

Swine products of the United States : message from the President of the United States, transmitting a report from the Secretary of State relative to the importation of the swine products of the United States, March 1, 1884 : referred to the Committee on agriculture and ordered to be printed.

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REPORT OF COMMISSION ON

SWINE PRODUCTS

IN THE

UNITED STATES

1884

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SWINE PRODUCTS OF THE UNITED STATES.

MESSAGE

FROM THE

PRESIDENT OF THE UNITED STATES,

TRANSMITTING

A report from the Secretary of State relative to the importation of the swine products of the United States.

MARCH 1, 1884.—Referred to the Committee on Agriculture and ordered to be printed.

To the House of Representatives :

I transmit herewith for the consideration of Congress a report of the Secretary of State, accompanying a report made by the Commission lately designated by me to examine and report upon the asserted unhealthfulness of the swine products of this country. The views and conclusions of the Commission deserve the most careful consideration of Congress, to the end that, if any path be legitimately open for removing the prohibition which closes important foreign markets to those products, it may be followed and appropriate legislation devised.

I earnestly recommend that Congress provide for reimbursing the expenses incurred by the Commissioners in this praiseworthy service, and I should be glad also if some remunerative recognition of their public-spirited action in accepting the onerous and responsible duties imposed on them were to suggest itself to Congress. At all events, in view of the conflicting theories touching the origin and propagation of trichiniasis and the means of isolating and extirpating it among domestic swine, and considering the important bearing which precise knowledge on these points would have on the commercial aspects of the matter, I recommend provision for special research in this direction.

CHESTER A. ARTHUR.

EXECUTIVE MANSION,
Washington, February 29, 1884.

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To the President:

In the President's last annual message to the Congress he announced that in view of the action of certain foreign Governments prohibiting importation of the swine products of the United States, because of alleged danger to health from their use, he had deemed it so important to ascertain and promulgate the exact facts that he had designated a commission of experts to make a thorough investigation of the subject.

The Commission so appointed has now submitted a report to the undersigned, which is herewith laid before the President, for transmission to Congress if in his judgment it be deemed advisable so to do.

The report is thorough and impartial to a degree which cannot fail to commend it to public consideration here and abroad. It deals mainly with the two asserted causes of a diseased condition of the prepared food-products, namely, hog cholera, so called, and trichiniasis. As to the first, it is conclusively shown that the flesh of swine so diseased does not enter the market packed for human food, and it is moreover demonstrable that in no event is the disease communicable to human beings.

As to trichiniasis in swine the report is less conclusive, because less is certainly known of the manner in which the living *trichinae* or their germs are transmitted. The need of further investigations to determine this point, on which alone can any practicable measure for the extirpation of the disease be based, is very clear. Admitting the fact that a percentage of the animals slaughtered (probably smaller than in the countries of Europe) are more or less infested with *trichinae*, the Commission points out that the processes and conditions of packing and the lapse of time between the slaughter of the animal and the consumption of the prepared flesh abroad, are found to so diminish the vitality and propagative power of the *trichinae* as to make it doubtful whether any of these parasites reach Europe in a living state, or in a condition to develop in the human body.

So far as known, no single authentic instance, resting on competent scientific testimony, can be adduced of a case of trichiniasis in Europe arising from the use of American packed swine products as food, whether eaten raw or cooked. In each instance of outbreak of trichiniasis in Germany, where the habit of eating hog's meat in an uncooked state makes the disease more prevalent than in other countries, the epidemic is not only distinctly traced to the consumption of the flesh of freshly-killed native hogs, but the further significant fact is observed that the virulence of the infection diminishes with the time elapsing between the killing of the animal and the consumption of its flesh, and that an interval of only a few days, especially when the meat is even slightly salted, suffices to reduce the severity of the symptoms below a fatal stage. It may not be irrationally inferred that a still longer interval would wholly remove the danger of infection, even in uncooked meat. Scientific research as to the duration and conditions of propagative vitality of the *trichinae* after the death of the animal in which they are found, would appear to be a very necessary step toward a fuller knowledge of this aspect of the question.

In conclusion the Commissioners say that—

After carefully studying every circumstance that in any way affects the condition of the American swine, from the hour of their birth to the landing of the cured meat in foreign ports, we are free to say that our exported pork in all its forms is fully equal, perhaps superior, in its freedom from taint of every kind, either from disease or deterioration after slaughtering, to the pork of France or Germany, or any other country in which the hogs are confined within a narrow compass and do not

enjoy that free run and pasturage which they get in the hog-growing regions of the United States. There is no general prevalence of disease among swine in any portion of this country. Microscopic examinations show that here, as in all other countries, a small percentage of the swine is affected with trichiniasis; probably a smaller percentage than in the countries of Europe. That the occasional presence of trichinæ in our pork is a comparatively unimportant fact is shown by the variety of trichiniasis among human beings, as indicated by the returns from the State and city boards of health. Another very important fact is the almost certain destruction of the trichinæ when present in pork by the curing process before it can be landed in foreign countries. Nevertheless, while we believe that no legitimate grounds exist for the restrictions imposed on the importation of American pork, we are satisfied that microscopic inspection of all pork for export can be secured at the packing houses, if such inspection should be demanded, as we have already fully explained.

There does not seem to be any objection in principle to such inspection whenever it may be required. Foreign commerce is necessarily conducted in conformity with the demands of the local trade, and it is clearly to the interest of producers to set such wares on a foreign market as will meet with ready and unhampered sale. When a government imposes upon the importation of foreign products conditions no more burdensome or unreasonable than those which weigh upon native products, conformity with those conditions is reasonable and requisite. If home inspection with due certification will open foreign markets for our swine products, it will certainly pay the American exporter to submit to inspection.

It is suggested that the trust expressed in the President's last annual message be repeated, that Congress shall find in the national and international bearings of the matter a sufficient motive for providing for the reimbursement of the expenses incurred by the Commissioners. It seems but just to also provide some compensation for the time and knowledge thus devoted by them to public interests. It may also be advisable to make an appropriation for setting on foot the investigations suggested by the Commission as to the origin and transmission of trichinæ and the means of isolating and extirpating the disease.

Respectfully submitted.

FRED'K T. FRELINGHUYSEN.

DEPARTMENT OF STATE,
Washington, February 28, 1884.

With the compliments of
C. F. Chandler,
School of Mines, Columbia College,
49th Street, cor. 4th Avenue, New York.

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PART I.

INTRODUCTORY.

HON. FRED'K T. FRELINGHUYSEN,
Secretary of State:

The Commission appointed by the President to examine into the swine industry of the United States, and into "the allegations as to the healthfulness of the pork products" of this country, beg leave to report. The Commissioners entered upon the work assigned them in accordance with the following letters of instruction:

Mr. Frelinghuysen to Mr. Loring, Commissioner of Agriculture, et al.

DEPARTMENT OF STATE,
Washington, July 30, 1883.

SIR: On several occasions during the last few years the importation of hog products from the United States has been restricted, or even entirely prohibited, by the legislation of several foreign states. The grounds of this action are understood to be the alleged prevalence of disease—hog cholera, trichinosis, and the like—among the swine of the United States, and the supposed consequent unfitness of the prepared products for consumption as human food. The consequent legislation, however, has not, in most cases, expressed the motives of the restrictions imposed. The prohibitory decrees of Austria-Hungary and Germany, for instance, unqualifiedly forbid the importation into those countries of the pork products of the United States.

This Government, from the time the intention was first observed abroad to question the healthfulness of the pork products exported from the United States, has made every effort to investigate the truth of the unfavorable statements which came to its knowledge. It was conceived that we were more interested in proving such charges against one of our greatest staples of food, consumed by millions of our people, than could be any foreign country, whose inhabitants are only in comparatively small part consumers of the American products. After exhaustive and impartial investigation of the subject, the conviction was reached by this Government that the premises upon which the above legislation abroad rested were and are unfounded, and that the exported hog products of the United States are in no wise the source of danger to life and health which they are alleged to be. Wide publicity has been given to the results of the investigations undertaken by the Department of State and by the report on trichinæ and trichinosis, prepared by the marine-hospital service, and published by order of Congress in 1881. And efforts have not been spared to induce in the minds of foreign Governments a right understanding of the facts of the matter as they are ascertained to exist here. The conviction reached by this Government has not, however, been shared by the foreign Governments to whose attention it was brought, and the contemplated prohibitory legislation has been effected, thereby closing important foreign markets to a food product generally used by a large proportion of our people.

It is doubtless one of the first duties of a Government to watch over the health of its own community. It is difficult to believe that their restrictive measures arise from any other motive; and if foreign Governments, after impartial examination, are satisfied that the pork products of the United States are, as compared with the like products of other countries, unwholesome to a degree which demands their exclusion from use as human food, it behooves this Government to examine this charge; and, if it should be substantiated, to fulfil its duty as the custodian of the public health, by enacting a system of sanitary laws which shall afford for its own citizens as complete a guarantee against the evil effects of consuming the domestic product as the statutes of foreign countries afford for their subjects. The President has therefore determined to name a Commission of experts of known probity, impartiality, and competence, to make a searching examination on the spot of all the conditions of the

hog raising and packing industries of the United States, and to follow by the most practical examination the course of this food staple from the fields and farms to the wharf where it is shipped, or to the shops where it is exposed for domestic consumption.

The matter presents itself to the President with such urgency that he is unwilling to await action by Congress. He believes it of national importance that the results of the investigation he contemplates should be laid before Congress at the opening of the session in December next, in order that, if needful, legislative action may be then taken. It is therefore the President's desire that you will recommend to him the names of two competent persons to be commissioned as the representatives of your Department.

The Commission will embrace, in addition, one representative of the New York Chamber of Commerce, one representative of the Chicago Board of Trade, and one gentleman to be chosen by the President, comprising in all five members. As the statutes prohibit the making of any contract involving guarantee of money payment, or the incurring of any obligation for the eventual repayment of expenses, without the previous assent of Congress, the Executive is unable to promise any positive assurance that the expenses of the commission will be repaid. It is, however, thought that the great importance of the step taken, and the magnitude of the interest at stake, will lead Congress to recognize the justice of reimbursing whatever outlay the commissioners shall have incurred in discharging the important trust confided to them.

I am, &c.,

FRED'K T. FRELINGHUYSEN.

Similar letters to—

The president of the New York Chamber of Commerce;

The president of the Chicago Board of Trade.

Mr. Frelinghuysen to Mr. Loring, Commissioner of Agriculture, et al.

DEPARTMENT OF STATE,
Washington, October 3, 1883.

SIR: During the last few years the importation of hog products from the United States has been restricted, and in some instances entirely prohibited, by the legislation of several foreign countries. The grounds of this action are understood to be the alleged prevalence of disease—hog cholera, trichinosis, and the like—among the swine of this country, and the supposed consequent unfitness of the prepared products for food.

This Government, from the time the intention was observed abroad to question the healthfulness of the pork products exported from the United States, has made efforts to investigate the truth of unfavorable statements on the subject which came to its knowledge. The result of the investigations so made has been to show that the premises upon which the adverse legislation abroad rests are unfounded, and that the exported hog products of the United States are in nowise the source of danger to health and life they are alleged to be. Although efforts have not been spared to inform foreign Governments as to this state of facts, they have not given due weight to the representations which have been made to them on the subject, and consequently prohibitory legislation has been extended in Europe, until many important markets there have been closed to the food products in question, of which this country produces a large excess above its own consumption.

Inasmuch as the course which various foreign powers have pursued with regard to this matter involves the charge that American citizens are engaged in the exportation of an unhealthful article of food, and inasmuch as it is believed that the agricultural and commercial interests of this country are now suffering great damage in consequence of misrepresentations as to the character of the hog products of the United States, it has been determined to take measures for such a formal and thorough investigation of the subject as will leave no doubt whatever as to the facts.

To this end you are hereby notified that the President has designated a commission to make a searching examination of all the conditions of the hog raising and packing industries of the United States of America. This commission is constituted as follows: 1. Dr. George B. Loring; 2. Prof. C. F. Chandler; 3. Eliphalet W. Blatchford, esq.; 4. F. D. Curtis, esq.; 5. Prof. E. D. Salmon.

As the statutes prohibit the making of any contract involving guarantee of money payment or the incurring of any obligation for the eventual repayment of expenses without the previous assent of Congress, the President is unable to give any positive assurance that the expenses of the commission will be repaid. It is, however, thought that the magnitude of the interests at stake will lead Congress to recognize

the justice of reimbursing whatever outlay the commission may incur in discharging the important trust confided to it.

You are requested to confer with your colleagues with a view to the speedy organization of the commission, that its labors may begin at an early day.

The method of procedure and other details are left to the judgment of the commission, the President desiring simply that it shall proceed in such manner as may seem most advisable to examine into this industry and the allegations as to the healthfulness of the pork products of the United States.

The commission will report the result of its investigation, as soon as practicable, to the Secretary of State, for communication to Congress.

I am, &c.,

FRED'K T. FRELINGHUYSEN.

Similar letters to—

Eliphalet W. Blatchford, esq., on the part of the Board of Trade of Chicago;

Prof. C. F. Chandler, on the part of the Chamber of Commerce of the State of New York;

F. D. Curtis, esq., of Charlton, N. Y.;

Prof. D. E. Salmon, of the Department of Agriculture, Washington, D. C.

The Commission assembled at the Department of Agriculture in Washington on the 15th of October, 1883, and assigned its work to the various members under the following heads, viz :

I.

1. The origin and history of the hogs which make up the market supply
2. The conditions under which they are raised and fattened.]

II.

1. Transportation of hogs from farms, or when they are fatted to "stock yards" or packers.
2. Condition of animals on arrival at stock-yards or where they are to be slaughtered and packed.
3. Manner of slaughter and effects on the meat.
4. Treatment of carcass after slaughtering, before cutting up.
5. Curing of meat, the mode and materials used.
6. Packages used for shipment.
7. Storage after packing.
8. Transportation to seaboard.
9. Inspection for home and foreign consumption by General Government, State authority, boards of trade.

III.

1. Extent of trichinæ and trichiniasis in America and Europe.
2. Preventive measures required.
3. Effect of salting or curing upon trichinæ.
4. Effects and extent of other diseases which may exist among hogs.

In performing this duty the packing-houses of the West and in the seaboard cities, and the large swine-breeding sections of the country have been personally examined by the Commission, and an extensive correspondence has been entered into with the packers of pork, the State and municipal authorities who have issued regulations with regard to the trade, and with the transportation companies over whose lines the traffic is conducted, in order to secure all possible information on the subject.

I.

1. *The origin and history of the hogs which make up the market supply.*
2. *The conditions under which they are raised and fattened.*

The raising of swine in the United States of America is an industry so universal that it extends to every farm. The products of the hog—pork, bacon, ham, and lard, or in their manufactured forms—are consumed by all classes. Among the farmers they constitute the chief meat food. The supply for domestic use is obtained partly from the farmers themselves, and partly from the general market, in which the products of every State and section find a sale, and from which foreign countries are supplied. The States which furnish nearly all the pork products which go to foreign markets are Iowa, Illinois, Missouri, Indiana, Ohio, Kansas, Kentucky, Nebraska, Wisconsin, and Tennessee. They are enumerated in the order of their production. Texas, Arkansas, and Michigan, West Virginia, and Minnesota also send to the packing-houses a small amount of the great market supply. The number of hogs in all these States, according to the returns of the Department of Agriculture for 1883, was 31,955,020, while the total number in the United States by the same report was 43,270,086. The Southern States produce a large number of hogs which make superior bacon and hams. Georgia is credited in the annual report of the Department of Agriculture with 1,412,604 hogs; North Carolina, 1,311,821; Alabama, 1,225,534; Mississippi, 1,070,269, and Virginia, 773,864. The hogs from these States are used for domestic consumption.

In the States which supply the hogs for the foreign market, corn is a leading grain production, and it is found that the number of hogs in each State is proportioned to the yield of this staple. The fifteen States mentioned above produced in 1883, 1,301,025,300 bushels of corn.

As indicating the interest in swine-breeding in America, it may be stated that a National Swine Breeders' Association has been formed, in which all the States are represented, which, at its last session held in the city of Chicago, Ill., November 14, 1883, unanimously passed a resolution which was reported by the special committee on sanitary conditions, from which we quote as follows:

We recommend that laws should be passed in all the States placing all animals thus affected [with cholera] in quarantine, with restrictions and severe penalties in any case of the violation of the law. The disease of trichinosis is practically unknown among the farmers, and we fail to see how corn, the chief food for the hogs which make up the market supply, can in any possible way be productive of trichinosis. The active efforts of the national administration in endeavoring to obtain a repeal of the embargoes of certain foreign Governments against the importation of American pork are highly appreciated, and we would approve of continued efforts, and, as the interests at stake are so great, of radical measures, if necessary, to the extent of a rigid Governmental inspection both before the slaughtering of the swine and the packing and foreign shipments of pork products.

BREEDS OF SWINE.

The breeds of hogs in the United States which are the most numerous bred are Poland-China, Berkshire, Essex, Chester-White, Yorkshire, Suffolk, Cheshire, Victoria, Duroc-Jersey, and Guinea. Nearly all of these breeds are represented by a distinctive association, whose members vie with each other in endeavoring to improve and perfect the breed of their choice. The Berkshire, Essex, Yorkshire, and Suffolk varieties are of English origin, the others being American breeds. The white breeds predominate in the Eastern and Middle States. These are

Yorkshire, large and small; Suffolk, Cheshire, Victoria, and Chester-White. The last originated in the State of Pennsylvania, and the Cheshire and Victoria in the State of New York. The Duroc-Jersey breed—red hogs—was formed by uniting the two different families, one originating in New York and the other in New Jersey. The Guinea hogs are natives of the South. They are compact in form, exceedingly hardy, and are black-blue and white in color. Ninety per cent. of the hogs which furnish the supply for the packers are of the breed of Poland-China and Berkshire. The Poland-China swine make up the largest proportion of this amount. About 3 per cent. of the hogs which go to the Western stock-yards are white, and about the same number are red or crossed with red, and the remaining 4 per cent. are crosses of white and black and Essex. The Poland-China and Berkshire breeds closely resemble each other, and have the same general characteristics, excepting that the Poland-China are usually larger. Berkshire blood predominates largely in the making up of this breed. Both the Poland-China and the Berkshire are black with white spots, but when dressed the skin is white, with, perhaps, a faint bluish tinge. Both of these breeds are as near perfect as American skill and experience in breeding can make them, and while they have the form of body which gives them great popularity, they also possess the color (nearly black) and skin which fit them for enduring the extremes of our climate.

BREEDING AND FEEDING.

The system of breeding and rearing swine is nearly the same in all the States, with the exception that in the colder latitudes more shelter is provided. Where the climate is milder the hogs are sometimes kept in the forests, and are protected by the underbrush, which breaks the force of the winds. Away from the forests, sheds are provided, or regular houses, and straw for bedding, or the hogs are allowed to sleep around the straw stacks, near the farm buildings. It is manifest that the best hogs should be bred on the farms, not only those suited to the wants of the packer, but possessing as much physical stamina and vital power as possible. It may be suggested here that more nitrogenous food would add to the nutrition of the blood, and give it greater force in building up the system. The crossing of breeds tends to impart greater constitutional vigor than animals have which have been bred for a considerable time in a direct line, and on this account it may be advisable for the producers of pork to infuse new blood into their herds. Fortunately there is no lack in this country of breeds, and such cross-bred hogs can be had without any material change of form or losing the benefits of as good skin and coats of hair. The farmers of the West understand these principles in breeding and are beginning to avail themselves of the means at hand in order to derive the consequent benefits. While it may be for the interest of the pork-producer to fit his hogs for market in the shortest space of time, the same law does not hold good in the rearing of breeding stock. The farmers have learned that they should grow slower, and that the food should be of such a combination as to develop the entire structure of the animal during the period of growth, and not the fatty portions to excess. The hogs in the United States are generally allowed to roam and feed upon grass and clover as their natural food, during those months in which pasturage can be continued, and they are fed mainly on corn during the time in which they are to be finished for the market. They are supplied also with an abundance of pure water, and this mode of feeding contributes so entirely to the

health of the animals that but a small amount of disease can be found among them. Refuse food is seldom or never used in the great pork-producing regions of the country; this being limited entirely to villages and small farms when the hogs are confined the year through in close quarters. The breeding of swine has always followed the lead of the market which used to demand larger hogs than are now required. Formerly the largest proportion of the pork was pickled in brine, and in this form, then as now, the heaviest hogs were used. The more modern way of dry-salting the sides and of making more bacon makes the demand now greatest for medium-sized hogs, which will make hams of smaller weight. The pigs of this kind are farrowed in the summer or in the autumn while the mothers are in the fields or in the woods; when in the fields they live, as we have said, upon blue grass or upon clover, as the case may be, supplemented with corn. In the woods or on the river bottoms they subsist on mast (nuts), grass, and roots of various kinds. In order to keep them from roving or getting wild on the bottom ranges, as they are often very extensive, reaching for miles, the hogs are fed corn occasionally, or regularly, if the owner finds it to his advantage to do so. The pigs designed for the next year's market are wintered on corn or mast and corn, and in the spring they are allowed to run in pastures, or they are confined to a feeding lot where there is water, and in which corn is their food. Except the grass and mast, which the hogs have access to in the hog-producing States, their food is Indian corn. The breeding sows are wintered on it, and it is fed to them bountifully while the pigs are suckling and to their offspring. The older hogs, which are wintered on corn, are turned out as early as possible into a pasture lot, as the value of succulent food, together with corn, is well appreciated.

• FEEDING OFFAL, ETC.

The statements in regard to feeding offal at slaughter-houses have been greatly exaggerated and convey an erroneous impression. Cases of such feeding are limited to a small fractional per cent. of the number of hogs as compared with the grand total in the country. A few hogs are kept by the butchers in the country towns, which are fed on the offal from their small slaughtering establishments as far as it will suffice for their food. This includes the offal from the sheep, cattle, and hogs which they may kill. These hogs are always slaughtered by their owners and sold in their own meat stores in the local markets to their customers. In Kentucky and some other States where whisky and alcohol are distilled from grain, hogs are sometimes fed by the owners of these distilleries on the refuse. The pork so made is soft and never purchased for the foreign market, as it does not cure well and does not make products equal to their standard and brand. When distillery-fed hogs are changed from the refuse of the grain and fed wholly on corn for several weeks before slaughtering, they make excellent pork. This fact is well understood. Butchers can always detect a distillery-fed hog after it has been dressed as well as one fed on mast. The fatty portion of the latter is yellow, and both are more oily than when corn-fed.

SANITARY CONDITIONS.

Not all American farmers have yet learned that hogs are really among the most delicate of farm animals, and that exposure and sudden changes of temperature often seriously affect them. It is a gratifying fact, how-

ever, that the sanitary conditions of the hog upon the farms have been greatly improved. Not only warmer quarters are provided, but the important fact is also better known and appreciated of affording them dry beds and sleeping ground. It is getting to be well understood that good water is almost as essential as good food to make healthy animals, and as a result of this knowledge and the gratifying consequence of the experience of those who have tried the experiment, where there are no natural streams or springs to furnish pure water, a resort is being extensively made to wells, with windmills and pumps attached, to procure the needful supply. The better care of the hogs now had and the precautions exercised by farmers to either burn or bury all animals dying from disease has had the most salutary effect in increasing the general healthfulness of swine. The sensational and exaggerated theories and statements both in regard to the propagation of hog cholera and trichinæ on the farms are not in accordance with the facts as hogs are now managed and fed. The disease termed "thumps," which is one of the most fatal, is confined to young pigs, and usually affects them while suckling. It is in no sense contagious, and almost always attacks pigs which are farrowed early while shut up in pens and deprived of exercise. The mortality on this account has been materially reduced by later farrowing to give the advantage of exercise, thus preventing excessive fatness.

SALES AND WEIGHTS.

The largest sales are made during the latter part of autumn and the early part of winter. Sales are also made through the summer or whenever the condition of the hogs is suitable, and the prices acceptable to the owner. The average dressed weight at one year old is about 200 pounds, at eighteen months about 250 pounds. These are the minimum averages. The spring pigs constitute another class of hogs. They make lighter bacon, lighter dry-salted sides, and smaller hams. These pigs are fed, as soon as they are old enough to eat, all the corn they will consume. When eight or ten months of age they are ready to be turned off with an average minimum dressed weight of about 150 pounds. The aggregate number of hogs of all ages now slaughtered annually in the United States is estimated at about 30,000,000, averaging a dressed weight of 175 pounds or 5,250,000,000 pounds of gross product, making a total of cured meats, lard, and other products of 4,725,000,000 pounds. The hogs are sold at the railway stations by live weight, and either driven or transported to the yards of the shipper

PART II.

II.

1. Transportation of hogs from farms, or where they are fattened, to stock-yards or packers.
2. Condition of animals on arrival at stock-yards or where they are to be slaughtered or packed.
3. The manner of slaughter and the effects on the meat.
4. Treatment of carcass after slaughtering, before cutting up.
5. Curing of meat; the mode and materials used.
6. Packages used for shipment.
7. Storage after packing.
8. Transportation to seaboard.
9. Inspection for home and foreign consumption by General Government, State authority, and boards of trade.

THE TRADE IN HOG PRODUCTS.

The pork trade of the United States has reached enormous proportions, one half of the world's supply of hogs being now owned and raised in this country.

THE WORLD'S SUPPLY OF SWINE.

The following table, provided by the Department of Agriculture, gives the number of swine reported in the United States in 1883, in the United Kingdom in 1882, and in other countries having 100,000 or more in 1880:

United States.....	43,270,000	Belgium.....	602,000
Russia.....	10,332,000	Australia.....	567,000
Germany.....	7,324,000	Denmark.....	504,000
Austro-Hungary.....	6,995,000	Sweden.....	426,000
France.....	5,891,000	Holland.....	352,000
Spain.....	4,352,000	Argentine Republic.....	342,000
United Kingdom.....	3,940,000	New Zealand.....	207,000
Switzerland.....	2,000,000	Greece.....	180,000
Italy.....	1,564,000	Cape of Good Hope.....	132,000
B. N. A. Provinces.....	1,419,000	Norway.....	101,000
Roumania.....	837,000		
Portugal.....	717,000	Total.....	91,964,000

[From the Report of the Commissioner of Agriculture for 1883.]

Table showing the estimated total number and total value of each kind of live stock and the average prices in January, 1883.

States and Territories.	Hogs.		
	Number.	Average price.	Value.
Maine.....	71,416	\$11 87	\$847,708
New Hampshire.....	54,511	12 13	661,218
Vermont.....	74,864	11 67	873,663
Massachusetts.....	80,908	14 31	1,157,793
Rhode Island.....	14,405	13 39	192,883
Connecticut.....	62,406	10 38	647,774
New York.....	744,238	10 96	8,156,848
New Jersey.....	214,688	12 75	2,737,272
Pennsylvania.....	1,060,856	9 24	9,802,309
Delaware.....	46,740	7 80	364,572
Maryland.....	325,413	7 94	2,583,779
Virginia.....	773,864	5 36	4,147,911
North Carolina.....	1,311,821	4 15	5,444,057
South Carolina.....	584,601	4 34	2,537,168
Georgia.....	1,412,604	4 04	5,706,920
Florida.....	320,000	2 75	880,000
Alabama.....	1,225,534	4 34	5,318,818
Mississippi.....	1,070,269	4 05	4,334,589
Louisiana.....	564,439	4 30	2,427,088
Texas.....	1,953,189	3 98	7,773,692
Arkansas.....	1,250,513	3 88	4,851,990
Tennessee.....	1,988,753	5 56	11,057,467
West Virginia.....	404,406	5 92	2,394,084
Kentucky.....	1,916,587	5 73	10,982,044
Ohio.....	2,714,112	8 07	21,902,884
Michigan.....	934,184	8 45	7,893,855
Indiana.....	2,724,383	7 64	20,814,286
Illinois.....	3,970,764	7 46	29,621,899
Wisconsin.....	1,162,238	9 76	11,343,443
Minnesota.....	424,057	7 45	3,159,225
Iowa.....	5,107,445	8 02	40,961,709
Missouri.....	3,892,920	5 56	21,644,635
Kansas.....	1,984,646	8 57	17,008,416
Nebraska.....	1,526,823	7 96	12,153,511
California.....	856,000	7 14	6,111,840
Oregon.....	168,954	5 49	927,557
Nevada.....	12,000	11 40	136,800
Colorado.....	12,100	11 58	140,118
Arizona.....	9,200	8 00	73,600
Dakota.....	109,600	8 81	965,576
Idaho.....	23,600	11 00	259,600
Montana.....	17,200	10 60	182,320
New Mexico.....	19,300	10 80	208,440
Utah.....	22,500	12 42	279,450
Washington.....	50,300	5 42	272,626
Wyoming.....	735	10 59	7,784
Indian.....			
Total.....	43,270,086	6 75	291,951,221

Table showing the estimated numbers of farm stock expressed as a percentage of the numbers of the previous years ; also, average of actual prices in January, 1883.

[From the Report of the Commissioner of Agriculture, November 10, 1883.]

States and Territories.	Hogs.		
	Total number of hogs compared with that of January, 1882.	Average price per head under 1 year old.	Average price per head over 1 year old.
	<i>Per ct.</i>		
Maine	99	\$9 25	\$22 33
New Hampshire	101	11 05	23 37
Vermont	99	8 75	20 00
Massachusetts	102	11 75	22 40
Rhode Island	101	11 33	21 67
Connecticut	101	8 54	17 75
New York	101	8 35	17 35
New Jersey	100	9 75	18 31
Pennsylvania	94	6 87	15 04
Delaware	100	6 00	15 00
Maryland	98	5 46	12 54
Virginia	87	3 93	8 70
North Carolina	95	2 88	6 33
South Carolina	99	2 95	6 25
Georgia	99	2 84	6 18
Florida	122	1 48	3 58
Alabama	103	3 31	6 26
Mississippi	92	2 87	6 36
Louisiana	90	2 60	6 86
Texas	103	2 69	5 92
Arkansas	85	2 46	6 00
Tennessee	97	4 14	9 23
West Virginia	88	4 56	9 79
Kentucky	99	4 29	9 86
Ohio	96	6 30	13 68
Michigan	102	6 23	14 78
Indiana	95	5 75	12 51
Illinois	96	5 51	12 46
Wisconsin	104	8 44	12 83
Minnesota	109	5 31	12 44
Iowa	92	6 22	12 89
Missouri	95	3 90	9 44
Kansas	111	6 73	13 57
Nebraska	116	6 40	11 60
California	95	5 48	10 07
Oregon	105	2 78	7 28
Nevada	120	8 00	16 50
Colorado	110	9 33	18 33
Arizona	120	7 00	20 00
Dakota	137	6 93	13 19
Idaho	100	5 00	15 00
Montana	105	9 75	19 25
New Mexico	110	7 00	24 00
Utah	107	11 05	21 95
Washington	103	3 50	8 82
Wyoming	105	8 00	25 00
Indian Territory	80	1 50	5 00

The following extracts from the recent report of George B. Loring, Commissioner of Agriculture, of date November 10, 1883, presents a valuable array of facts on this subject. The returns of cattle, calves, sheep, and horses are included in order to present comparative values.

STOCK STATISTICS.

THE CHICAGO MARKET.

The volume of business in this great stock market is rapidly increasing. There were 1,582,530 cattle, exclusive of calves, received, and 661,521 retained for home consumption or slaughter and cutting, or shipment as dressed beef. In 1870 the difference between receipts and shipments was only 141,255. The receipts and shipments, and home consumption, for seventeen years, are thus presented:

	Cattle.	Calves.	Hogs.	Sheep.	Horses.
Receipts	14, 629, 013	73, 913	66, 334, 665	5, 788, 920	149, 778
Shipments	9, 848, 754	43, 694	22, 855, 706	2, 641, 171	133, 655
Total.....	4, 780, 259	30, 219	43, 478, 959	3, 147, 749	16, 123

Of these receipts, 8,892,253, or 61 per cent. of the whole number of cattle, were handled in the last seven years. The increase has been comparatively steady, amounting to nearly half a million since 1876, stimulated by the demand for the packing and canning trade, and more recently the dressed-beef trade. This increase is shown clearly in diagram D, which displays graphically the receipts of seventeen years, and the relative proportions shipped and retained. The proportions, year after year, run in nearly parallel lines until 1876, when the light shading indicating consumption suddenly encroaches on the dark space showing shipments.

The receipts of sheep have doubled in ten years, and the increase in seventeen has been about 200 per cent. Formerly, much the larger proportion were for city consumption; now, while the number retained has greatly increased, the shipments are about half of the aggregate.

The swine receipts have increased with still more wonderful rapidity. As "hogs" and "corn" are in a sense reciprocal terms, the six years of fat corn crops nearly doubled Chicago receipts. So the poor corn year, 1881, reduced the next year's receipts 657,340, as the bad crop of 1874 checked the tendency to increase and made the following year's receipts less by 346,269.

Total receipts for seventeen years.

Years.	Cattle.	Calves.	Hogs.	Sheep.	Horses.
1865 (five days).....	613	.....	17, 764	1, 433	.....
1866	393, 007	.....	961, 746	207, 987	1, 553
1867	329, 188	.....	1, 696, 738	180, 888	847
1868	324, 524	.....	1, 706, 782	270, 891	1, 902
1869	403, 102	.....	1, 661, 869	340, 072	1, 524
1870	532, 964	.....	1, 693, 158	349, 853	3, 537
1871	543, 050	.....	2, 380, 083	315, 053	5, 963
1872	684, 075	.....	3, 252, 623	310, 211	12, 145
1873	761, 428	.....	4, 437, 750	291, 734	20, 289
1874	843, 966	.....	4, 258, 379	333, 655	17, 588
1875	920, 843	.....	3, 912, 110	418, 948	11, 346
1876	1, 096, 745	.....	4, 190, 006	364, 095	8, 159
1877	1, 033, 151	.....	4, 025, 970	310, 240	7, 874
1878	1, 083, 068	.....	6, 339, 654	310, 420	9, 415
1879	1, 215, 732	.....	6, 448, 330	325, 119	10, 473
1880	1, 382, 477	.....	7, 059, 355	335, 816	10, 398
1881	1, 498, 550	*48, 948	6, 474, 844	493, 624	12, 909
1882	1, 582, 530	24, 965	5, 817, 504	628, 887	13, 856
Total.....	14, 629, 013	73, 913	66, 334, 665	5, 788, 920	149, 778

* Prior to 1881 calves were classed with cattle.

Total shipments for seventeen years.

Years.	Cattle.	Calves.	Hogs.	Sheep.	Horses.
1866	263,693		482,875	75,447	162
1867	203,580		758,789	50,275	387
1868	215,987		1,020,329	81,634	2,185
1869	294,717		1,086,305	108,690	1,538
1870	391,709		924,453	116,711	3,488
1871	401,927		1,162,286	135,084	5,482
1872	510,025		1,835,594	145,016	10,625
1873	574,181		2,197,557	115,235	18,540
1874	622,929		2,330,361	180,555	16,608
1875	696,534		1,582,643	243,604	11,129
1876	797,724		1,131,635	195,925	6,839
1877	703,402		951,221	155,354	6,598
1878	699,108		1,266,906	156,727	8,176
1879	726,903		1,692,361	159,266	9,289
1880	886,614		1,394,990	156,510	8,713
1881	938,712	*33,465	1,289,679	253,938	11,108
1882	921,009	10,229	1,747,722	314,200	12,788
Total	9,848,754	43,694	22,855,706	2,641,171	133,655

* Prior to 1881 calves were classed with cattle.

THE FOREIGN TRADE.

While the domestic distribution has been rapidly extending and enlarging, the foreign trade in all farm animals has increased, and especially the exportation of sheep and cattle. The cattle exports prior to 1878 were from Southern ports almost entirely. When the transportation to Europe commenced, from Northern ports, the numbers increased rapidly and values enormously.

The following statement exhibits the progress of stock exportation:

Years.	Cattle.		Swine.		Sheep.		Horses.		Mules.	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
1870	27,530	\$439,987	12,058	\$189,753	39,570	\$95,193	2,121	\$177,479	995	\$140,350
1871	20,530	403,491	8,770	61,390	45,465	86,888	1,186	173,273	1,930	265,827
1872	28,033	565,719	56,110	548,153	35,218	79,592	1,772	268,475	2,121	294,402
1873	35,455	695,957	99,720	787,402	66,717	107,698	2,814	255,365	1,659	172,172
1874	56,067	1,150,857	158,581	1,625,837	124,248	159,735	1,432	169,303	1,252	174,125
1875	57,211	1,103,085	64,979	739,215	424,416	183,898	3,220	242,031	2,802	356,828
1876	51,593	1,110,703	68,044	670,042	110,312	171,101	2,030	234,964	1,784	224,860
1877	50,001	1,593,080	65,107	699,180	179,017	234,480	2,042	301,134	3,441	478,434
1878	80,040	3,896,818	29,284	267,249	183,995	333,499	4,104	798,723	3,860	501,513
1879	136,720	8,379,200	75,129	710,262	215,680	1,082,938	3,915	770,742	4,153	530,989
1880	182,756	13,344,195	83,434	421,089	209,137	892,647	3,060	675,139	5,198	532,362
1881	185,707	14,304,103	77,456	572,138	179,919	762,932	2,523	390,243	3,207	353,924
1882	108,110	7,800,227	36,368	509,651	139,676	603,778	2,248	470,183	2,632	320,130
1883	104,444	8,341,431	16,129	272,516	337,251	1,154,856	2,800	475,806	4,237	486,560

Exports of pork products.

Years.	Bacon and hams.		Pork.		Lard.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
<i>Pounds.</i>						
1873	395,381,737	\$35,022,137	64,147,461	\$5,007,035	230,534,207	\$21,245,815
1874	347,405,405	33,383,908	70,482,379	5,808,712	205,527,471	19,308,019
1875	250,286,549	28,612,613	56,152,331	5,671,495	166,869,393	22,900,522
1876	327,730,172	39,664,456	54,195,118	5,744,022	168,405,839	22,429,485
1877	460,057,146	49,512,412	69,671,894	6,296,414	234,741,233	25,562,665
1878	592,814,351	51,752,068	71,889,255	4,913,657	342,766,254	30,022,133
1879	732,249,576	58,074,433	84,401,676	4,807,568	326,658,686	22,856,673
1880	759,773,109	50,987,623	95,949,780	5,930,252	374,979,286	27,920,367
1881	746,944,545	61,161,205	107,928,086	8,272,285	378,142,496	35,226,575
1882	468,026,640	46,675,774	80,447,466	7,201,270	250,367,740	28,975,902
1883	340,258,670	38,155,952	62,116,302	6,192,268	224,718,474	26,618,048

VALUE OF FARM ANIMALS.

The value of farm animals, as reported in the census of 1880, was \$1,500,464,609. This includes only stock on farms, exclusive of ranch cattle, sheep, and horses, and stock in towns and villages. The prices have advanced since 1883. The value of stock, as estimated in January, 1883, was as follows:

Stock.	Number.	Average value.	Value.
Horses	10,838,111	\$70 59	\$765,041,308
Mules	1,871,079	79 49	148,732,390
Milch cows	13,125,685	30 21	396,557,405
Other cattle	28,046,077	21 80	611,549,109
Sheep	49,237,291	2 53	124,365,835
Swine	43,270,086	6 75	291,951,221

This makes a total value of \$2,338,197,268. The numbers are intended to include all animals on farms, ranches, or public lands.

The increase in prices in four years from 1879, the time of lowest depression in twenty years, is very marked. According to the Department returns this advance amounts to 35 per cent. for horses, 41 for mules, 39 for milch cows, 41 for other cattle, 22 for sheep, and 112 for swine. Besides the general advance of values incident to a recovery of business prosperity, there is a powerful cause at work in the case of swine, the unexampled cheapness of corn in 1879, from consecutive crops of great abundance, and the high prices now prevailing in consequence of poor yields. This increase in values, applied to the census numbers, amounts to \$2,174,000,000.

Average price of farm animals.

Years.	Horses.	Mules.	Cows.	Other cattle.	Sheep.	Swine.
1870.....	\$81 38	\$109 01	\$39 12	\$22 54	\$2 28	\$6 99
1871.....	78 51	101 52	37 33	22 81	2 32	6 19
1872.....	73 37	94 82	31 97	19 61	2 80	4 36
1873.....	74 21	95 15	29 72	20 06	2 96	4 09
1874.....	71 45	89 22	27 99	19 15	2 61	4 36
1875.....	68 01	80 00	28 52	18 68	2 79	5 34
1876.....	64 96	75 33	28 89	19 04	2 60	6 80
1877.....	60 08	68 91	27 32	17 10	2 27	6 09
1878.....	58 16	63 70	26 41	17 14	2 25	4 98
1879.....	52 41	56 06	21 73	15 39	2 07	3 18
1880.....	54 75	61 26	23 27	16 10	2 21	4 28
1881.....	58 44	69 79	23 95	17 33	2 39	4 70
1882.....	58 52	71 35	25 89	19 89	2 37	5 98
1883.....	70 59	79 49	30 21	21 80	2 53	6 75

The following tabular statements present the growth and present magnitude of this interest:

Total number of hogs packed in the West during winter seasons, according to special reports since 1849.

Season.	Number packed.	Cost, net.	Cost, gross.	Season.	Number packed.	Cost, net.	Cost, gross.
1882-'83.....	6,132,212	\$7 85	\$6 28	1861-'62.....	2,893,666	\$3 03	\$2 42
1881-'82.....	5,747,760	7 58	6 06	1860-'61.....	2,155,702	5 67	4 57
1880-'81.....	6,919,456	5 80	4 64	1859-'60.....	2,350,822	5 91	4 73
1879-'80.....	6,950,451	5 22	4 18	1858-'59.....	2,465,552	6 28	5 02
1878-'79.....	7,480,648	3 56	2 85	1857-'58.....	2,210,778	4 86	3 89
1877-'78.....	6,505,446	4 99	3 99	1856-'57.....	1,818,468	5 94	4 75
1876-'77.....	5,101,308	7 18	5 74	1855-'56.....	2,489,502	5 75	4 60
1875-'76.....	4,880,135	8 82	7 05	1854-'55.....	2,124,404	4 21	3 37
1874-'75.....	5,566,226	8 33	6 60	1853-'54.....	2,534,770	4 19	3 35
1873-'74.....	5,466,200	5 43	4 34	1852-'53.....	2,201,110	6 01	4 81
1872-'73.....	5,410,314	4 66	3 73	1851-'52.....	1,182,846	4 45	3 56
1871-'72.....	4,831,558	5 15	4 12	1850-'51.....	1,332,867	3 75	3 00
1870-'71.....	3,695,251	6 58	5 26	1849-'50.....	1,652,220	2 66	2 13
1869-'70.....	2,635,312	11 53	9 22	1848-'49.....	1,560,000	4 70	3 75
1868-'69.....	2,499,873	10 22	8 18	1847-'48.....	1,710,000	3 25	2 60
1867-'68.....	2,781,084	7 95	6 36	1846-'47.....	800,000	3 55	2 85
1866-'67.....	2,490,791	7 22	5 78	1845-'46.....	900,000	4 85	3 90
1865-'66.....	1,785,955	11 67	9 34	1844-'45.....	790,000	3 30	2 65
1864-'65.....	2,422,779	14 32	11 46	1843-'44.....	1,245,000	.....	.....
1863-'64.....	3,261,105	6 70	5 36	1842-'43.....	675,000	.....	.....
1862-'63.....	4,069,520	4 20	3 36				

The following shows the number of hogs packed in the Mississippi Valley during each year ended March 1 for the last thirty years, divided between summer and winter packing, and also the number packed in Chicago during each of these years:

Years ended March 1—	Number of hogs packed March 1 to November 1.		Number of hogs packed November 1 to March 1.		Total number packed March 1 to March 1.	
	In Chicago.	In the West.	In Chicago.	In the West.	In Chicago.	In the West.
1854.....			52,849	2,534,770	52,849	2,534,774
1855.....			73,694	2,124,404	73,694	2,124,402
1856.....			80,380	2,489,502	80,380	2,489,508
1857.....			74,000	1,818,468	74,000	1,818,468
1858.....			99,262	2,210,778	99,262	2,210,772
1859.....			179,684	2,465,552	179,684	2,465,552
1860.....			151,339	2,350,822	151,339	2,350,822
1861.....			271,805	2,155,702	271,805	2,155,706
1862.....			505,691	2,893,666	505,691	2,893,660
1863.....			970,264	4,069,520	970,264	4,069,525
1864.....			904,659	3,261,105	904,659	3,261,109
1865.....			760,514	2,422,779	760,511	2,422,775
1866.....			507,355	1,785,955	507,355	1,785,951
1867.....			639,332	2,490,791	639,332	2,490,794
1868.....			796,226	2,781,084	796,226	2,781,083
1869.....			597,954	2,499,173	597,954	2,499,173
1870.....			688,140	2,595,243	688,140	2,595,243
1871.....	48,917	115,000	870,280	3,717,084	919,197	3,832,084
1872.....	10,350	250,000	1,214,886	4,875,560	1,225,236	5,125,560
1873.....	31,571	505,000	1,425,079	5,451,254	1,456,650	5,956,254
1874.....	306,536	1,062,916	1,520,024	5,462,700	1,826,560	6,225,610
1875.....	446,368	1,200,444	1,690,348	5,561,226	2,136,716	6,761,672
1876.....	728,781	1,262,343	1,592,065	4,887,999	2,320,846	6,150,342
1877.....	1,315,402	2,307,866	1,618,084	5,068,992	2,933,486	7,376,856
1878.....	1,508,026	2,543,120	2,501,285	6,502,446	4,009,311	9,045,566
1879.....	2,017,841	3,378,044	2,943,115	7,475,648	4,960,956	10,853,692
1880.....	2,155,418	4,051,248	2,525,219	6,946,151	4,680,637	10,997,399
1881.....	2,971,127	5,323,898	2,781,064	6,914,456	5,752,191	12,238,354
1882.....	2,732,384	4,803,689	2,368,100	5,747,760	5,100,484	10,551,449
1883.....	1,664,957	3,210,787	2,557,823	6,130,212	4,222,780	9,340,999

Previous to 1871 no reliable returns were made of the summer packing; it was, however, very inconsiderable.

Comparative statement of the last ten packing seasons, November 1 to March 1.

Seasons.	No. of hogs.	Average net weight.	Aggregate weight.	Seasons.	No. of hogs.	Average net weight.	Aggregate weight.
1873-4.....	5,462,700	214 97-100	1,174,316,613	1878-9....	7,475,648	217 14-100	1,623,262,206
1874-5.....	5,561,226	209 97-100	1,166,578,378	1879-80....	6,946,151	212 94-100	1,479,113,493
1875-6.....	4,887,999	217 71-100	1,064,122,270	1880-1....	6,914,456	207 71-100	1,436,201,655
1876-7.....	5,068,992	215 58-100	1,092,773,295	1881-2....	5,747,760	210 16-100	1,207,935,077
1877-8.....	6,502,446	226 04-100	1,469,812,893	1882-3....	6,130,212	213 62-100	1,309,535,887

The following table from the recently issued Report of the Department of Agriculture, presents the itemized hog products reported inclusive of 1883:

Exports of pork products.

Years.	Bacon and hams.		Pork.		Lard.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	<i>Pounds.</i>		<i>Pounds.</i>		<i>Pounds.</i>	
1873.....	395,381,737	\$35,022,137	64,147,461	\$5,007,035	230,534,207	\$21,245,815
1874.....	347,405,405	33,383,908	70,482,379	5,808,712	205,527,471	19,308,019
1875.....	250,286,549	28,612,613	56,152,331	5,671,495	166,869,393	22,900,522
1876.....	327,730,172	39,664,456	54,195,118	5,744,022	168,405,839	22,429,485
1877.....	460,057,146	49,512,412	69,671,894	6,296,414	234,741,233	25,562,665
1878.....	592,814,351	51,752,068	71,889,255	4,913,637	342,766,254	30,022,133
1879.....	732,249,576	58,074,433	84,401,676	4,807,568	326,658,686	22,856,673
1880.....	759,773,109	50,987,623	95,949,780	5,930,252	374,979,286	27,920,367
1881.....	746,944,545	61,161,205	107,928,086	8,272,285	378,142,496	35,226,575
1882.....	468,026,640	46,675,774	80,447,466	7,201,270	250,367,740	28,975,902
1883.....	340,258,670	38,155,952	62,116,302	6,192,268	224,718,474	26,618,048

Of the 45,000,000 hogs owned in the United States, and which are valued at \$300,000,000, from 14,000,000 to 15,000,000 find their way into the trade annually, and are valued at \$243,000,000.

The following tables show how the packing business is distributed over the country:

Table showing the distribution of swine in the United States, of all ages, in January, 1883, and 1882.

	Department of Agriculture.	
	1883.	1882.
Ohio.....	2,714,112	2,827,200
Indiana.....	2,724,383	2,867,772
Illinois.....	3,970,764	4,136,213
Iowa.....	5,107,445	5,551,571
Missouri.....	3,892,920	4,097,811
Kansas.....	1,984,646	1,787,969
Nebraska.....	1,526,823	1,316,227
Minnesota.....	424,057	389,043
Wisconsin.....	1,162,238	1,117,537
Michigan.....	934,184	915,867
Kentucky.....	1,916,587	1,935,946
Tennessee.....	1,988,753	2,050,261
12 packing States.....	28,316,912	28,993,417
Maine.....	71,416	73,625
New Hampshire.....	54,511	53,971
Vermont.....	74,864	75,620
Massachusetts.....	80,908	79,322
Rhode Island.....	14,405	14,262
Connecticut.....	62,406	61,788
New York.....	744,238	736,869
New Jersey.....	214,688	214,688
Pennsylvania.....	1,060,856	1,128,570
Delaware.....	46,740	46,740
Maryland.....	325,413	332,054
Virginia.....	773,864	889,499
West Virginia.....	404,406	459,552
North Carolina.....	1,311,821	1,380,864
South Carolina.....	584,601	590,506
Georgia.....	1,412,604	1,426,873
Florida.....	320,000	284,180
Alabama.....	1,225,534	1,189,839
Mississippi.....	1,070,269	1,163,336
Louisiana.....	564,439	627,154
Texas.....	1,953,189	1,896,300
Arkansas.....	1,250,513	1,471,192
California.....	856,000	585,443
Oregon.....	168,954	160,909
Nevada.....	12,000	10,000
Colorado.....	12,100	10,000
Territories.....	252,435	165,627
Total.....	43,270,086	41,122,200

The Department of Agriculture reports of swine of all ages in the United States in January for the years mentioned show the following totals :

1883.....	43,270,086	1875.....	28,062,200
1882.....	44,122,200	1874.....	30,860,900
1881.....	36,227,603	1873.....	32,632,000
1880.....	34,034,100	1872.....	31,796,300
1879.....	4,766,200	1871.....	29,457,500
1878.....	32,262,500	1870.....	26,751,600
1877.....	28,077,100	1869.....	23,316,400
1876.....	25,726,800		

Receipts and shipments of hogs.

[From 1872 to 1883, inclusive.]

Year.	Chicago.		Saint Louis.		Kansas City.		Peoria.		Milwaukee.	
	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.	Receipts.	Shipments.
1872	3,252,623	1,835,594	759,076	188,700	104,689	8,593	171,797	119,669		
1873	4,437,750	2,197,557	973,512	224,873	220,956	32,610	216,319	129,321		
1874	4,258,379	2,330,361	1,126,586	453,710	212,532	114,569	188,224	116,646		
1875	3,912,110	1,582,643	628,569	126,729	59,413	15,790	139,647	93,259		
1876	4,190,006	1,131,635	877,160	232,876	153,777	26,264	163,646	96,044		
1877	4,025,970	951,221	896,319	314,287	192,645	15,973	104,830	87,470	235,244	53,663
1878	6,339,654	1,266,906	1,451,634	528,627	427,777	91,671	235,500	207,938	371,985	66,188
1879	6,448,330	1,692,361	1,762,724	686,099	588,908	208,851	267,669	236,693	585,102	115,845
1880	7,059,355	1,394,990	1,840,684	770,769	676,477	152,920	304,167	265,419	511,104	147,793
1881	6,474,844	1,289,679	1,672,153	889,909	1,014,304	195,524	205,130	186,072	569,830	124,813
1882	5,817,504	1,747,722					161,939	163,797	598,560	75,284
1883									633,503	133,843

The total number of hogs packed during 12 months ending March 1, at fifteen leading places, which pack in both winter and summer seasons, are as follows :

	1882-'83.	1881-'82.	1880-'81.
Chicago	4,222,780	5,100,484	5,752,191
Kansas City	813,834	800,928	579,398
Saint Louis	532,180	556,379	884,159
Cincinnati	507,316	508,548	632,981
Milwaukee	405,510	486,066	462,348
Indianapolis	388,417	406,894	771,928
Cedar Rapids	327,163	350,900	402,081
Cleveland	218,885	337,738	506,997
Saint Joseph	152,365	163,066	126,000
Louisville	143,393	161,007	245,670
Ottumwa	121,554	140,950	123,206
Omaha	151,006	133,781	96,149
Des Moines	90,871	112,270	144,707
Detroit	99,155	103,122	107,181
Keokuk	60,446	95,662	51,881

With a view of indicating closely the total packing and marketing of hogs in all the sections of the country during the year, we submit the following for 12 months ending March 1, 1883, compared with the preceding year :

	1882-'83.	1881-'82.
Packed in the West	9,342,999	10,551,449
Packed at Buffalo, Albany, and Troy	268,734	297,563
Packed at New Haven, Providence, &c.	316,568	250,000
Packed on Pacific coast	275,000	355,000
Receipts at four seaboard cities	3,264,088	3,371,810
Aggregate number	13,467,389	14,825,822
Decrease in 1882-'83	1,358,433	

The weight and production of the above reported supply of hogs for the year ending March 1 are:

	1882-'83.	1881-'82.
Net weight of hogs..... pounds..	2, 623, 511, 584	2, 839, 239, 457
Decrease	215, 727, 923	
Green meats, all kinds pounds..	1, 836, 458, 073	1, 987, 467, 620
Decrease	151, 009, 547	
Production of lard pounds..	421, 513, 211	468, 929, 200
Decrease	47, 415, 989	
Tierces of lard 330 pounds..	1, 277, 313	1, 420, 997
Decrease	143, 684	

The seven largest packing centers of the West, with their business for 1882-'83, are as follows:

	Number packed.	Value.
Chicago.....	4, 222, 780	\$69, 148, 000
Kansas City.....	813, 834	13, 623, 581
Cincinnati.....	507, 316	*9, 043, 359
Saint Louis.....	532, 180	*8, 207, 313
Milwaukee.....	405, 510	6, 256, 862
Indianapolis.....	388, 417	5, 911, 391
Louisville.....	143, 393	2, 548, 460

* The apparent discrepancy between the number and value of hogs at Cincinnati and Saint Louis arises from the larger average weight of the hogs at the former city, and the higher prices paid.

The following statement from the Report of the Department of Agriculture of November 10, 1883, presents facts of interest showing changes in the movements of hogs to the seaboard cities, page 285:

In the record for swine the most noticeable change is the remarkable movement to Boston, which is now nearly equal to the aggregate receipts of Philadelphia and Baltimore.

Receipts of hogs at the seaboard cities.

Years.	New York.	Boston.	Philadelphia.	Baltimore.	Total.
	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>
1869	901, 725	167, 558	176, 200	250, 516	1, 495, 999
1870	889, 625	189, 330	183, 500	300, 000	1, 568, 455
1871	1, 310, 280	351, 307	199, 610	350, 000	2, 211, 197
1872	1, 923, 727	602, 625	210, 276	314, 269	3, 050, 897
1873	1, 958, 389	854, 507	344, 300	392, 734	3, 549, 930
1874	1, 774, 221	587, 721	339, 590	357, 547	3, 059, 079
1875	1, 388, 517	331, 989	243, 300	279, 631	2, 243, 437
1876	1, 222, 657	361, 317	289, 900	259, 064	2, 132, 938
1877	1, 268, 596	330, 604	242, 400	322, 945	2, 164, 545
1878	1, 794, 539	510, 432	282, 060	260, 514	2, 847, 545
1879	1, 725, 537	582, 615	341, 450	356, 524	3, 006, 126
1880	1, 719, 137	691, 839	346, 960	336, 867	3, 094, 803
1881	1, 533, 526	708, 900	367, 876	338, 551	2, 948, 853
1882	1, 366, 848	816, 535	186, 800	268, 811	2, 638, 994

The following table presents the exports of hog products from the United States, by countries, for the year ending June 30, 1882, taken from Commerce and Navigation Report of United States for 1882:

	Countries to which exported.	Pork.		Bacon.	
		Pounds.		Pounds.	
1	Argentine Republic.....				
2	Austria.....				
3	Belgium.....	591,430	\$48,417	19,660,547	\$1,696,150
4	Brazil.....	52,020	5,640	86,190	10,343
5	Central American States.....	159,421	14,622	19,480	1,693
6	Chili.....	26,200	2,087		
7	China.....	14,000	1,298	3,111	480
8	Denmark.....	9,000	770	2,065,440	163,382
9	Danish West Indies.....	372,610	34,570	2,711	320
10	France.....	257,574	22,956	4,776,689	381,375
11	French West Indies.....	429,510	41,938	100	10
12	French Guiana.....	70,150	6,672		
13	Miquelon, Langley, and St. Pierre Islands.....	249,715	22,953		
14	French East Indies.....				
15	French Poss. in Africa and adjacent islands.....	1,500	123		
16	French Possessions, all other.....	50,800	4,177	1,803	259
17	Germany.....	1,109,000	92,546	3,482,623	295,856
18	England.....	27,032,677	2,298,241	359,840,448	35,871,720
19	Scotland.....	1,993,017	170,890	24,262,662	2,446,979
20	Ireland.....	10,000	1,000		
21	Gibraltar.....			1,879	194
22	Nova Scotia, N. Brunswick, and Prince E. Island.....	1,979,449	161,730	2,432	316
23	Quebec, Ontario, Manitoba, and the N. W. Ter.....	18,372,222	1,725,972	8,674,246	694,857
24	British Columbia.....	35,100	3,435	61,584	8,321
25	Newfoundland and Labrador.....	5,006,100	411,778	13,602	1,493
26	British West Indies.....	6,435,927	596,537	260,629	28,086
27	British Guiana.....	3,055,500	289,661	9,532	895
28	British Honduras.....	481,546	43,510	57,756	5,209
29	British East Indies.....				
30	Hong-Kong.....	119,200	9,312	4,595	604
31	British Poss. in Africa and adjacent islands.....	74,500	6,436		

	Countries to which exported.	Hams.		Lard.	
		Pounds.		Pounds.	
1	Argentine Republic.....			302,646	\$40,500
2	Austria.....			106,776	11,640
3	Belgium.....	767,820	\$83,472	21,200,192	2,398,716
4	Brazil.....	8,148	1,158	3,698,462	491,252
5	Central American States.....	25,744	3,839	189,017	24,685
6	Chili.....	3,289	516	567,560	73,278
7	China.....	34,912	5,405	1,940	280
8	Denmark.....	327	40	6,533,008	751,416
9	Danish West Indies.....	75,366	8,669	225,817	25,671
10	France.....	573,622	64,344	31,610,618	3,699,876
11	French West Indies.....	65,800	8,977	757,288	78,458
12	French Guiana.....	2,950	310	17,639	2,317
13	Miquelon, Langley, and St. Pierre Islands.....	8,274	1,080	67,944	8,749
14	French East Indies.....			100,000	13,000
15	French Poss. in Africa and adjacent islands.....			2,000	260
16	French Possessions, all other.....	10,939	1,695	22,390	2,953
17	Germany.....	397,733	44,024	55,467,728	6,255,827
18	England.....	27,968,209	3,185,044	75,210,227	8,786,923
19	Scotland.....	2,968,377	331,755	5,306,937	620,834
20	Ireland.....				
21	Gibraltar.....	1,244	193	207,700	22,959
22	Nova Scotia, N. Brunswick, and Prince E. Island.....	17,814	2,295	343,493	38,795
23	Quebec, Ontario, Manitoba, and the N. W. Ter.....	2,156,605	220,336	5,198,689	609,305
24	British Columbia.....	51,928	8,267	80,678	12,234
25	Newfoundland and Labrador.....	144,178	17,636	27,290	3,188
26	British West Indies.....	690,185	85,284	2,589,700	268,363
27	British Guiana.....	271,796	29,671	766,767	78,156
28	British Honduras.....	26,573	3,494	88,500	9,795
29	British East Indies.....				
30	Hong-Kong.....	11,937	1,902	860	105
31	British Poss. in Africa and adjacent islands.....			149,253	20,157

The following statement shows the quantities of hog product exported from the United States during the year ending June 30, 1883, and the

principal countries to which the same was exported, taken from Commerce and Navigation Report of the United States for 1883:

Countries to which exported.	Pork.		Bacon and Hams.		Lard.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Great Britain—England	14, 770, 992	\$1, 398, 151	260, 094, 519	\$29, 230, 372	61, 982, 126	\$7, 311, 925
Scotland	1, 304, 724	135, 283	20, 014, 434	2, 286, 015	5, 174, 940	628, 242
Ireland	6, 000	462			11, 487	1, 362
Germany	1, 146, 662	108, 025	14, 708, 832	1, 469, 283	41, 872, 915	4, 867, 142
France	109, 400	10, 854	252, 891	29, 246	31, 794, 241	3, 727, 926
Belgium	141, 025	13, 566	12, 864, 971	1, 298, 507	14, 384, 359	1, 723, 355
Netherlands	170, 400	17, 226	2, 933, 206	309, 289	4, 384, 553	521, 873
Denmark			6, 914, 231	644, 545	5, 996, 373	684, 410
Other countries in Europe	52, 822	5, 313	5, 321, 868	563, 934	2, 078, 501	248, 625
Cuba	915, 584	113, 268	4, 433, 114	603, 255	21, 405, 360	2, 471, 774
Hayti	5, 463, 330	570, 061	142, 497	22, 895	1, 315, 410	181, 399
Porto Rico	1, 828, 603	206, 522	644, 498	91, 163	2, 340, 899	298, 977
Other West India islands	7, 263, 172	743, 733	1, 057, 503	146, 315	3, 753, 276	426, 035
Mexico	24, 284	2, 911	243, 583	37, 955	1, 392, 134	163, 797
British Guiana	2, 458, 950	247, 381	242, 645	31, 866	659, 956	64, 865
United States of Colombia	466, 085	49, 693	197, 985	31, 857	5, 859, 185	729, 537
Central American States	177, 045	18, 304	54, 018	8, 693	288, 288	38, 665
Brazil	20, 340	2, 193	129, 805	17, 768	3, 426, 275	468, 874
Venezuela	30, 850	3, 845	175, 251	28, 477	2, 484, 228	322, 532
Other So. & Cen. Am. countr's	1, 827, 212	194, 229	299, 711	34, 863	1, 467, 132	192, 821
Que., Ont., Man., & N.W. Ter.	17, 021, 015	1, 714, 543	8, 509, 912	1, 121, 519	11, 280, 652	1, 363, 825
Canadian Maritime Provinces	6, 127, 322	556, 864	226, 092	27, 879	535, 790	61, 352
British Columbia	31, 200	3, 885	410, 569	57, 549	126, 636	19, 000
China, Japan, and East Indies	155, 700	15, 598	75, 044	13, 212	14, 400	2, 122
Africa and adjacent islands	146, 070	15, 069	55, 138	7, 059	354, 593	49, 558
Hawaiian Islands	150, 900	14, 679	208, 028	35, 199	204, 250	30, 763
All other countries and islands	299, 615	31, 110	48, 325	7, 837	130, 515	17, 292
Total—Yearended June 30, '83	62, 116, 302	6, 192, 268	340, 258, 670	38, 155, 952	224, 718, 474	26, 618, 048
'82	80, 447, 466	7, 201, 270	468, 026, 640	46, 675, 774	250, 367, 740	28, 975, 902
'81	107, 928, 086	8, 272, 285	746, 944, 545	61, 161, 205	378, 142, 496	35, 226, 575
'80	95, 949, 780	5, 930, 252	759, 773, 109	50, 987, 623	374, 979, 286	27, 920, 367
'79	84, 401, 676	4, 807, 568	732, 249, 576	51, 074, 433	326, 658, 686	22, 856, 673

The following table shows the weekly exports of hog product from the principal Atlantic ports during 1883, compiled from current weekly returns, but not official:

Week ended—	From New York.			From Boston, Portland, Philadelphia, Baltimore, New Orleans, and Montreal.		
	Pork.	Bacon and hams.	Lard.	Pork.	Bacon and hams.	Lard.
	Barrels.	Pounds.	Pounds.	Barrels.	Pounds.	Pounds.
Jan. 6	4, 590	11, 546, 863	7, 346, 131	1, 373	7, 706, 500	2, 991, 748
13	5, 480	11, 852, 117	3, 255, 284	812	4, 198, 615	1, 997, 980
20	4, 831	9, 168, 920	3, 346, 505	2, 582	2, 784, 276	894, 254
27	3, 743	7, 476, 379	4, 945, 911	1, 456	4, 575, 800	2, 235, 210
Feb. 3	4, 477	6, 828, 636	3, 784, 885	400	3, 642, 483	1, 403, 345
10	4, 470	8, 555, 488	3, 265, 028	850	4, 234, 884	1, 930, 906
17	3, 594	6, 598, 480	3, 666, 013	608	1, 813, 364	2, 797, 572
24	3, 500	7, 297, 641	2, 141, 727	1, 705	2, 111, 929	1, 612, 386
Mar. 3	3, 176	6, 980, 779	4, 521, 478	1, 177	2, 080, 735	1, 251, 858
10	4, 056	7, 226, 877	2, 627, 330	850	3, 742, 729	259, 601
17	4, 185	7, 822, 210	4, 067, 343	682	1, 479, 406	465, 560
24	3, 621	4, 790, 481	2, 174, 608	1, 026	3, 497, 356	216, 977
31	2, 280	3, 970, 060	3, 033, 023	1, 032	1, 836, 166	512, 798
Apr. 7	3, 614	5, 377, 156	2, 586, 074	1, 137	5, 188, 879	810, 879
14	4, 319	4, 810, 434	2, 539, 182	1, 455	2, 568, 027	306, 700
21	3, 314	4, 997, 330	4, 167, 252	1, 845	2, 993, 106	512, 074
28	4, 154	4, 430, 453	4, 327, 087	786	1, 386, 000	313, 418
May 5	2, 401	3, 576, 874	2, 059, 772	488	2, 320, 150	495, 601
12	3, 144	2, 466, 564	2, 465, 679	1, 202	1, 338, 539	643, 930
19	3, 240	2, 561, 544	2, 156, 875	611	1, 060, 333	1, 709, 940
26	1, 789	2, 587, 435	2, 157, 028	893	1, 421, 065	1, 565, 474
June 2	1, 523	2, 003, 804	2, 646, 772	994	1, 407, 925	500, 526
9	2, 223	2, 883, 515	2, 588, 139	1, 181	2, 235, 970	985, 305
16	2, 883	2, 153, 964	2, 621, 648	362	908, 783	493, 314
23	2, 094	3, 357, 003	2, 766, 038	167	2, 047, 918	275, 813
30	3, 504	2, 316, 506	4, 376, 733	994	2, 996, 761	620, 699

Week ended—	From New York.			From Boston, Portland, Philadelphia, Baltimore, New Orleans, and Montreal.		
	Pork.	Bacon and hams.	Lard.	Pork.	Bacon and hams.	Lard.
	<i>Barrels.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Barrels.</i>	<i>Pounds.</i>	<i>Pounds.</i>
July 7	2,970	2,803,531	3,825,536	1,411	2,353,600	2,624,069
14	2,950	3,114,302	7,628,762	1,107	2,645,967	5,161,007
21	3,272	3,716,134	7,184,215	1,113	3,366,535	7,075,946
28	3,640	3,622,784	6,392,057	4,015	6,017,080	3,221,061
Aug. 4	3,955	5,341,871	6,788,266	2,202	3,978,045	3,857,639
11	2,171	4,820,687	4,836,339	301	5,094,019	2,936,286
18	3,089	5,596,746	5,630,870	1,473	4,577,882	1,719,875
25	2,271	5,447,195	5,160,990	585	3,897,556	858,491
Sept. 1	2,533	4,132,348	6,405,536	1,708	3,144,025	766,761
8	1,259	5,586,981	4,793,285	2,235	2,078,785	1,673,964
15	2,643	3,455,752	3,437,944	482	5,273,904	2,067,887
22	3,216	4,128,479	4,501,327	1,230	2,244,922	872,203
29	3,559	4,797,526	3,238,472	964	2,409,781	1,500,602
Oct. 6	3,430	3,484,373	3,033,172	1,735	2,315,349	1,327,975
13	2,664	3,778,950	2,754,110	1,484	2,083,335	430,690
20	3,829	5,626,658	2,646,620	1,063	1,962,993	357,465
27	4,328	4,803,011	2,104,206	1,330	4,064,256	608,030
Nov. 3	4,420	4,151,673	2,412,176	2,110	2,388,059	415,033
10	3,345	3,693,208	4,013,180	1,817	2,285,827	457,777
17	5,309	4,626,850	6,263,899	1,495	2,146,586	789,233
24	4,961	4,953,031	4,119,020	672	2,134,700	902,499
Dec. 1	2,262	7,835,103	5,701,249	862	5,612,313	669,658
8	4,704	6,387,833	4,892,115	1,992	4,914,395	1,520,235
15	5,990	9,795,311	9,285,550	846	5,645,010	2,363,217
22	5,424	8,961,520	2,710,976	383	2,632,806	862,119
29	3,768	7,372,085	2,941,404	1,250	3,770,882	1,825,991

Total exports of hog product from the principal Atlantic ports during the years 1879 to 1883, inclusive.

Year.	From New York.			From Boston, Portland, Philadelphia, Baltimore, New Orleans, and Montreal.		
	Pork.	Bacon and hams.	Lard.	Pork.	Bacon and hams.	Lard.
	<i>Barrels.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Barrels.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1883	182,167	275,670,855	208,334,821	62,533	160,616,311	74,669,581
1882	184,049	214,752,919	180,512,147	40,824	117,924,126	53,127,403
1881	235,731	349,876,366	233,237,428	53,782	265,024,067	68,188,948
1880	282,261	511,317,129	293,745,050	58,969	288,069,645	97,284,391
1879	304,880	503,867,149	243,281,844	55,206	236,460,063	84,819,335

To show the progress made in exportation of products of agriculture in a half century or more, the following figures from the records of the Bureau of Statistics are given, taken from the Report of the Commissioner of Agriculture for 1883, p. 328:

Year ended June 30—		Value of exports of domestic merchandise.	Value of exports of products of domestic agriculture.	Percent. of products of agriculture.
		<i>Dollars.</i>	<i>Dollars.</i>	
1820 *	.....	51,683,640	41,657,673	80.60
1830 *	.....	58,524,878	48,095,184	82.18
1840 *	.....	111,660,561	92,548,067	82.93
1850 .....	.....	134,900,233	108,605,713	80.51
1860 .....	.....	316,242,423	256,560,972	81.14
1870 .....	.....	455,208,341	361,188,483	79.34
1880 .....	.....	823,946,353	683,010,976	82.90
1881 .....	.....	883,925,947	729,650,016	82.55
1882 .....	.....	733,239,732	552,219,819	75.31

* Year ended September 30.

The increase in number of farms, in improved (or tillable) acres, and in the total area of land in farms is thus shown from the records of the national census:

Years.	Number of farms.	Improved.	Total.
		<i>Acres.</i>	<i>Acres.</i>
1850	1, 449, 073	113, 032, 614	293, 560, 614
1860	2, 044, 077	163, 110, 720	407, 212, 538
1870	2, 659, 985	188, 921, 099	407, 735, 041
1880	4, 008, 907	284, 771, 042	536, 081, 835

The product of corn is nearly three times as much as in 1849, while the wheat aggregate is more than four times as large. The progress in grain-growing has entirely outstripped the advance in population. It is shown from the census exhibits as follows, though it should be remembered that the corn crop in 1869 was a comparative failure—25 per cent. less than the acreage would have yielded in a good year:

Years.	Corn.	Wheat.
	<i>Bushels.</i>	<i>Bushels.</i>
1849	592, 071, 104	100, 485, 944
1859	838, 792, 742	173, 104, 924
1869	760, 944, 549	287, 745, 626
1879	1, 754, 591, 676	459, 483, 137

The nations most affected by competitive exportation from the United States are Great Britain, France, and Germany. To show the principal American exports to those nations, the following tables have been prepared from Reports of Commerce and Navigation, excluding the minor articles, which might extend the list without enlarging much the volume of quantity or value.

In the past ten years the exports to France have averaged \$58,457,124, a trifle more than the imports. The exports to Germany have averaged \$57,713,236; the imports, \$44,526,702. Great Britain and Ireland (the "United Kingdom") have been the best customers, buying annually to the value of \$374,088,360, and sending in return to the United States goods worth \$160,627,212, showing a difference of over \$213,000,000 per annum.

An examination of the details of this trade will illustrate the bearing of competition upon the agriculture of these countries:

Years.	Value of all exports.			Value of all imports.		
	Great Britain and Ireland.	France.	Germany.	Great Britain and Ireland.	France.	Germany.
1873	\$316, 861, 874	\$33, 781, 506	\$61, 590, 047	\$237, 298, 218	\$33, 977, 200	\$61, 401, 756
1874	345, 359, 584	42, 964, 311	62, 993, 225	180, 042, 813	51, 691, 896	43, 909, 852
1875	317, 111, 142	33, 632, 727	50, 466, 025	155, 297, 944	59, 773, 148	40, 247, 712
1876	336, 052, 050	39, 792, 702	50, 629, 072	123, 373, 281	50, 959, 577	35, 319, 462
1877	345, 961, 055	45, 139, 918	58, 107, 433	113, 734, 258	47, 556, 292	32, 509, 365
1878	387, 430, 730	55, 319, 138	54, 809, 845	107, 290, 677	43, 378, 870	34, 790, 103
1879	348, 828, 439	89, 669, 627	57, 057, 245	108, 538, 812	50, 684, 601	35, 519, 818
1880	453, 796, 497	100, 063, 044	57, 062, 263	210, 613, 694	69, 344, 412	52, 211, 237
1881	481, 135, 078	94, 197, 451	70, 188, 252	174, 493, 738	69, 806, 375	52, 989, 181
1882	408, 347, 155	50, 010, 818	54, 228, 953	195, 588, 692	88, 897, 606	56, 368, 542
Total	3, 740, 883, 604	584, 571, 242	577, 132, 360	1, 606, 272, 127	566, 069, 977	445, 267, 028

The following statistics from the Report of the Commissioner of Agriculture for the year 1883, p. 352, are necessary to a complete view of this branch of the subject:

The value of agricultural exports of the past year (1883) is greater than those of any previous years except 1880 and 1881. The value of manufactures exported was absolutely greater than that of any previous year. It is a hopeful indication, as the prosperity of the American farmer depends upon that of American producers in other industries, and not upon the prosperity of foreign manufacturers. The following statement of progress in exportation is from the records of the Bureau of Statistics of the Treasury Department:

Years.	Value of ex-ports of domestic mer- chandise.	Value of ex-ports of products of domestic agriculture.	Value of ex-ports of merchandise other than products of domestic agriculture.	Per cent. of products of agri- culture.
1820*.....	\$51,683,640	\$41,657,673	\$10,025,967	80.60
1830*.....	58,524,878	48,095,184	10,429,694	82.18
1840*.....	111,660,561	92,548,067	19,112,494	82.93
1850.....	134,900,233	108,605,713	26,294,520	80.51
1860.....	316,242,423	256,560,972	59,681,451	81.14
1870.....	455,208,341	361,188,483	94,019,858	79.34
1871.....	478,115,292	368,466,011	109,649,281	77.07
1872.....	476,421,478	368,796,625	107,624,853	77.41
1873.....	575,227,017	446,900,004	128,327,013	77.69
1874.....	633,339,368	501,371,501	131,967,867	79.16
1875.....	559,237,638	430,306,570	128,931,068	76.95
1876.....	594,917,715	456,113,515	138,804,200	76.67
1877.....	632,980,854	459,734,148	173,246,706	72.63
1878.....	695,749,930	536,192,873	159,557,057	77.07
1879.....	699,538,742	546,476,703	153,062,039	78.12
1880.....	823,946,353	685,961,091	137,985,262	83.25
1881.....	883,925,947	730,394,943	153,531,004	82.63
1882.....	733,239,732	552,219,819	181,019,913	75.31
1883.....	804,223,632	619,269,449	184,954,183	77.00

* Year ended September 30.

The proportions of exports by classes of industry for the past two years are as follows:

Products of—	1882.		1883.	
	Value.	Per cent. of total.	Value.	Per cent. of total.
Agriculture.....	\$552,219,819	75.31	\$619,269,449	77.00
Manufactures.....	103,132,481	14.07	111,890,001	13.91
Mining (including mineral oils).....	56,278,887	7.67	51,444,857	6.40
Forestry.....	9,138,934	1.25	9,976,143	1.24
The fisheries.....	6,197,752	.85	6,276,375	.78
All other commodities.....	6,271,859	.85	5,366,807	.67
Total.....	733,239,732	100.00	804,223,632	100.00

Value of products of domestic agriculture exported from the United States to foreign countries during the years ending June 30, 1882 and 1883.

Articles.	Fiscal year 1882.	Fiscal year 1883.
Animals, living:		
Hogs	\$509,651	\$272,516
Horned cattle	7,800,227	8,341,431
Horses	470,183	475,806
Mules	320,130	486,560
Sheep	603,778	1,154,856
All other and fowls	25,147	58,099
Bones and bone-dust	41,266	59,103
Bread and breadstuffs:		
Barley	151,575	299,137
Bread and biscuits	781,292	829,281
Indian corn	28,845,830	27,756,082
Indian-corn meal	994,201	980,798
Oats	298,349	233,843
Rye	946,086	1,657,998
Rye flour	28,593	25,070
Wheat	112,929,718	119,879,341
Wheat flour	36,375,055	54,824,459
Other small grain and pulse	664,687	567,012
Maizena, farina, and all other preparations of breadstuffs used as food	655,142	987,829
Cotton, unmanufactured	199,812,644	247,328,721
Fruits:		
Apples, dried	228,945	786,800
Apples, green or ripe	539,543	1,085,230
Other fruit, green, ripe, or dried	322,229	447,395
Preserved, in cans or otherwise	659,681	686,517
Glue	46,274	62,210
Hair, unmanufactured	267,643	438,897
Hay	190,170	261,614
Hemp, unmanufactured	21	76
Hides and skins other than fur	1,449,737	1,220,158
Hops	1,456,786	5,616,370
Oil-cake	6,302,828	6,061,699
Oils, animal:		
Lard	434,124	353,184
Neat's-foot, and other animal	53,736	64,405
Oils, vegetable:		
Cotton-seed	330,260	216,779
Linseed	35,970	34,468
Provisions:		
Bacon and hams	46,675,774	38,155,952
Beef, fresh	6,768,881	8,342,131
Beef, salted or cured	3,902,556	3,742,282
Butter	2,864,570	2,290,665
Cheese	14,058,975	11,134,526
Condensed milk	200,490	180,505
Eggs	28,262	75,080
Lard	28,975,902	26,618,048
Meats, preserved	4,208,608	4,578,902
Mutton, fresh	131,641	188,172
Pork	7,201,270	6,192,268
Onions	61,299	44,074
Potatoes	441,816	428,478
Other vegetables, raw, prepared, or preserved	309,891	222,124
Rice	10,109	8,679
Seed:		
Cotton	114,683	108,491
Clover, timothy, garden, and all other	4,104,917	4,311,919
Sugar, brown	4,251	148,957
Tallow	4,015,798	3,248,749
Tobacco, leaf	19,067,721	19,438,066
Wax (bees')	32,325	17,604
Wine	67,909	77,280
Wool, unmanufactured	37,327	22,114
Unmanufactured articles:		
Bladders	6,906	5,115
Bristles	12,180	10,053
Broom-corn	170,137	173,468
Bulbs	10,834	332
Casings	271,503	359,446
Cotton, in seed	4,384	1,256
Cotton, short		375
Feathers, crude	16,476	6,312
Flax, tow of	120	
Grasses and flowers	2,655	286
Honey, unstrained	19,082	27,826
Hoofs	16,505	36,594
Horns and horn-tips	35,622	54,374
Mohair	399	
Nuts of all kinds	134	591

Value of products of domestic agriculture exported from the United States, &c.—Continued.

Articles.	Fiscal year 1882.	Fiscal year 1883.
Unmanufactured articles:		
Plants and trees	\$32,765	\$21,172
Rennets	1,143	1,301
Rice-root	12,622	6,900
Silk, raw		7,136
Teasels	5,606	2,404
Vine-cuttings (grape)	36,759	16,804
Manufactured articles:		
Blood, prepared	8,936	2,600
Butter, imitation	312,854	271,099
Cider	9,810	36,466
Cotton-seed meal	2,921	247,464
Cotton-seed foots		801
Glucose (grape sugar)	181,411	196,114
Glue, liquid	604	
Grease not elsewhere specified	248,768	206,432
Grease, pulp		4,500
Honey, strained	30,592	4,907
Horn strips and horn waste	5,555	
Linseed meal		420
Malt	12,295	21,208
Mill-feed	30,665	39,990
Oil-cake meal	58,730	7,547
Oils: oleomargarine (the oil)	2,703,038	4,273,220
Olive butter		12,074
Poultry, dressed	173	
Silk waste and noils	21,571	9,265
Sirup	2,763	1,204
Soap stock	44,243	26,250
Sugar, beet	896	
Tallow, scraps	31,746	46,730
Total value of exports of agricultural products	552,219,819	619,269,449

VALUE OF THE CORN CROP OF THE UNITED STATES.

The importance of this subject will be apparent if we look at it from another standpoint, viz, the value of our corn crop.

The following table from the Report of the Commissioner of Agriculture of 1881-'82, p. 580, presents the annual estimates of acreage, product, and value for a series of years. The abnormal extraordinary increase of recent years made it difficult to keep pace with advancing production, as is shown by the record for 1879, which is widely at variance with the census returns for that year. In other crops the difference is usually slight between the two records, but in the corn estimate it is evident that the Department figures are quite too low. The table should be studied in connection with the variable character of the seasons, and with the prices per bushel, as they will in the main bear close scrutiny and afford reliable evidence of comparative accuracy.

Calendar years.	Total produc- tion.	Total area of crop.	Total value of crop.	Average value per bushel.	Average yield per acre.	Average value of yield per acre.
	<i>Bushels.</i>	<i>Acres.</i>		<i>Cents.</i>	<i>Bushels.</i>	
1871	991,898,000	34,091,137	\$478,275,900	48.2	29.1	\$14.02
1872	1,092,719,000	35,526,836	435,149,290	39.8	30.7	12.24
1873	932,274,000	39,197,148	447,183,020	48.0	23.8	11.41
1874	850,148,500	41,036,918	550,043,080	64.7	20.7	13.40
1875	1,321,069,000	44,841,371	555,445,930	42.0	29.4	12.38
1876	1,283,827,500	49,033,364	475,491,210	37.0	26.1	9.69
1877	1,342,558,000	50,369,113	480,643,400	35.8	26.6	9.54
1878	1,388,218,750	51,585,000	441,153,405	31.8	26.9	8.55
1879	1,547,901,790	53,085,450	580,486,217	37.5	29.2	10.93
1880	1,717,434,543	62,317,842	679,714,499	39.6	27.6	10.91
1881	1,194,916,000	64,262,025	759,482,170	63.6	18.6	11.82
Total	13,662,965,083	525,346,204	5,883,068,121			
Annual average ..	1,242,087,735	47,758,746	534,824,375	43.1	26	11.20

The following table, from the report of the Commissioner of Agriculture for 1883, page 266, presents the summary for each State, showing the product, the area, and the value, &c.:

States and Territories.	Corn.		
	Bushels.	Acres.	Value.
Maine.....	904,400	30,987	\$832,048
New Hampshire.....	870,700	37,269	835,872
Vermont.....	1,930,300	56,916	1,814,482
Massachusetts.....	1,237,200	57,129	1,175,340
Rhode Island.....	277,900	12,100	255,668
Connecticut.....	1,155,800	57,577	1,109,568
New York.....	21,187,500	769,115	16,314,375
New Jersey.....	9,942,800	343,536	7,556,528
Pennsylvania.....	43,518,800	1,388,245	30,463,160
Delaware.....	3,936,600	208,182	2,322,594
Maryland.....	17,904,700	691,542	10,384,726
Virginia.....	35,904,000	1,881,568	19,029,120
North Carolina.....	34,260,700	2,446,056	18,158,171
South Carolina.....	16,356,200	1,361,256	11,122,216
Georgia.....	36,617,500	2,747,005	23,801,375
Florida.....	3,708,900	392,073	2,967,120
Alabama.....	31,982,500	2,300,341	19,188,500
Mississippi.....	30,233,600	1,798,944	16,628,480
Louisiana.....	14,636,400	796,336	8,781,840
Texas.....	63,416,300	3,280,329	36,781,454
Arkansas.....	34,485,900	1,596,672	15,863,514
Tennessee.....	75,188,600	3,119,371	31,579,212
West Virginia.....	14,927,000	588,233	8,657,060
Kentucky.....	75,500,900	3,103,248	39,260,468
Ohio.....	93,319,200	2,977,680	57,857,904
Michigan.....	28,581,600	929,760	16,863,144
Indiana.....	107,484,300	3,438,332	51,592,464
Illinois.....	182,336,900	7,914,042	85,698,343
Wisconsin.....	32,201,600	1,117,240	17,066,848
Minnesota.....	21,127,600	661,050	9,507,420
Iowa.....	175,487,600	6,777,302	66,685,288
Missouri.....	170,037,000	5,763,102	66,614,430
Kansas.....	144,452,600	4,280,430	63,447,462
Nebraska.....	82,478,200	2,364,120	27,217,806
California.....	2,790,900	98,634	2,372,263
Oregon.....	130,000	5,450	104,000
Nevada.....	18,000	830	16,200
Colorado.....	422,400	21,076	380,160
Arizona.....	57,000	2,709	62,700
Dakota.....	4,650,000	186,247	2,371,500
Idaho.....	45,000	1,580	47,250
Montana.....	18,000	492	18,900
New Mexico.....	965,000	45,594	1,061,500
Utah.....	275,000	13,208	247,500
Washington.....	62,000	2,646	49,600
Wyoming.....			
Indian Territory.....			
Total.....	1,617,025,100	65,659,546	783,867,175

The following table presents the acreage, product, and home value of the corn crop of the United States for the year 1880, as finally estimated by the United States Agricultural Department :

States.	CORN.		
	Acres.	Bushels.	Home value.
Maine.....	31,000	1,108,020	\$853,175
New Hampshire.....	36,890	1,401,820	1,023,329
Vermont.....	56,300	1,801,600	1,279,136
Massachusetts.....	55,980	1,875,330	1,406,497
Rhode Island.....	12,106	363,180	326,862
Connecticut.....	55,900	1,621,100	1,215,825
New York.....	801,600	27,895,680	15,900,538
New Jersey.....	347,200	14,235,200	8,256,416
Pennsylvania.....	1,374,500	55,804,700	29,576,491
Delaware.....	202,120	6,467,840	3,233,920
Maryland.....	678,190	21,702,080	10,634,019
Virginia.....	1,809,200	45,230,000	18,996,600
North Carolina.....	2,253,300	36,954,120	19,216,142
South Carolina.....	1,263,000	11,745,900	9,044,343
Georgia.....	2,384,700	21,939,240	15,138,076
Florida.....	374,700	3,522,180	2,993,853
Alabama.....	1,828,980	22,679,352	15,195,166
Mississippi.....	1,590,300	23,218,380	14,627,579
Louisiana.....	784,886	14,912,720	9,096,759
Texas.....	2,670,180	66,754,500	35,379,885
Arkansas.....	1,294,010	32,350,250	15,851,622
Tennessee.....	2,788,830	62,469,792	22,489,125
West Virginia.....	576,900	17,307,000	8,134,290
Kentucky.....	2,956,700	86,039,970	32,695,189
Ohio.....	3,198,400	119,940,000	49,175,400
Michigan.....	855,430	34,816,001	16,015,360
Indiana.....	3,421,700	99,229,300	39,691,720
Illinois.....	8,810,180	240,452,896	86,563,043
Wisconsin.....	1,023,254	33,767,382	13,169,279
Minnesota.....	442,230	15,478,050	5,572,098
Iowa.....	6,847,180	260,192,840	67,650,138
Missouri.....	5,650,120	160,463,408	57,766,827
Kansas.....	3,625,200	106,218,360	30,803,324
Nebraska.....	1,919,600	59,507,600	14,876,900
California.....	80,650	2,580,800	1,961,408
Oregon.....	4,850	113,005	92,664
Colorado, Nevada, and the Territories.....	181,282	5,274,947	3,811,501
Total for 1880.....	62,317,842	1,717,434,543	679,714,499
1879.....	53,085,450	1,547,901,790	580,486,217
1878.....	51,585,000	1,388,218,750	441,153,405
1877.....	50,369,113	1,342,558,000	480,643,400
1876.....	49,033,364	1,283,827,500	475,491,210
1875.....	44,841,371	1,321,069,000	555,445,930
1874.....	41,036,918	850,148,500	550,043,080
1873.....	39,197,148	932,274,000	447,183,020
1872.....	35,526,836	1,092,719,000	435,149,290
1871.....	34,091,137	991,898,000	478,275,900

In order to present the comparative value of the corn crop, the following table is presented, showing the corn crop of the United States for the years 1882 and 1881. This presents the estimate of the United States Agricultural Department of the product of corn grown in the United States in 1882, and the final estimate for the same crop harvested in 1881.

States.	1882.			1881.		
	Wheat.	Corn.	Oats.	Wheat.	Corn.	Oats.
Maine.....	512, 100	904, 400	1, 776, 750	617, 000	1, 064, 000	2, 369, 000
New Hampshire...	148, 700	870, 700	1, 030, 000	175, 000	1, 262, 000	1, 030, 000
Vermont.....	378, 000	1, 930, 300	3, 445, 350	378, 000	1, 990, 000	3, 345, 000
Massachusetts....	20, 100	1, 237, 200	703, 000	19, 000	1, 406, 000	703, 000
Rhode Island.....		277, 900	155, 800	260	327, 000	164, 000
Connecticut.....	43, 600	1, 155, 800	1, 048, 380	39, 000	1, 427, 000	1, 038, 000
New York.....	12, 145, 200	20, 687, 500	40, 068, 000	10, 844, 000	20, 086, 000	38, 160, 000
New Jersey.....	2, 098, 700	9, 942, 800	3, 808, 880	2, 018, 000	7, 829, 000	4, 052, 000
Pennsylvania....	20, 300, 700	41, 518, 800	34, 721, 100	18, 797, 000	34, 599, 000	38, 579, 000
Delaware.....	1, 200, 600	3, 936, 600	391, 840	1, 044, 000	2, 940, 000	316, 000
Maryland.....	8, 655, 600	17, 904, 700	1, 658, 930	7, 213, 000	16, 277, 000	1, 823, 000
Virginia.....	8, 311, 400	35, 904, 000	3, 551, 420	7, 165, 000	27, 200, 000	4, 331, 000
North Carolina....	5, 494, 800	34, 260, 700	5, 713, 400	4, 579, 000	26, 977, 000	4, 081, 000
South Carolina....	1, 729, 000	15, 856, 200	4, 430, 140	988, 000	8, 809, 000	3, 098, 000
Georgia.....	3, 812, 900	29, 617, 500	7, 235, 800	2, 933, 000	19, 745, 000	5, 566, 000
Florida.....	600	3, 708, 900		480	3, 170, 000	392, 000
Alabama.....	1, 700, 800	30, 982, 500	3, 994, 900	1, 479, 000	20, 250, 000	3, 073, 000
Mississippi.....	250, 100	28, 233, 600	3, 080, 850	197, 000	17, 646, 000	2, 185, 000
Louisiana.....	7, 000	14, 636, 400	527, 800	5, 350	9, 693, 000	364, 000
Texas.....	4, 173, 700	63, 416, 300	9, 239, 640	3, 339, 000	33, 377, 000	8, 324, 000
Arkansas.....	1, 566, 100	34, 485, 900	3, 131, 580	1, 017, 000	21, 028, 000	2, 337, 000
Tennessee.....	8, 971, 200	73, 188, 600	7, 129, 560	6, 408, 000	36, 232, 000	6, 726, 000
West Virginia....	4, 854, 300	14, 927, 000	1, 678, 400	4, 413, 000	12, 980, 000	2, 098, 000
Kentucky.....	17, 250, 000	79, 500, 900	7, 579, 440	8, 625, 000	51, 624, 000	6, 534, 000
Ohio.....	45, 453, 600	93, 319, 200	16, 732, 154	38, 520, 000	79, 760, 000	25, 009, 000
Michigan.....	33, 315, 400	30, 081, 600	18, 057, 000	21, 220, 000	25, 068, 000	18, 057, 000
Indiana.....	45, 461, 800	107, 484, 300	18, 696, 090	31, 353, 000	79, 618, 000	15, 711, 000
Illinois.....	52, 302, 900	187, 336, 900	99, 141, 000	26, 822, 000	176, 733, 000	66, 094, 000
Wisconsin.....	20, 145, 400	30, 201, 600	34, 324, 400	17, 987, 000	29, 040, 000	31, 204, 000
Minnesota.....	37, 030, 500	21, 127, 600	29, 700, 000	35, 952, 000	16, 252, 000	23, 760, 000
Iowa.....	25, 487, 200	178, 487, 600	44, 555, 700	18, 248, 000	173, 289, 000	42, 434, 000
Missouri.....	27, 538, 600	174, 037, 000	30, 073, 560	20, 399, 000	93, 069, 000	22, 783, 000
Kansas.....	33, 248, 000	150, 452, 600	12, 780, 840	19, 909, 000	76, 377, 000	8, 754, 000
Nebraska.....	14, 947, 200	82, 478, 200	9, 417, 700	13, 840, 000	58, 913, 000	6, 976, 000
California.....	34, 546, 600	2, 790, 900	1, 548, 000	28, 406, 000	2, 633, 000	1, 548, 000
Oregon.....	12, 039, 300	101, 000	4, 433, 520	12, 673, 000	101, 000	5, 278, 000
Nevada.....	49, 400	11, 700	193, 800	48, 000	13, 000	190, 000
Colorado.....	1, 598, 200	422, 400	902, 070	1, 310, 000	352, 000	771, 000
The Territories...	16, 000, 000	7, 500, 000	9, 000, 000	11, 300, 000	5, 761, 000	7, 224, 000
Total.....	502, 789, 300	1, 624, 917, 800	475, 656, 794	380, 280, 090	1, 194, 916, 000	416, 481, 000

Crops of the United States for the year 1883. Preliminary (December 1) estimate of the United States Agricultural Department of the crops of wheat, corn, and oats produced in 1883.

States and Territories.	WHEAT.			CORN.			OATS.		
	Acres.	Yield per acre, bush.	Product, bushels.	Acres.	Yield per acre, bush.	Product, bushels.	Acres.	Yield per acre, bush.	Product, bushels.
Maine.....	43,263	14.2	614,300	30,367	35.0	1,062,800	84,579	31.5	2,665,000
New Hampshire.....	11,509	15.8	181,700	38,014	36.0	1,368,500	29,697	34.8	1,033,000
Vermont.....	21,573	16.4	353,700	58,623	31.0	1,817,300	102,505	34.6	3,548,600
Massachusetts.....	1,180	16.7	19,700	58,262	35.0	2,039,100	23,098	31.3	724,000
Rhode Island.....				12,947	32.0	414,300	5,882	30.4	179,100
Connecticut.....	2,171	15.8	34,300	57,001	30.0	1,710,000	27,141	29.6	1,100,700
New York.....	780,124	10.3	8,035,200	761,423	23.0	17,512,700	1,344,637	31.3	42,071,400
New Jersey.....	154,000	13.4	2,063,600	346,971	28.0	9,715,100	130,873	32.6	4,265,800
Pennsylvania.....	1,518,474	13.2	20,043,800	1,402,127	27.0	37,857,400	1,247,868	30.6	38,193,200
Delaware.....	93,860	10.3	966,700	212,346	18.0	3,822,200	21,664	23.9	517,600
Maryland.....	626,200	12.1	7,577,000	691,542	23.5	16,251,200	100,323	20.2	2,023,800
Virginia.....	928,089	9.0	8,352,800	1,919,199	14.0	26,868,700	628,434	10.0	6,275,600
North Carolina.....	717,100	5.9	4,230,800	2,494,977	11.5	28,692,200	593,890	8.7	5,142,000
South Carolina.....	218,500	5.2	1,136,200	1,388,481	8.0	11,107,800	362,805	9.8	3,544,000
Georgia.....	504,900	5.1	2,574,900	2,829,415	8.7	24,615,900	780,682	9.0	7,018,700
Florida.....				399,914	8.5	3,390,200	51,528	9.8	504,500
Alabama.....	276,450	5.2	1,437,500	2,277,338	11.5	26,189,300	427,199	10.6	4,517,300
Mississippi.....	49,500	5.0	247,500	1,870,902	13.5	25,257,100	274,236	11.5	3,142,400
Louisiana.....				924,693	14.2	13,130,600	34,096	13.9	475,000
Texas.....	506,000	8.5	4,301,000	3,608,362	17.5	63,146,300	416,096	22.8	9,489,300
Arkansas.....	232,200	6.1	1,416,400	1,740,372	17.5	30,456,500	223,961	14.4	3,225,400
Tennessee.....	1,323,000	5.6	7,408,800	3,212,952	20.0	64,259,000	586,490	11.9	6,997,700
West Virginia.....	425,700	10.0	4,257,000	588,233	24.3	14,294,000	129,829	15.6	2,020,300
Kentucky.....	1,248,390	7.7	9,612,600	3,258,410	24.0	78,201,800	422,628	16.3	6,899,900
Ohio.....	2,588,400	10.0	25,884,000	2,818,480	26.1	73,560,000	871,250	33.9	29,560,000
Michigan.....	1,786,500	14.0	25,011,000	911,165	23.5	21,412,300	580,451	34.6	20,061,300
Indiana.....	2,735,370	10.4	28,447,800	3,541,482	27.0	95,620,000	717,560	29.7	21,304,100
Illinois.....	2,215,000	10.0	22,150,000	8,151,463	25.0	203,786,500	2,848,555	36.1	102,780,000
Wisconsin.....	1,593,900	12.3	19,604,900	1,122,826	21.0	23,579,300	1,331,392	30.4	40,502,700
Minnesota.....	2,597,940	13.0	33,773,200	727,155	20.8	15,124,800	949,200	33.1	31,447,500
Iowa.....	2,435,300	11.3	27,518,800	6,980,621	24.3	169,629,000	2,005,569	34.1	68,403,600
Missouri.....	2,358,350	10.1	23,819,300	5,878,364	27.5	161,655,000	1,057,422	28.7	30,374,200
Kansas.....	1,534,350	17.5	26,851,100	4,708,473	36.7	172,800,900	699,476	39.4	27,560,000
Nebraska.....	1,772,990	15.5	27,481,300	2,813,303	36.0	101,278,900	540,161	40.0	21,630,000
California.....	2,794,000	13.0	36,322,000	100,607	24.5	2,464,800	70,858	25.8	1,826,600
Oregon.....	755,300	16.5	13,122,400	5,504	23.5	129,300	170,993	24.6	4,211,800
Nevada.....	5,424	18.3	99,200	847	25.0	21,100	7,344	28.9	212,100
Colorado.....	114,000	21.0	2,394,000	21,287	25.0	532,100	41,250	29.3	1,209,000
Arizona.....				2,736	20.0	54,700			
Dakota.....	1,008,000	16.0	16,128,000	270,058	18.2	4,915,055	210,000	42.9	9,000,000
Idaho.....				1,627	20.0	32,500	30,450	37.4	1,140,000
Montana.....	57,796	16.3	942,000	502	20.0	10,040	32,200	37.6	1,210,000
New Mexico.....	65,195	15.0	977,900	46,506	20.0	930,100	11,760	17.0	199,800
Utah.....	83,130	19.0	1,579,400	13,340	21.0	280,100	24,050	22.7	546,000
Washington.....	170,200	18.7	3,182,700	2,672	23.0	61,400	62,540	39.7	2,480,400
Wyoming.....									
Totals.....	36,393,319	11.5	420,154,500	68,301,889	22.7	1,551,066,895	20,322,622	28.1	571,233,400

The following statement shows the number of acres under cultivation in wheat, corn, and oats in the State of Illinois in 1881, by counties; also the product of each county, in bushels, by the latest estimate of the State department of agriculture:

Counties.	Winter wheat.		Spring wheat.		Corn.		Oats.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Adams	85,125	794,500	178	1,602	85,239	2,727,648	25,112	1,130,040
Alexander	6,853	70,814			6,488	77,856	321	6,099
Bond	32,327	210,125			38,340	115,020	7,900	268,600
Boone	1,456	11,648	1,134	10,206	32,591	1,042,912	25,380	761,400
Brown	24,454	244,540			30,610	979,520	5,001	175,035
Bureau	1,553	12,424	6,267	56,403	175,577	4,038,271	38,618	1,351,630
Calhoun	22,118	199,062			13,964	279,280	1,119	36,927
Carroll	3,149	15,745	2,015	18,135	67,168	2,015,040	33,287	1,331,480
Cass	12,934	84,071	452	6,780	28,984	869,520	5,049	212,058
Champaign	30,000	322,500	300	2,700	200,000	4,400,000	45,000	1,890,000
Christian	49,182	271,051	401	2,807	145,634	3,203,948	14,976	569,088
Clark	52,323	260,615			37,497	262,479	4,498	71,968
Clay	40,026	173,446	4	36	29,171	87,513	8,255	264,160
Clinton	88,066	528,396			45,140	90,280	16,056	561,960
Coles	25,946	207,568	163	1,467	65,128	1,042,048	8,349	250,470
Cook	174	2,610	2,422	31,486	46,052	1,013,144	54,800	1,644,000
Crawford	50,092	267,157			30,553	91,659	8,764	201,572
Cumberland	37,353	280,147			25,022	100,088	6,453	154,872
De Kalb	375	1,875	809	16,180	99,764	3,591,504	44,890	1,346,700
De Witt	8,561	96,311	1,591	7,955	82,060	2,872,100	16,172	663,052
Douglas	22,500	196,875	441	3,969	75,250	2,031,750	12,000	384,000
Du Page	274	4,110	574	8,610	21,237	530,925	20,644	825,760
Edgar	47,029	540,833	140	1,260	70,322	1,476,762	5,315	159,450
Edwards	28,689	143,445	14	126	17,775	35,550	1,582	49,042
Effingham	50,396	151,188	41	369	40,125	240,750	15,268	519,112
Fayette	62,129	279,580			47,973	143,919	12,398	421,532
Ford	509	5,090	101	909	125,834	3,397,518	19,515	702,510
Franklin	26,955	87,604	25	225	19,053		4,080	81,600
Fulton	26,644	213,152	3,300	19,800	80,707	2,744,038	14,494	565,266
Gallatin	31,623	189,738	17	153	28,803	374,439	1,154	27,696
Greene	44,082	528,984	111	999	41,175	1,317,600	2,339	70,170
Grundy	347	3,470	23	207	68,111	1,498,442	12,513	462,981
Hamilton	35,118	105,354			21,489	21,489	2,092	62,760
Hancock	31,672	348,392	2,981	26,829	102,990	2,574,750	35,968	1,007,104
Hardin	4,801	33,607	7	63	6,193	49,544	1,071	17,136
Henderson	3,371	25,282	3,172	15,860	52,172	1,147,784	12,569	477,622
Henry	804	7,236	4,151	37,359	191,348	3,444,264	36,420	1,274,700
Iroquois	9,823	88,407	308	2,772	229,653	5,970,978	46,459	1,858,360
Jackson	48,983	342,881	85	765	23,635	118,175	2,462	51,702
Jasper	44,146	198,657			34,754	69,508	5,758	115,160
Jefferson	63,456	203,059			37,221	37,221	8,852	239,004
Jersey	51,747	620,964			35,137	667,603	3,778	120,896
Jo Daviess	3,887	31,096	1,475	10,325	50,375	1,612,000	32,184	1,126,440
Johnson	22,164	166,230			16,560	165,600	1,764	44,100
Kane	157	3,140	569	5,121	53,771	1,720,672	25,645	1,179,670
Kankakee	2,653	39,795	360	4,320	109,732	2,743,300	35,772	1,216,248
Kendall	137	1,370	820	8,200	73,629	1,619,838	22,721	886,119
Knox	8,269	90,959	1,130	9,040	135,050	3,916,450	43,610	1,744,400
Lake	277	3,462	1,700	17,000	26,439	634,536	28,659	1,146,360
LaSalle	1,777	35,540	2,781	27,810	237,583	4,038,911	61,178	2,417,120
Lawrence	55,023	220,092			28,887	57,774	2,728	54,560
Lee	2,101	31,515	3,714	37,140	140,146	3,363,504	58,110	2,324,400
Livingston	838	9,218	121	1,089	268,597	6,983,522	62,667	2,381,346
Logan	26,199	334,037	779	7,790	140,859	5,070,924	20,200	808,000
Macon	39,899	289,015			127,840	3,835,200	24,244	1,090,980
Macoupin	112,271	1,010,439	182	1,638	90,982	2,547,496	11,112	444,480
Madison	152,900	1,834,800			72,500	942,500	14,150	452,800
Marion	51,903	259,515			31,606	31,606	8,725	218,125
Marshall	936	12,168	147	1,470	58,761	1,762,830	18,087	669,219
Mason	9,456	40,976	852	6,816	61,515	1,537,875	6,711	201,330
Massac	17,123	159,815			12,911	90,377	1,382	34,550
McDonough	20,000	133,333	9,000	27,000	100,000	4,000,000	25,000	800,000
McHenry	462	4,774	3,495	41,940	38,830	931,920	22,422	896,880
McLean	5,000	57,500	600	4,200	250,000	9,750,000	80,000	3,360,000
Menard	18,001	168,009	1,064	9,576	77,049	3,236,058	10,220	459,900
Mercer	2,840	25,560	4,172	37,548	97,397	2,240,131	29,381	1,028,335
Monroe	60,048	780,624			16,118	241,770	6,003	150,075
Montgomery	89,218	624,526	64	576	107,353	1,073,530	18,728	730,392
Morgan	40,000	410,000	2,178	19,602	101,297	4,153,177	10,160	558,800
Moultrie	1,052	5,260	78	702	61,540	1,415,420	8,326	333,040
Ogle	2,831	33,972	1,919	15,353	107,404	3,329,524	59,475	1,784,250
Peoria	7,450	99,333	1,600	16,000	93,271	2,425,406	25,380	1,015,200
Perry	44,400	242,200			14,196	14,196	9,316	214,268
Platt	10,217	102,170	476	4,284	66,916	2,141,312	16,132	806,600

Counties.	Winter wheat.		Spring wheat.		Corn.		Oats.	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Pike.....	77,446	542,122	141	1,269	79,442	1,668,282	6,855	226,215
Pope.....	16,229	81,145	.....	.....	22,001	264,012	5,000	85,000
Pulaski.....	11,397	91,176	.....	.....	11,600	127,600	600	7,800
Putnam.....	1,077	16,155	1,403	7,015	28,872	635,184	6,430	257,200
Randolph.....	84,993	467,461	.....	.....	23,646	189,168	11,158	334,740
Richland.....	40,572	121,716	.....	.....	24,338	24,338	6,108	122,160
Rock Island.....	277	2,770	2,178	30,492	52,242	1,044,840	14,789	473,248
Saline.....	28,203	155,116	.....	.....	22,722	159,054	1,812	16,308
Sangamon.....	39,930	359,370	769	6,152	112,877	4,627,957	10,023	390,897
Schuyler.....	29,632	251,872	326	2,934	36,074	1,442,960	5,086	198,354
Scott.....	24,530	220,770	89	801	30,184	1,358,280	1,278	48,564
Shelby.....	50,000	150,000	1,342	12,078	100,000	2,000,000	15,155	636,510
Stark.....	444	6,660	255	1,275	68,240	1,910,720	20,713	828,520
Saint Clair.....	158,643	1,031,179	184	1,656	54,945	714,285	12,610	441,350
Stephenson.....	6,233	40,514	5,035	60,420	74,231	2,969,240	41,675	1,375,275
Tazewell.....	26,565	239,085	1,020	12,240	106,767	3,203,010	29,175	875,250
Union.....	26,181	209,448	50	450	20,000	300,000	4,000	72,000
Vermillion.....	44,347	443,470	623	5,607	126,756	2,661,876	15,444	586,872
Wabash.....	27,461	151,035	.....	.....	16,876	84,380	1,425	29,925
Warren.....	2,847	27,046	2,670	16,020	123,872	3,344,544	36,731	1,285,585
Washington.....	72,500	471,250	.....	.....	35,000	35,000	25,000	625,000
Wayne.....	52,167	169,543	.....	.....	34,208	.....	5,825	151,450
White.....	56,167	252,751	437	3,933	38,487	115,461	2,404	43,272
Whitesides.....	681	3,064	1,718	10,308	95,402	2,194,246	31,028	1,148,036
Will.....	1,278	12,780	636	5,088	113,459	3,063,393	69,295	2,425,325
Williamson.....	47,964	227,829	.....	.....	39,827	199,135	4,327	90,867
Winnebago.....	1,680	33,600	591	5,910	65,606	2,624,240	45,420	1,362,600
Woodford.....	5,670	75,600	951	10,461	112,947	3,614,304	46,100	1,613,500
Total 1881.....	2,951,668	21,586,483	90,921	784,680	7,195,674	174,995,707	1,922,389	68,844,514
Same estimate for:								
1880.....	2,970,086	53,865,505	286,264	2,642,804	7,574,545	250,697,036	1,749,391	62,709,002
1879.....	2,137,063	42,041,253	303,736	3,376,409	7,918,881	305,913,377	1,631,139	54,664,569
1878.....	2,032,840	30,013,147	291,912	3,870,251	8,672,088	251,149,230	1,757,953	53,424,555
1877.....	1,736,301	29,510,032	248,458	2,980,524	8,935,411	269,889,742	1,556,194	61,145,983

The following statistics regarding the consumption and distribution of corn and wheat—the latter being included in this report for purposes of comparison—is of value in the investigation of this part of the subject, and is taken from the Report of the Commissioner of Agriculture for 1883, page 310:

CONSUMPTION AND DISTRIBUTION OF CORN AND WHEAT.

For two years past efforts have been made for the first time to ascertain approximately the consumption of the corn and wheat supply of the year on the first day of March. The purpose is to show the rate of distribution, and to indicate the extent of consumption at that date. The result is exceedingly interesting and valuable. It reveals facts so numerous, so various, and local conditions of consumption so peculiar and diverse as to prove practically a revelation to local agricultural writers and to commercial editors. This is especially the case as to corn. Among the points presented are—

1. That the average stock of corn on hand at this date in a series of years is one-third, two-thirds having been consumed on the farm or shipped away.

2. That nearly five-sixths of the corn shipped from the county where grown goes from seven States, known as the corn-surplus States; and most of the remainder from Kentucky and Tennessee.

3. That 44 per cent. of the corn is fed to cattle and swine (for meat-making) in the counties where grown; 28 per cent. is fed to work-animals in the operations of the farm, and 8 per cent. used as human food. Most of the 20 per cent. shipped from the counties are also used in the East and South for the various purposes above named. This would make the distribution nearly—

	Percent.
For feeding for meat.....	50
For feeding for work.....	30
For human food.....	9
For exportation.....	5
For spirits, glucose, starch, seed, and waste.....	6

4. That in the South about half is used for work-animals and a fourth for meat; while in the West half goes for making meat and one-fifth for farm work.

5. That the above diversities as to use in home consumption make large difference in the time of consumption. In the South, 43.5 per cent. remained on hand March 1, because of the large crop, and its required use for five months of spring and summer plowing.

The smaller former average in the South, 35.9 per cent., is not because of a change in the usage as to consumption, but because the smaller former supply was earlier exhausted, and purchases from the West large after that date. In the West only a third remained on hand, because the heaviest feeding comes in autumn and early winter.

CORN.

Proportion on hand March 1.—The returns of March 1, 1883, showed that about 36 per cent. of the crop still remained in the hands of the growers, or about 558,000,000 bushels of 1,617,000,000 bushels representing the crop of 1882. Nearly two-thirds of this amount was in the Western States, and about three-tenths in the Southern States.

Comparing with an average of the five preceding years, one of which (1881) was a year of great scarcity, we find that New England had less than that average; the Middle States, 37.4 per cent., the average being 36.7; the Southern States, 43.5 per cent., instead of 35.9; the Western States only a fraction more than such average, or 33.8 per cent., in place of 32.9 per cent.; the Pacific coast, 25.1, the average being 24.5 per cent.; and the Territories, 35 per cent., a very large increase, due to the development of corn culture in Dakota. The following statement shows these percentages and the quantities they represent:

Sections.	Production.	Stock on hand March 1, 1883.		Average per cent. for five years.
	Bushels.	Per cent.	Bushels.	
New England.....	6,376,300	29.8	1,898,701	32.6
Middle.....	78,585,700	37.4	29,397,288	36.7
Southern.....	394,695,300	43.5	171,551,062	35.9
Western.....	1,127,934,500	33.8	381,600,606	32.9
Pacific.....	2,920,900	25.1	741,908	24.5
Nevada, Colorado, and Territories.....	6,512,460	35.0	2,282,552	25.5
Total.....	1,617,025,100	36.3	587,472,117	33.7

It is seen that the only stocks contributing appreciably to the aggregate are those of the West, South, and the Middle States. The statement by States and Territories is as follows:

States.	Product in 1882.	Stock on hand March 1, 1883.		Per cent. for five years.
	Bushels.	Bushels.	Per ct.	
Maine.....	904,400	253,232	28	30
New Hampshire.....	870,700	261,210	30	32
Vermont.....	1,930,300	656,302	34	35
Massachusetts.....	1,237,200	346,416	28	32
Rhode Island.....	277,900	69,475	25	27
Connecticut.....	1,155,800	312,066	27	33
New York.....	21,187,500	7,627,500	36	37
New Jersey.....	9,942,800	3,778,264	38	36
Pennsylvania.....	43,518,800	16,101,956	37	36
Delaware.....	3,936,600	1,889,568	48	45
Maryland.....	17,904,700	8,037,115	45	43
Virginia.....	35,904,000	15,797,760	44	40
North Carolina.....	34,260,700	15,759,922	46	43
South Carolina.....	16,356,200	6,869,604	42	37
Georgia.....	36,617,500	18,674,925	51	33
Florida.....	3,708,900	1,594,827	43	40
Alabama.....	31,982,500	15,351,600	48	35
Mississippi.....	30,233,600	14,209,792	47	35
Louisiana.....	14,636,400	5,708,196	39	35
Texas.....	63,416,300	23,464,031	37	34
Arkansas.....	34,485,900	14,481,078	42	35
Tennessee.....	75,188,600	31,579,212	42	33
West Virginia.....	14,927,000	6,269,340	42	34
Kentucky.....	75,500,900	30,955,369	41	33
Ohio.....	93,319,200	27,062,568	29	28
Michigan.....	28,581,600	8,574,480	30	28
Indiana.....	107,484,300	38,694,348	36	33
Illinois.....	182,336,900	67,464,653	37	39
Wisconsin.....	32,201,600	9,660,480	30	28

States.	Product in 1882.	Stock on hand March 1, 1883.		Per cent. for five years.
	Bushels.	Bushels.	Per ct.	
Minnesota	21, 127, 600	6, 127, 004	29	27
Iowa	175, 487, 600	52, 646, 280	30	36
Missouri	170, 037, 000	51, 011, 100	30	28
Kansas	144, 452, 600	47, 669, 358	33	30
Nebraska	82, 478, 200	35, 465, 626	43	38
California	2, 790, 900	725, 634	26	25
Oregon	130, 000	13, 000	10	10
Nevada	18, 000	3, 600	20	18
Colorado	422, 400	160, 512	38	33
Arizona	57, 000	20, 520	36	32
Dakota	4, 650, 000	1, 720, 500	37	25
Idaho	45, 000	13, 500	30	28
Montana	18, 000	5, 400	30	28
New Mexico	965, 000	270, 200	28	25
Utah	275, 000	66, 000	24	22
Washington	62, 000	22, 320	36	33
Wyoming				
Indian				
Total	1, 617, 025, 100	587, 468, 843	36. 3	33. 7

The largest proportions on hand are those of the Southern States. This is in accordance with intelligent expectation, not because there is any surplus for shipment, nor because more is consumed than in the West. On the contrary, the requirements of that region are far smaller than of the States where pork and beef are made. The larger portion is used for feeding the horses and mules employed so constantly in plowing during the spring and early summer. Pork is not made for shipment, and only a partial supply for home consumption, from mast, and the run of the pea field, and a limited supply of corn towards killing time. These conditions are reflected in the results of this inquiry, showing a great contrast with Western practice.

Consumption.—Inquiry was made as to proportions used for specific purposes, to illustrate the rural economy of different sections of the country, under the following heads, viz: (A) human food; (B) feed for work animals; (C) feed for cattle and swine; (D) shipped out of country where produced.

In the first inquiry the percentage would be expected to vary from two causes—the amount produced per capita, and the comparative use of maize for human food, which differs greatly in the different States. In New England its use is quite limited, and not confined to the home product; but very little is grown, so that the percentage is larger, though the quantity is not. In the South the quantity is greater, but less than in the West, so that 16 per cent. is required in the former, and but 5 in the latter States, though the aggregate Southern requirement is not very greatly in excess of Western, 63,000,000 bushels against 56,000,000 bushels. The quantity of native corn reported as used for food in the South is 4.6 bushels per capita; in the West, nearly 3 bushels. In the Middle States, and in New England, the native supply is supplemented by corn from other States, increasing the consumption as reported; the population is largely in cities and towns, and the rural population small. The total reported as used for food in the country, of nearly 130,000,000 bushels, may probably be increased by 20,000,000 more from the column which reports corn “shipped out of the county” in which it is grown, making an aggregate of 150,000,000 bushels or nearly three bushels per capita. This is very unequally distributed, some communities using twice this average, and others a scarcely appreciable quantity.

In the use of corn for feed of work animals is seen a marked difference between Western and Southern usages and rural methods. The per cent. of corn used for this purpose in the Southern States is placed at 47.2. As the supplies brought from the West are almost entirely used for work animals or human food the real proportion of corn consumption is fully one-half for such feeding. In the West it is one-fifth, or 20.9 per cent. Yet the quantity used is 235,000,000 bushels. The larger relative use of corn for work animals in the South is due to the fact that plowing is almost continuous from March to July, inclusive; that more horses and mules are required in proportion to work done, and corn is the principal feed. In the West there is less cultivation, wheat taking the place of cotton, and requiring no culture after planting, while horses feed upon hay as well as corn, and use oats much more extensively than in the South. Everything in crop and cultivation, in work and rations of animals, conspires to widen the relative requirement of corn for work animals of these two belts of States.

The consolidation of returns makes the proportion used for feeding work animals 28 per cent. Taking into account receipts from beyond county (and State) lines the proportion may be stated at 30 per cent.

The third branch of consumption relates to meat production. It also includes, to a limited extent, milk production. Beef, pork, and mutton all require an increasing proportion of corn, supplementary to grass products and rougher forage in summer droughts and winter severities, especially in the finishing process. Eggs and poultry demand a share of the maize supply. Half of the crop in the West appears to be used as feed for cattle, sheep, and swine. Applying the percentage to the present crop, the grand volume of 557,000,000 bushels is indicated. As only one-fourth is shipped from counties where grown, and little more than one-fifth can be traced to Chicago, Toledo, New York, and all other distant markets, it is evident that the other fourth is ample for working animals and home food. When we recount the various uses of corn in every stage of cattle life, and for ripening 12,000,000 swine (more or less) for the packing trade, and some millions more for farmers' use, and a further requirement for sheep and poultry, it would seem that 50 per cent. of the Western crop might be used for these purposes. The use of corn for spirits has not been mentioned, because it is usually only about 1 per cent. of the crop. Seed requires not more than 1 per cent. In this calculation it is proper to say that the entire crop is accounted for. Yet it should be remembered that the farmers' cribs were bare of corn at the beginning of the year, and that they will not be so thoroughly exhausted at its end. However short the stock may be which Chicago is able to drain, there will be scattered through twenty States many million bushels more than existed there at the beginning of the year. The actual consumption (excluding exportation, seed, &c.) will not much exceed 1,450,000 bushels. This is more than an average consumption, even of recent years, but with rapidly increasing population, a large export demand, and the necessity for beef of earlier maturity and better quality, it will not be too large a quantity for the future.

Shipped from the county.—As the returns were made by counties, the portion shipped does not necessarily mean shipped to the seaboard or beyond State lines. I must include, however, all such shipments. The aggregate of this branch of the inquiry is about 330,000,000 bushels, which is ample to account for exportation, eastern and southern shipments, and leave a margin for shipments short distances for local supply of towns and cities, and the requirements of neighboring feeders. Seven-eighths of this county surplus is in the West. The largest quantity is in Illinois; and Kansas, Iowa, and Missouri follow in order. Iowa's portion is greatly reduced by the very poor crop of last year. Kentucky and Tennessee have a much larger surplus than usual.

The statement of this division of local consumption, according to specific uses, is thus made:

Sections.	Human food.		Feed for work-animals.		Feed for cattle and swine.		Shipped from county.	
	Pr.ct.	Bushels.	Pr.ct.	Bushels.	Pr.ct.	Bushels.	Pr.ct.	Bushels.
New England.....	14	894,089	29.4	1,873,651	54.2	3,457,579	2.4	150,981
Middle.....	9.2	7,224,526	32.7	25,755,430	47.3	37,144,801	10.8	8,460,943
Southern.....	16	63,185,261	47.2	186,306,987	26.3	103,953,517	10.5	41,249,535
Western.....	5	56,499,363	20.9	235,227,078	49.4	557,237,200	24.7	278,970,850
Pacific.....	30.8	898,979	24.3	701,625	34.6	1,016,506	10.3	303,790
Nevada, Colorado, and Territories.....	15.3	996,397	43.1	2,806,844	29.2	1,966,745	11.4	742,414
Total.....	8	129,698,615	28	452,671,615	43.6	704,776,348	20.4	329,878,52

Allowing for the export reserve, and for a moderate filling of the usual stocks held over (which were so depleted last year), and for the requisite conversion of corn into spirits, glucose, starch, and the seed for sixty-five million acres or more to be planted, the actual consumption of the year for man and beast may thus be stated, after distribution of the remnant of the county surplus not required for the miscellaneous uses indicated above:

	Bushels.
For human food.....	150,000,000
For feed of work-animals.....	520,000,000
For feed for meat-producing animals.....	780,000,000
Total.....	1,450,000,000
Leaving for export, seed, spirits, and surplus.....	167,025,100

The returns by States are as follows:

States.	Human food.		Food for work-animals.		Food for cattle and swine.		Shipped from county.	
	Bushels.	Pr. ct.	Bushels.	Pr. ct.	Bushels.	Pr. ct.	Bushels.	Pr. ct.
Maine	198,968	22	721,320	30	416,024	46	18,088	2
New Hampshire	130,605	15	235,089	27	487,592	56	17,414	2
Vermont	231,636	12	540,484	28	1,080,968	56	77,212	4
Massachusetts	160,836	13	420,648	34	643,344	52	12,372	1
Rhode Island	33,348	12	105,602	38	136,171	49	2,779	1
Connecticut	138,696	12	300,508	26	693,480	60	23,116	2
New York	2,118,750	10	6,356,250	30	11,653,125	55	1,059,375	5
New Jersey	795,424	8	3,778,264	38	3,977,120	40	1,391,992	14
Pennsylvania	3,916,692	9	14,361,204	33	20,018,648	46	5,222,256	12
Delaware	393,660	10	1,259,712	32	1,495,908	38	787,320	20
Maryland	1,611,423	9	6,445,692	36	5,908,551	33	3,939,034	22
Virginia	5,744,640	16	13,643,520	38	11,130,240	31	5,385,600	15
North Carolina	6,852,140	20	13,704,280	40	9,935,603	29	3,768,677	11
South Carolina	4,089,050	25	9,159,472	56	2,944,116	18	163,562	1
Georgia	8,788,200	24	16,844,050	46	8,055,850	22	2,929,400	8
Florida	927,225	25	2,114,073	57	519,246	14	148,356	4
Alabama	7,036,150	22	16,311,075	51	6,716,325	21	1,918,950	6
Mississippi	6,349,056	21	16,023,808	53	6,651,392	22	1,209,344	4
Louisiana	2,927,280	20	8,781,840	60	2,341,824	16	585,456	4
Texas	7,609,956	12	36,147,291	57	15,219,912	24	4,439,141	7
Arkansas	4,483,167	13	19,312,104	56	8,966,334	26	1,724,295	5
Tennessee	6,766,974	9	27,819,782	37	25,564,124	34	15,037,720	20
West Virginia	1,791,240	12	5,970,800	40	6,120,070	41	1,044,890	7
Kentucky	6,040,072	8	24,160,288	32	32,465,387	43	12,835,153	17
Ohio	5,599,152	6	25,196,184	27	46,659,600	50	15,864,264	17
Michigan	2,572,344	9	8,860,296	31	15,434,064	54	1,714,896	6
Indiana	5,374,215	5	25,796,232	24	52,667,307	49	23,646,546	22
Illinois	7,293,476	4	32,820,642	18	83,874,974	46	58,347,808	32
Wisconsin	2,576,128	8	7,084,352	22	18,354,912	57	4,186,208	13
Minnesota	1,478,932	7	5,704,452	27	11,408,904	54	2,535,312	12
Iowa	7,019,504	4	28,078,016	16	96,518,180	55	43,871,900	25
Missouri	8,501,850	5	34,007,400	20	91,819,980	54	35,707,770	21
Kansas	5,778,104	4	26,001,468	18	66,448,196	46	46,224,832	32
Nebraska	2,474,346	3	11,546,948	14	35,465,626	43	32,991,280	40
California	865,179	31	697,725	25	948,906	34	279,090	10
Oregon	33,800	26	3,900	3	67,600	52	24,700	19
Nevada								
Colorado	50,688	12	215,424	51	80,256	19	76,032	18
Arizona	17,100	30	28,500	50	11,400	20		
Dakota	604,500	13	1,999,500	43	1,534,500	33	511,500	11
Idaho								
Montana								
New Mexico	250,900	26	463,200	48	154,400	16	96,500	10
Utah	33,000	12	85,250	31	112,750	41	44,000	16
Washington	37,200	60	6,200	10	6,200	10	12,400	20

THE CORN-SURPLUS STATES.

Practically we have only to consider the surplus-corn States in an inquiry concerning the corn of commerce or current and prospective prices. Commercial prices are made by the production of seven States. In addition to these Kentucky and Tennessee usually add something to this surplus, ordinarily not enough to affect prices. In two of these seven, Illinois and Iowa, the crop of 1882 was not much superior to that of 1881, and the available supply of the present year actually less than that of last year, which had a larger stock left over from the previous year's supply. The local prices in those States are, therefore, comparatively high. The following statement shows the proportion and quantity on hand in those States March 1, 1883:

States.	Crop.	Stock.	Per cent.
	<i>Bushels.</i>	<i>Bushels.</i>	
Ohio	93,319,200	27,062,568	29
Indiana	107,484,300	38,694,348	36
Illinois	182,336,900	67,464,653	37
Iowa	175,487,600	52,646,280	30
Missouri	170,037,000	51,011,100	30
Kansas	144,452,600	47,669,358	33
Nebraska	82,478,200	35,465,626	43
Total	955,595,800	320,013,933	33

The proportion of Illinois on hand at this date is ordinarily much larger than that of other States. In 1881 it was 45 per cent., or 35,000,000 to 40,000,000 bushels more than the present remainder. The percentage is about the same as that of 1882. Iowa has a smaller proportion on hand than last year, and less than half the number of bushels remaining on the 1st of March, 1881. The comparison of the stock on hand in the seven States is, in round numbers, as follows:

	<i>Bushels.</i>
March 1, 1883	320,000,000
March 1, 1882	200,000,000
March 1, 1881	413,000,000

PORK TRADE AT THE PACKING CENTERS.

Nearly one-third of all the hogs which go into the trade of this country are packed at Chicago, therefore a thorough study has been made of all that pertains to the handling of hogs for this market from the time they are purchased in the country until the meat is cured, packed, and shipped to the seaboard.

It will not be out of place to present here some carefully-prepared statements of the provision business at Chicago:

Receipts and shipments of hogs (at Chicago) for twenty years.

Years.	Received.			Shipped.		
	Live.	Dressed.	Total.	Live.	Dressed.	Total.
1864	1,285,871	289,457	1,575,328	561,277	98,115	659,392
1865	757,072	92,239	849,311	575,511	69,034	644,545
1866	933,233	353,093	1,286,326	484,793	91,306	576,099
1867	1,696,689	260,431	1,957,120	760,547	156,091	916,638
1868	1,706,592	281,923	1,988,515	1,020,812	226,901	1,247,713
1869	1,661,869	190,513	1,852,382	1,086,305	199,650	1,285,955
1870	1,693,158	260,214	1,953,372	924,483	171,188	1,095,671
1871	2,380,083	272,466	2,652,549	1,162,286	169,473	1,331,759
1872	3,252,623	235,905	3,488,528	1,835,594	145,701	1,981,295
1873	4,337,750	233,156	4,570,906	2,197,557	200,906	2,398,463
1874	4,259,629	213,038	4,472,667	2,330,661	197,747	2,528,408
1875	3,912,110	173,012	4,085,122	1,582,643	153,523	1,736,166
1876	4,190,006	148,622	4,338,628	1,131,635	79,654	1,211,289
1877	4,025,970	164,339	4,190,309	951,221	94,648	1,045,869
1878	6,339,654	102,512	6,442,166	1,266,906	26,039	1,292,945
1879	6,448,300	91,044	6,539,344	1,692,361	40,024	1,732,385
1880	7,059,355	89,102	7,148,457	1,394,990	33,194	1,428,184
1881	6,474,844	52,835	6,527,679	1,289,679	46,849	1,336,528
1882	5,817,504	36,778	5,854,282	1,747,722	40,196	1,787,918
1883	5,640,625	56,538	5,697,163	1,319,392	44,367	1,363,759

Statement of bacon, hams, and dry-salted meats, pork, and lard inspected at Chicago for ten years ending 1881.

Years.	Bacon, hams, and dry-salted meats.	Pork.	Lard.
	<i>Pounds.</i>	<i>Barrels.</i>	<i>Pounds.</i>
1872	245,288,404	208,664	86,040,785
1873	343,986,021	191,144	89,847,680
1874	262,931,462	231,350	82,209,887
1875	362,141,943	313,713	115,616,093
1876	467,289,109	319,344	138,216,376
1877	479,926,231	296,457	147,000,616
1878	747,269,774	346,366	244,323,933
1879	835,629,540	354,255	251,020,295
1880	958,036,113	367,324	333,539,138
1881	782,993,729	319,999	278,531,733

Pork packing in Chicago for the last twenty years, March 1 to March 1.

Season.	Number of hogs packed.	Season.	Number of hogs packed.
1863-'64	904, 659	1873-'74	1, 826, 560
1864-'65	760, 514	1874-'75	2, 136, 716
1865-'66	507, 355	1875-'76	2, 320, 846
1866-'67	639, 332	1876-'77	2, 933, 486
1867-'68	796, 226	1877-'78	4, 009, 311
1868-'69	597, 954	1878-'79	4, 960, 956
1869-'70	688, 140	1879-'80	4, 680, 637
1870-'71	919, 197	1880-'81	5, 752, 191
1871-'72	1, 225, 236	1881-'82	5, 100, 484
1872-'73	1, 456, 650	1882-'83	4, 222, 780

A special investigation has also been made of the methods and conditions which obtain at each of the large packing centers of the country; and as our facts for each of these have been drawn from different sources, and the statements carefully compared, it is believed that they are entirely reliable.

The members of the Commission have made a personal inspection of the stock-yards, the principal slaughter-houses, the stock trains in transit, and as they reach the respective stock-yards. Carefully prepared sets of interrogatories were furnished the railroad companies, the stock-yard corporations, and the packers, which covered instructions to railroad agents, stock contracts, and care of hogs in transit, their care and condition at the stock-yards, and the slaughter, curing, inspection, and packing. The information thus obtained from different parties has been compared and confirmed by careful reports from the officers of the boards of health exercising supervision at the respective districts where are located the stock-yards and packing-houses, and the intelligent inspectors of the humane association. A special agent, familiar with the trade, has also been employed to follow it through all its intricate ramifications. In order to obtain full and trustworthy information on the many important points connected with this subject it has been found necessary to gather the facts from different sources and through various channels, and to confirm and extend our own knowledge thus acquired by the aid of experts who have long been familiar with the various branches of this business.

In all cases the statements of interested parties have been controlled by our own observations or by the investigations of other disinterested persons, and generally by both.

Interrogatories were prepared to cover the respective subjects of investigation, copies of which are inserted with their respective topics.

TRANSPORTATION OF HOGS FROM SHIPPING POINTS TO STOCK-YARDS.

The following interrogatories on railroad transportation were personally presented to the several railroad companies, and information covering the various points of investigation, was, in all cases, fully and cheerfully granted:

1. Are dead hogs ever allowed to be transported?
2. Are diseased hogs allowed to be transported?
3. If transported, to what points are they carried?
4. It has been stated that "hogs which have died of cholera have been shipped to Chicago to be cured and packed." Are you aware of such being the fact?
5. Does the station agent examine hogs as to their condition before receiving them?
6. Has he authority to reject any hogs?
7. Would hogs in following condition, ordinarily, be received for transportation?

- a. Diseased.
- b. Bruised.
- c. Over-fatigued, feverish.
- d. Piggy (pregnant) sows.
- e. Hogs evidently needing food or water.
8. What is the rule as to the number of hogs to be loaded into a car?
9. What is the nature of the bill of lading given? Please give blank form.
10. Is the condition of the hogs usually specified in bill of lading?
11. Do your railroad regulations compel your employes to look after the hogs in transit?
12. What care do hogs have while in transit?
13. Does the owner or shipper accompany the hogs?
14. What are the regulations regarding this?
15. What examinations of the hogs are made in transit, for injury, bruising, smothering, and death?
16. What food is given them?
17. How frequent?
18. Of what quality?
19. How much?
20. What care is taken as to condition or quality of water given?
21. How often are they watered?
22. What quantity is given?
23. Is water ever used for cooling the hogs?
24. Under what circumstances, and what regulations and arrangements have you therefor?
25. What is the ordinary length of journey allowed?
26. How are the cars prepared for transporting hogs?
27. How often are the cars cleansed?
28. How are they cleansed?
29. Is any special care taken to disinfect cars in which diseased hogs have been carried?

The important relations which the railroads bear to the subject under investigation will appear from the following statement from page 284 of the recent Report of the Department of Agriculture, dated November 10, 1883:

The Chicago, Burlington and Quincy Railroad transported about one-third of the cattle to Chicago. It runs through a corn belt, perhaps unsurpassed in the United States, which continues to maintain its superiority as a source of cattle supply. The Chicago and Northwestern still maintains second rank as a feeder to the great cattle mart. Chicago, Rock Island and Pacific is third, and Chicago and Alton fourth, as in the previous year, while the Wabash has changed places with the Milwaukee and Saint Paul during the last year. The receipts come by the following routes:

Total receipts by railway lines for 1882.

Roads.	Cattle.	Calves.	Hogs.	Sheep.	Horses.
	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>
Baltimore and Ohio.....	1,260	853	22,891	8,526	176
Chicago and Alton	199,141	296	335,723	66,639	1,723
Chicago, Burlington and Quincy.....	491,800	2,174	1,555,688	168,181	2,416
Chicago and Eastern Illinois	26,403	636	98,439	15,013	320
Chicago and Grand Trunk	1,951	802	12,575	1,300	542
Chicago, Milwaukee and Saint Paul.....	154,873	4,067	735,203	94,044	866
Chicago and Northwestern.....	223,678	5,420	1,061,616	111,344	880
Chicago, Rock Island and Pacific.....	212,884	601	859,381	42,460	1,631
Illinois Central	95,415	967	592,212	36,368	1,032
Lake Shore and Michigan Southern.....	4,474	4,527	54,235	11,362	1,764
Louisville, New Albany and Chicago.....	7,611	388	18,976	3,418	59
Michigan Central.....	3,030	1,549	39,279	7,804	728
New York, Chicago and Saint Louis.....	24	3	2,761	.....	.....
Pittsburgh, Cincinnati and Saint Louis.....	5,127	373	46,595	4,596	301
Pittsburgh, Fort Wayne and Chicago.....	3,286	1,834	29,071	2,763	159
Wabash, Saint Louis and Pacific.....	146,104	373	351,961	54,590	1,259

Total shipments by railway lines for 1882.

Railroads.	Cattle.	Calves.	Hogs.	Sheep.	Horses.
	Number.	Number.	Number.	Number.	Number.
Baltimore and Ohio	46,002	3	27,794	1,035	290
Chicago and Alton	7,349	837	514	2,052	61
Chicago, Burlington and Quincy	5,257	1,678	114	6,029	198
Chicago and Eastern Illinois	3,858	212	82	14	48
Chicago and Grand Trunk	47,691	40	22,241	47,158	290
Chicago, Milwaukee and Saint Paul	13,642	1,082	280	6,957	3,654
Chicago and Northwestern	16,764	1,795	3,825	6,445	2,560
Chicago, Rock Island and Pacific	21,780	1,342	.....	2,334	181
Illinois Central	10,424	1,410	2,955	3,263	95
Lake Shore and Michigan Southern	272,778	831	865,074	137,602	3,035
Louisville, New Albany and Chicago	706	139	263	.....	35
Michigan Central	207,901	28	559,459	5,037	1,017
New York, Chicago and Saint Louis	342	.....	510	384	.....
Pittsburgh, Cincinnati and Saint Louis	5,698	84	222	190	100
Pittsburgh, Fort Wayne and Chicago	258,260	75	264,302	94,016	1,191
Wabash, Saint Louis and Pacific	2,557	673	87	1,654	33

SHIPMENTS EASTWARD.

The shipments eastward have augmented more rapidly than population. Philadelphia has made the largest relative gain in cattle, though the absolute increase in numbers is, of course, made by New York. The receipts of veals in New York have increased from 91,529 in 1869 to 190,582 in 1882.

The New York Produce Exchange record of these shipments is as follows:

In the record for swine the most noticeable change is the remarkable movement to Boston, which is now nearly equal to the aggregate receipts of Philadelphia and Baltimore.

Receipts of hogs at the seaboard cities.

Years.	New York.	Boston.	Philadelphia.	Baltimore.	Total.
	Number.	Number.	Number.	Number.	Number.
1869	901,725	167,558	176,200	250,516	1,495,999
1870	889,625	189,330	189,500	300,000	1,568,455
1871	1,310,280	351,307	199,610	350,000	2,211,197
1872	1,923,727	602,625	210,276	314,269	3,050,897
1873	1,958,389	854,507	344,300	392,734	3,549,930
1874	1,774,221	587,721	339,590	357,547	3,059,079
1875	1,388,517	331,989	243,300	279,631	2,243,437
1876	1,222,657	361,317	289,900	259,064	2,132,938
1877	1,268,596	330,604	242,400	322,945	2,164,545
1878	1,794,539	510,432	282,060	260,514	2,847,545
1879	1,725,537	582,615	341,450	356,524	3,006,126
1880	1,719,137	691,839	346,960	336,867	3,094,803
1881	1,533,526	708,900	367,876	338,551	2,948,853
1882	1,366,848	816,535	186,800	268,811	2,638,994

Hogs for the trade are gathered together at the various shipping points on the railway lines. When loaded into the cars if any have died from any cause while awaiting shipment, which seldom occurs, the dead animals are placed in the cars and the railroad agent notes on the way-bill the number of "live" and the number of "dead hogs." Some railroad companies state that such dead hogs would not be carried by them; others would carry them only to points where there are offal-rendering establishments. We have been unable to learn, after careful investigation, of any special shipment of hogs which have died from disease to any of the cities where hogs are packed, or even from country districts to city offal-rendering works. Some roads, however, provide for the transportation of hogs which have died from disease, provided they are solidly frozen.

We herewith append the "Classification on dead hogs," in use by the Chicago and Northwestern Railway Company.

By this classification less than car-load lots of dead hogs are placed in third class, the same as in the case of live hogs; but in car-load lots live hogs go in class four, while car-load lots of 20,000 pounds dead hogs are placed in Class C. The difference in rates may be understood by the following example: Between Huron (Dakota) and Chicago the rate for class three is 90 cents per hundred, for class four 70 cents, and for C 35 cents.

In connection with the classification on hogs that have died from disease, it may be desirable, for general information, to give the special rates on live hogs from Western to principal Eastern points. They are made on car-load lots, either ordinary or refrigerator cars; in the latter case the through rates being five cents higher per hundred pounds. The minimum weight of hogs per car load by the Baltimore and Ohio classification is 22,000 pounds per double-decked car, and 16,000 pounds per single decked car. The winter rates (December) of this company are as follows:

Articles.	To Baltimore from—				To Philadelphia from—			
	Chicago.	Milford Junction.	Sandusky.	Newark.	Chicago.	Milford Junction.	Sandusky.	Newark.
Hogs:								
Dressed, refrigerator cars, O. R. . . . per 100 lbs	66	64	52	49½	67	65	53	50½
Dressed, ordinary cars do	61	59	47	44½	62	60	48	45½

Articles.	To New York from—				To Boston from—			
	Chicago.	Milford Junction.	Sandusky.	Newark.	Chicago.	Milford Junction.	Sandusky.	Newark.
Hogs:								
Dressed, refrigerator cars, O. R. per 100 lbs.	69	67	55	52½	74	72	60	57½
Dressed, ordinary cars do	64	62	50	47½	69	67	55	52½

The Pennsylvania Company's rates for December are as follows:

Articles.	Chicago to—					East Saint Louis to—				
	Boston.	New York.	Philadelphia.	Baltimore.	Washington.	Boston.	New York.	Philadelphia.	Baltimore.	Washington.
Hogs:										
Dressed, common cars, O. R., C. L. per 100 lbs.	64	64	62	61	61	74	74	72	71	71
Dressed, common cars, O. R., L. C. L. per 100 lbs.	64	64	62	61	61	74	74	72	71	71

O. R.—Owner's risk; C. L.—Car-load; L. C. L.—Less than car-load.

In inserting these and other tables the Commission have deemed it important that all regulations relating to transportation of animals, to the health of the community, should be laid before the public in condensed and available form.

1882—G. F. D. No. 398.

CHICAGO AND NORTHWESTERN RAILWAY COMPANY,
GENERAL FREIGHT DEPARTMENT,
Chicago, December 14, 1882.

To Agents:

The following will be classification on dead hogs:

Hogs that have died from disease, when frozen solid..... Third class.
In car loads of 20,000 pounds..... Class C.

Do not receive them for shipment unless frozen solid.

WILLIAM S. MELLEN,
General Freight Agent.

HENRY C. WICKER,
Freight Traffic Manager.

(Fill up this Form and return it at once. Do not wait to be asked for it.)

1882.—G. F. D. No. 398.

Station, No. —, —, 1882.

Received copy of G. F. D. No. 398, dated December 14, 1882.

—, Agent.

To WILLIAM S. MELLEN,
General Freight Agent C. & N. W. Ry, Chicago.

Where hogs have died in considerable numbers, as they have sometimes done in country districts from swine plague, &c., they are either disposed of to be "rendered as offal" in the locality or are buried. Diseased hogs offered for shipment, if discovered, would be refused by some transportation companies. As a matter of fact, hogs in such condition are seldom offered for shipment, as they would be nearly certain to die before reaching the end of the route, and would cause the whole lot to be looked upon with suspicion, and greatly reduce the amount realized from them. While, therefore, it is probable that hogs in the first stages of disease might be, and possibly at times are shipped in railway lines, it must seldom occur, for the reason it does not pay. The animal would be either dead or too obviously sick to deceive buyers, even before it reached the city stock-yards.

The following question, being No. 4 of the interrogatories in the foregoing list, has been asked of the several railroad companies, agents of the humane societies, and boards of health, and employes of the stock-yards, viz:

It has been stated that "hogs, having died of cholera, have been shipped to Chicago to be cured and packed." Are you aware of such being the fact?

This question has uniformly been answered in the negative. The skin and flesh of such hogs is very much discolored; and if slaughtered and attempted to be cured the meat from them would be easily and at once detected. Our special agent, inspectors of the humane and health boards, and the packers, deem it impossible for such animals to be slaughtered. The flesh would not cure without that incipient putrefaction taking place which produces what is known in the trade as "sour meat."

As a rule the station agents of the different railroads do not examine hogs for diseases, bruises, &c., before receiving them for transportation; if discovered, however, they have specific instructions to reject them for these causes. The quality and condition of the hogs and number to be loaded into the car are left almost exclusively to the judgment of the shipper, who is generally the owner of the hogs, subject to the rules of the railroad companies. The number shipped in a car varies with the size of the hogs and also of the car, from 45 to 70 head, but as

a rule is from 50 to 65. The condition of the hogs is not clearly specified in the bill of lading, and if the shipper or his agents accompany the stock, the care of this is not assumed by the railroad employes. On some roads the shipper seldom avails himself of the privilege granted by all railway companies of allowing transportation for one man to accompany every two cars of stock. On other roads the shipper usually accompanies the animals and cares for them. Some companies instruct their employes to be particular in examining the hogs when stops are made; but such is not true of all the roads.

There are here inserted the ordinary forms of "live stock contracts" in use by the several railroads in this country.

[Form 1134—8—'83—100M.]

THE MISSOURI PACIFIC RAILWAY COMPANY AND LEASED AND OPERATED LINES.

Rules and regulations for the transportation of live stock.

No station agent of this company has any power or authority to bind this company in regard to the shipment of live stock except by written contract in the following form; neither has such agent any power or authority to contract to have cars at his or any other station for the shipment of live stock at any given or named date, or to agree to furnish, under any circumstances, any particular class or kind of cars.

Live stock of all kinds at the following estimated weights, first-class rates: One horse, mule, or horned animal, 2,000 pounds; two horses, mules, or horned animals, 3,500 pounds; three horses, mules, or horned animals, 5,000 pounds; each additional animal to be rated at 1,500 pounds; jacks or stallions, 4,000 pounds each; calves, hogs, and sheep, each 300 pounds.

In case the owner or consignor agrees to save the Missouri Pacific Railway Company from liability for any or all the causes enumerated in the following contract, and also agrees to load, unload, feed, water, and attend to the stock himself, &c., as specified therein, the rates agreed upon and specified in the contract will be given.

The said The Missouri Pacific Railway Company, as aforesaid, will not assume any liability over the actual value, but in no case exceeding one hundred dollars per head on horses and valuable live stock, except by special agreement.

For the purpose of taking care of the stock, *the owner* or men in charge, in proportion to the number of cars as indorsed hereon, will be passed on the train with it, and all persons thus passed are at their own risk of any personal injury whatever, and will agree to sign release to that effect indorsed on contract.

[illegible]

In order to avoid misunderstanding, shippers are respectfully requested to read this contract.

No. of cars.	Initials.	Way-bill.		
		Series.	No.	
.....	Second. That said second party hereby agrees to accept, and does accept, for the transportation of his said stock, the cars tendered him by the said first party, and agrees that he will see that they are in good and safe condition, and that they are securely fastened so as to prevent the escape of said stock therefrom, and that he will not hold said first party responsible for any loss or damage which may result from neglect or failure on his part, or of his agents or employes, to do so; and also agrees to assume, and does hereby assume, all risks of injury or loss to his stock because of any defect in said cars, of their being wild, unruly, weak, or maiming each other or themselves, or of heat, suffocation, or other results of being crowded in the cars, or of being injured or destroyed by fire on any account whatever, and especially because of burning hay, straw, or other materials used for bedding the cars, or feeding the stock, or for any other purpose.
.....	Third. That, at his own risk and expense, he is to take care of, feed, water, and attend to said stock, while the same may be in the stock yards of the said first party, or elsewhere, awaiting shipment, and while the same is being loaded, transported, unloaded and reloaded, and to load and unload, and reload the same at feeding and transfer points, and wherever the same may be unloaded and reloaded, for any purpose whatever, and hereby covenants and agrees to hold said first party harmless on account of any and all losses or damages to his said stock while being so in his charge, and so cared for, and attended to, by him or his agents or employes, as aforesaid.
.....	Fourth. That he, the said second party, for the considerations aforesaid, hereby assumes, and releases said first party from all risks of injury or loss which may be sustained by reason of any delay in the transportation of his said stock, caused by any mob, strike, threatened or actual violence to persons or property, from any source, failure of machinery or cars, injury to track or yards, storms, floods, escape or robbery of any of said stock, overloading cars, fright of animals, or crowding one upon another, or any and all causes, except the gross negligence of the said first party.
.....	Fifth. That in all cases, when said first party shall furnish, for the accommodation of said second party, laborers to assist in loading or unloading his stock, they shall be entirely subject to his orders and deemed his own employes while so engaged; and he hereby agrees to hold said first party harmless on account of their acts.
.....	Sixth. That for the considerations aforesaid, said second party further expressly agrees that, as a condition precedent to his right to any damages for any loss or injury to his said stock during the transportation thereof or previous to loading thereof for shipment, he will give notice, in writing, verified by affidavit of his claim therefor, to some general officer of said first party or to its nearest station agent, before said stock is removed from the point of shipment or from the place of destination, and before such stock is mingled with other stock, within one day after the delivery of such stock at its point of destination, and before the same shall have been removed, slaughtered, or intermingled with other stock, to the end that such claim may be fully and fairly investigated, and that a failure to fully comply with the terms of this clause shall be a complete bar to any recovery of any and all such claims.
.....	Seventh. The said second party further agrees, for the considerations aforesaid, that in case of total loss of any of his said stock from any cause for which the said first party will be liable to pay for the same, the actual cash value at the time and place of shipment, but in no case to exceed one hundred dollars per head, shall be taken and deemed as a full compensation therefor, and in case of injury or partial loss the amount or damages claimed shall not exceed the same proportion.
.....	Eighth. That this contract does not entitle the holder thereof, or any other person, to ride on any train except for the purposes and in accordance with the rules and instructions printed on the back hereof, all of which are hereby expressly accepted and agreed to be made a part of this contract.

Ninth. This contract does not entitle the holder or other parties to ride in the cars of any train, except the train in which his stock, referred to herein, is drawn or taken. Neither does it entitle him (and the party of the second part named in this contract so expressly stipulates, admits, and agrees) to return passage from ——— to ——— unless this said contract is presented within 15 days from the date hereof to the properly authorized agent of this company for return pass, which pass, when obtained, shall be used by those only whose names are written herein within 24 hours after the date and hour issued. Nor does it entitle any person except the party of the second part and parties who accompany him in charge of said stock, for the purpose of assisting him in taking care of the same as specified in and upon this contract (and does not include women, infants, or other persons unable to do and perform the services required, as expressed in this contract), to such return passage within the said 15 days; the object, purpose, and intent of the return pass being to enable the said party of the second part hereto or his men in charge, as expressed in contract, and no other person, to return to ——— thereon, at any time within 15 days from date hereof, and not thereafter.

Tenth. For the considerations aforesaid, the said second party hereby further agrees that the said persons in charge of said stock under this contract shall remain in the caboose-car attached to the train while the same is in motion, and that whenever such persons shall leave the caboose-car, or pass over or along the cars or track, they shall do so at their own risk of personal injury from every cause whatever, and that the said first party shall not be required to stop or start its caboose-cars from depots or platforms, or to furnish lights for the accommodation or safety of such persons.

Eleventh. In consideration of the rates herein named, and the aforesaid covenants, the shipper hereby releases and does waive and bar any and all cause of action for damages that has accrued to him by any written or verbal contract prior to the execution hereof.

Twelfth. And it is further stipulated and agreed between the parties hereto, that in case the live stock mentioned herein is to be transported over the road or roads of any other railroad company, the said party of the first part shall be released from liability of every kind after said live stock shall have left its road; and the party of the second part hereby so expressly stipulates and agrees; the understanding of both parties hereto being that the party of the first part shall not be held or deemed liable for anything beyond the line of the Missouri Pacific Railway Company, excepting to protect the through rate of freight named herein.

Thirteenth. No person, other than the owner of the stock shipped, or his duly authorized agent in the name of the owner shall be allowed to sign this contract.

Fourteenth. The evidence that the said second party, after fully understanding and accepting all the terms, covenants, and conditions of this contract, including the printed rules and regulations at its head and on the back thereof, and that they all constitute a part hereof, fully assents to each and all of the same, is his signature hereto.

Witness,

—————, Agent,
for the ——— Railway Company.
—————, Shipper.

To be other than either of the contractors.

[Form 123.]

WABASH, SAINT LOUIS AND PACIFIC RAILWAY COMPANY.

LIVE STOCK CONTRACT.

Rules and regulations for the transportation of live stock.

Live stock in quantities less than a full car load, will be rated as follows:

One horse, mule, or horned animal.....	2,000 pounds, first-class.
Two horses, mules, or horned animals.....	3,500 pounds, first-class.
Three horses, mules, or horned animals.....	5,000 pounds, first-class.
Each additional horse, mule, or horned animal.	1,000 pounds, first-class.
Stallions (be sure and take release).....	4,000 pounds, first-class.
Calves, though in no case less than 75 cts. each.	ea. 500 pounds, once and half first-class.
Sheep, though in no case less than 75 cts. each.	ea. 200 pounds, once and half first-class.
Pigs and store hogs, actual weight	once and half first-class.

This line will not assume any liability over one hundred dollars on horses and valuable live stock, except by special agreement.

Agents are not allowed to receive and ship such valuable horse or other animal until a proper contract or release is signed by the owner or shipper thereof.

When live stock is shipped, the owner or his agent is to feed, water, and take care

of his stock, at his own expense and risk, and is to assume all risk of injury or damage that the animals may do to themselves or each other, or which may arise from delay of trains.

Stock will only be taken by the car load at the prices fixed under the table of "special rates," when a contract is executed by the station agent and shipper, to be loaded and unloaded, watered and fed by the owner, and at his risk in all respects, except as specified in form of contract on receipt below.

Shippers in charge of stock will be passed on freight trains, on stock contract as follows:

One (1) man for two (2) or three (3) cars; two (2) men for four (4) to seven (7) cars, and three (3) men for eight (8) cars or more, which is the maximum number that will be passed with stock for one owner. All persons thus passed are at their own risk of personal injury from any cause whatever.

Men in charge of stock will not be allowed to ride on passenger trains on their stock contract.

Mixed shipments of stock will not be allowed except by special authority of the general freight agent.

Agents of the company are not authorized to agree to forward live stock to be delivered at any specific time, nor are they authorized to agree to furnish cars for shippers to load at any stated time; they will make requisition on train master for cars in the order in which shippers have applied for them, and when cars are received, will distribute them in like manner.

Agents will ask train master for instructions as to when, and for what train, stock should be loaded, and will not allow shippers to load their stock until such instructions have been received.

Stock pens, at stations on the line, are provided for the use and convenience of live stock shippers; but it must be distinctly understood that the company does not assume any liability for live stock while remaining in such pens; and no agent of the company will receipt for, or in any way acknowledge the receipt of live stock while in the pens, and will not execute contract until stock is loaded.

No. of cars.	This agreement, made this — day of — A. D. 18—, between the "Wabash, Saint Louis and Pacific Railway Company," party of the first part and —, witnesseth:
.....	That the party of the first part will, in consideration of the agreement herein contained, forward to the party of the second part, — men and the following freight, to wit: — from — to —, at the rate of — per —, which is a reduced rate expressly agreed upon between the parties hereto, and in consideration of which rate the party of the second part stipulates and agrees as follows: <i>First.</i> The party of the second part agree to take care of said freight while the same is being transported, and load and unload the same at his or their own risk and expense. <i>Second.</i> The party of the second part expressly agrees that neither the party of the first part nor any connecting line or lines over which said freight may pass, shall be responsible for any loss, damage, or injury which may happen to said freight, or be sustained by it, while being loaded, forwarded, or unloaded. <i>Third.</i> The party of the second part agrees that as soon as said live stock is placed in said cars, he will see that all the doors and openings in said cars are closed and so fastened, and afterwards kept so closed and fastened, as to prevent the escape of said stock therefrom, and the party of the second part in consideration of this agreement, hereby releases the party of the first part and all connecting lines from all claims for damage or loss sustained by the party of the second part in consequence of the escape of any of said live stock through the doors and openings in said cars. <i>Fourth.</i> It is agreed that neither the party of the first part nor any connecting line shall be responsible for any damage or injury sustained by said live stock from suffocation while in said cars, or for any injury caused by overloading cars, or from fright of animals, or from the crowding of one upon or against another. <i>Fifth.</i> It is agreed that neither the party of the first part nor any connecting line shall be responsible for any delay caused by storm, failure of machinery or cars, or from obstructions of track from any cause, or for any injury caused by fire from any cause whatever. <i>Sixth.</i> In consideration of this agreement, the party of the second part hereby releases the party of the first part and connecting lines from all claims for damage that may be occasioned by the burning of hay, straw, or other material placed in said car, or cars, for the purpose of feeding or bedding said stock. <i>Seventh.</i> The party of the second part, in consideration of the rate named in this contract, further agrees to water and feed said stock at his or their own risk and expense while the same is in the cars of said first party or connecting lines, and in the event of any unusual delay or detention of

..... said live stock while on said trip from any cause whatever, the party of the second part agrees to accept as full compensation for all loss or damage sustained in consequence of such delay, the amount actually expended by him or them in the purchase of food and water for the stock aforesaid. *Eighth.* The party of the second part hereby agrees to assume all risk of injury or damage to, or escape of the live stock aforesaid, which may happen to it while in the stock yards of the said first party awaiting shipment at any point on any line of railroad owned or operated by it. *Ninth.* It is hereby further agreed by and between the parties hereto, that the party of the first part and the connecting lines over which said freight may pass, shall be deemed merely forwarders, and they shall only be responsible for such injuries to said live stock as may be caused by gross negligence. *Tenth.* In consideration of the rate aforesaid it is further agreed that no claim for damages which may accrue to the party of the second part under this contract, shall be allowed or paid by the party of the first part, or sued for in any court, by the party of the second part, unless a claim for such loss or damage shall be made in writing, verified by the affidavit of the party of the second part or his or their agent, and delivered to the general freight agent of the party of the first part at his office, in the city of Saint Louis, within five (5) days from the time said stock is removed from said cars; and it is also agreed that if any loss or damage occurs upon a connecting line, then such line shall not be liable unless a claim shall be made in like manner, and delivered in like time, to some officer or general agent of the line on which the loss or injury occurs, but it is expressly agreed between the parties hereto, that said first party shall not be responsible for any damage or injury to, or loss or detention of said live stock after the same shall have left the line of railroad operated by said first party, and that all responsibility of said first party under this contract shall cease after said live stock shall have been delivered to a connecting line to be forwarded to its destination. *Eleventh.* It is agreed that neither the party of the first part, nor any connecting line, shall be liable for more than the sum of one hundred dollars on account of the loss or injury of any one horse or other animal received or carried by the party of the first part under this contract. The party of the second part further agrees to release, and does hereby release the party of the first part and connecting lines, from all claims for damage or injury to, or loss of said live stock, from any defects in the doors of said cars or their fastenings, and also from any injury to said stock, caused from defects in the slats on said cars, or from the manner in which said slats are placed on said cars, and from all injuries which said stock may sustain from kicking or goring each other while in said cars, or from kicking their feet through the slats or sides of said cars. It is further agreed that the person or persons accompanying said stock under this contract to take care of the same, shall be inside the caboose car attached to the train whenever said train or caboose car shall be in motion, and that whenever such person or persons shall leave the caboose or pass over or along the cars or track of said first party or connecting lines they shall do so at their own risk of personal injury from every cause whatever, and neither the party of the first part nor connecting lines shall be required to stop or start its trains or caboose cars at or from depots or platforms or furnish lights for the accommodation or safety of the persons accompanying said stock to take care of the same under this contract.

Witness our hands ——— in duplicate.

WABASH, SAINT LOUIS AND PACIFIC RAILWAY CO.

By ———, Agent.

Owner or shipper.

Two copies of this contract will be signed by both the agent of the company and the owner or shipper—one copy to be retained by the shipper and one copy to be returned to general freight office.

(Across the face:) Not negotiable.

H. Ex. 106—4

(2,500.)

[The Missouri Pacific Railway; Central Branch U. P. R. R.; Missouri, Kansas and Texas Railway; Saint Louis, Iron Mountain and Southern Railway; Texas and Pacific Railway; International and Great Northern R. R.; Wabash, Saint Louis and Pacific Railway. Total mileage, 9,757 miles.]

THE MISSOURI PACIFIC RAILWAY COMPANY AND WABASH, SAINT LOUIS AND PACIFIC RAILWAY.

OFFICE OF FREIGHT TRAFFIC MANAGER.

CIRCULAR No. 20.

Rules for passing men in charge of shipments of live stock.

SAINT LOUIS, December 28, 1883.

To Agents:

The following rules will govern the transportation of men in charge of and accompanying live stock shipped under contract over the lines within this system. No person will be allowed to go free with less than two cars in one shipment from one consignor to one consignee. One person may be allowed to go free with two or three cars; two persons with four to seven cars, and three persons with eight cars or more in one shipment. One person only will be allowed with any number of cars of hogs or sheep.

RETURNING.

No return pass will be given for less than two cars in one shipment from one consignor to one consignee. One man may return free for two or three cars, two men for four, five, six, or seven, and three men for eight cars or more in one shipment. Only one return pass will be given for two or more cars of hogs or sheep. These rules will not apply on shipments between points governed by the Southwestern Railway, Iowa Trunk Line, or Colorado Traffic Associations.

This cancels all previous instructions.

GEO. OLDS,
Freight Traffic Manager.

CIRCULAR No. 20.

J. J. ROGERS,

General Freight Agent:

Circular numbered as above received ———, 188—.

———, *Agent,*
Station No. —.

Agents receiving will detach, date, sign, and return this receipt to G. F. O. by first train.

NOTE.—The agent must in all cases enter plainly the name and number of his station in proper place above.

[The Missouri Pacific Railway; Central Branch U. P. R. R.; Missouri, Kansas and Texas Railway; Saint Louis, Iron Mountain and Southern Railway; Texas and Pacific Railway; International and Great Northern R. R.; Wabash, Saint Louis and Pacific Railway. Total mileage, 9,757.]

THE MISSOURI PACIFIC RAILWAY COMPANY AND WABASH, SAINT LOUIS AND PACIFIC RAILWAY.

CIRCULAR No. 162—G.

Rules for passing men in charge of shipments of live stock.

SAINT LOUIS, October 31, 1883.

To Agents:

The following rules will govern the transportation of men in charge of and accompanying live stock shipped under contract over the lines within this system. One person will be allowed to go free with one, two, or three cars; two persons with four to seven cars, and three persons with eight cars or more in one shipment. One person only will be allowed with any number of cars of hogs or sheep.

RETURNING.

No return pass will be given for less than two cars in one shipment from one consignor to one consignee. One man may return free for two or three cars, two men for four, five, six, or seven, and three men for eight cars or more in one shipment. Only one return pass will be given for two or more cars of hogs or sheep. These rules will not apply on shipments between points governed by the Southwestern Railway, Iowa Trunk Line, or Colorado Traffic Association.

GEO. OLDS,
Freight Traffic Manager.

CIRCULAR No. 162—G.

J. J. ROGERS, *General Freight Agent:*

Circular, numbered as above, received ——— —, 1883.

——— ——— *Agent.*
——— ——— *Station.*

Agents receiving will detach, sign, and return this receipt to G. F. O. by first train.

NOTE.—The agent must in all cases enter plainly the name and number of his station in proper place above.

THE MISSOURI PACIFIC RAILWAY COMPANY.

CIRCULAR No. 90.

Transportation of stock.

ATCHISON, KANS., *December 22, 1883.*

To Agents and Conductors:

You will give your personal attention to the handling of live stock, both at stations and while in transit.

Agents are requested to see, personally, to loading stock at their respective stations; to examine all cars before and after loading, and know, from personal examination, that cars are in good condition, and that doors are securely fastened and sealed on both corners or side of each door as soon as cars are loaded.

Conductors are required to notice condition of stock when taken into train and while in transit; to see, personally, to watering same when the weather requires; and know, from a personal examination, that all doors are securely fastened and sealed. In all cases where seals are not perfect make special report to this office, giving car number and station billed from, keeping record of such report in your book for future reference.

W. W. FAGAN,
Superintendent.

L. A. EMERSON,
General Western Freight Agent.

CIRCULAR No. 90.

L. A. EMERSON,
General Western Freight Agent, Atchison:

Circular numbered as above received ——— —, 188—.

——— ———, *Agent.*
——— ——— *Station.*

Agents receiving will detach, sign, and return this receipt by first train.

NOTE.—The agent must in all cases enter plainly the name of his station in proper place above.

1-9-84-10 M.

37.

CHICAGO AND NORTHWESTERN RAILWAY COMPANY.

Live-stock contract.

Live stock in full car-loads will be way-billed as follows:

Horses, mules, and cattle	20,000 pounds per car.
Hogs	16,000 pounds per car.
Sheep and calves	12,000 pounds per car.

Less than car-loads at rates and weights given in classifications.

No liability will be assumed on horses or valuable live stock for more than one hundred dollars per head, unless by special agreement noted hereon, and agents are not permitted to receive or ship such valuable animals until a proper contract or release is signed by the owner or shipper thereof. And it is agreed between the owner and shipper of these animals and the said railway company, that in case of accident, resulting in injury to said animals, the value thereof shall in no case be estimated at more than one hundred dollars for each animal so injured.

Shipments of live stock in car-loads, or less than car-loads, will only be taken at the rates named herein, after this contract or agreement shall have been signed by the company's station agent and the owner or shipper, by which it is agreed and understood that such owner or shipper shall load, feed, water, and take care of such stock at his own expense and risk, and will assume all risk of injury or damage that the animals may do to themselves, or each other, or which may arise by delay of trains.

Different kinds of live stock must not be loaded together in the same car (except as provided for in classifications or by special instructions). Agents are not authorized to agree to forward live stock to be delivered at any specific time.

Persons in charge of live stock will be passed on the trains with, and to take care of it as follows: One man with two or three cars; two men with four to seven cars; three men with eight cars, which is the maximum number that will be passed for one owner. No return passes will be given on account of shipments of stock-cattle west-bound.

No person will be passed with one car of live stock, except that one car of horses, mules, or emigrant movables containing live stock will entitle the owner, or man in charge, to pass one way on the same train to take care of it, but these are the only two instances in which a conductor is authorized to pass any one with a single car-load. Parties so passed must accompany the stock on the same train.

Agents will permit only the signatures of owners or *bona fide* employes, who accompany the stock, to be entered on back of contract, without regard to passes allowed by number of cars, and run a pen through remaining lines.

Such entry of persons in charge, and certificate of billing agent to that effect, will be the authority for conductors to pass them with the stock.

All persons are thus passed only at their own risk of personal injury from whatever cause.

WILLIAM S. MELLEN,
General Freight Agent.

HENRY C. WICKER,
Freight Traffic Manager.

Nos. of way-bills.	Nos. of cars.	No. of animals in each car.	
			<p style="text-align: right;">FREIGHT OFFICE, CHICAGO AND NORTHWESTERN RAILWAY COMPANY, —— Station, ——, 188—.</p> <p>Received of ——, to be delivered at —— Station, at special rates, being—</p> <p>—— dollars per car for horses or mules.</p> <p>—— dollars per car for cattle or hogs.</p> <p>—— dollars per car for sheep.</p> <p>In consideration of which, and for other valuable considerations, it is hereby mutually agreed that said company shall not be liable for loss by jumping from the cars, delay of trains not caused by negligence as aforesaid, or any damage said property may sustain, except such as may result from a collision of the train with other trains, or when the cars are thrown from the track in course of transportation, and in this case the company upon whose road the accident, loss, or damage shall occur, shall be liable therefor, and no suit shall be brought, or claim made, against any other company forming a part of the route, for such loss or damage (it being expressly understood and agreed that the responsibility of this railway company shall cease upon delivery of said property to its connecting line, unless otherwise agreed to in writing, and signed by the respective parties hereto), and that the rules and regulations printed above are an essential part of this contract.</p> <p style="text-align: right;">_____, <i>Agent.</i></p> <p style="text-align: right;">_____, <i>Owner.</i></p>

(Across the face:) Read this contract.

[Form 282.]

Live stock contract.

Non-enumerative live stock, of all kinds, not shipped under contract, will be charged first-class rates

Enumerative live stock, in quantities less than car loads, will be charged as follows: One horse (except stallions), mule, or horned animal, 2,000 pounds each; two animals, 3,500 pounds; three animals, 5,000 pounds; each additional animal, 1,000 pounds, first-class rates; stallions or jacks, 4,000 pounds each, first-class rates; colts, when with their dam, 500 pounds each, first-class rates.

Live hogs, calves, and sheep, in boxes, actual weight, once and a half first class; loose, for any distance, calves, 500 pounds, hogs and sheep, 200 pounds each, once and a half first-class; but not less than 75 cents each for any distance; if no partition in car, or not otherwise secured, at car-load rates, of price fixed under the table of "Special rates."

At the above rates, the owner is to feed, water, and take care of his stock at his own expense and risk, and if he fails so to do, the company may, without notice, do the same if it thinks proper, and charge the expense as additional freight; and the owner is also to assume all risk of injury or damage that the animals may do to themselves or to each other, or which may arise from delay of trains.

Two or three cars will entitle the owner or driver to pass on the train with the stock, to take care of it. Four to seven cars inclusive (one owner), two men in charge, eight cars or more, three men in charge, to pass on stock train, which is the maximum number that will be passed on any train from one consignor or party. All persons thus passed are at their own risk of personal injury from any cause whatever. On shipments of hogs, only one man will be passed with any number of cars.

No passes will be granted on shipment of single cars.

The company reserves the right of refusing, at the discretion of their agents, passes to any parties accompanying stock, without regard to quantity shipped.

No agent is authorized to make an agreement for the shipment of live stock, fresh provisions, or slaughtered hogs at any particular time. Due diligence will be observed in sending them forward.

No. of
cars.

CHICAGO AND ALTON RAILWAY COMPANY.

— Station, —, 188—.

Memorandum of an agreement, made and concluded this day, by and between the Chicago and Alton Railroad Company, of the first part, by the station agent at the above-named station, and — of the second part, witnesseth:

That, whereas the said Chicago and Alton Railroad Company transport cattle, hogs, horses, pigs, sheep, lambs, calves, or other live stock, only as per tariff in use at this date for stock, per car load, or when taken less than car loads, as per special rates published on the tariff of prices.

Now, in consideration that the said party of the first part will transport for the party of the second part such live stock at the rate of — dollars per car load, or — cents per 100 pounds, and advanced charges — and other valuable considerations, the said party of the second part does hereby agree to take the risk of injuries which the animals, or either of them, may receive in consequence of any of them being wild, unruly, weak, escaping, or maiming each other, or from delays, or in consequence of heat, suffocation, or other ill effects of being crowded in the cars, or on account of being injured by the burning of hay, straw, or any other material used by the owner for feeding stock or otherwise, and for any damage occasioned thereby, and also, all risks for damages which may be sustained by reason of any delay in such transportation, and that he will see to it that the cattle, &c., are securely placed in the cars furnished, and that the cars are properly and safely fastened, so as to prevent the escape of the live stock therefrom.

And it is further agreed between the parties, that the first party shall in no case be held liable for damages to stock shipped under this contract, in a greater sum than \$100 for each horse, \$75 for each bull, cow, or ox, \$25 for each sheep, calf, or other animal.

And it is further mutually agreed that should loss or damage of any kind occur to the property, or any part thereof, specified in this agreement, while such property is in the possession of said first party under this agreement, said second party shall, within five days after such loss or damage has occurred, make out and send to the general freight agent of said first party a written statement of his claim for damages, if said second party shall have

any such claim; and unless such written statement is so made and sent within said period of five days, the amount of such loss or damage, or any part thereof, shall not be payable or recoverable, and a suit thereupon shall be forever barred, and the party of the second part hereby so expressly stipulates and agrees.

And it is further mutually agreed that any suit or action against said first party for the recovery of any claim by virtue of this agreement for loss or damage to the property, or any part thereof herein specified, shall be commenced within sixty days next after such loss or damage shall have occurred, or be thereafter forever barred; and should any suit or action be commenced against said first party after the expiration of the aforesaid sixty days, the lapse of time shall be taken and deemed as conclusive evidence against the validity of such claim, any statute of limitation to the contrary notwithstanding, and the party of the second part hereby so expressly stipulates and agrees.

And it is further agreed that the said party of the second part is to load and unload said stock at his own risk, the Chicago and Alton Railroad Company furnishing laborers to assist, who will be subject to the order of the owner or the agent while in that service; and that the said party of the second part will assume all risk for damage or injury to, or escape of, the live stock, which may happen to them while in the stock-yards awaiting shipment. And that the said second party will assume the charge of feed and water, and take care of the stock enumerated herein, at his own expense and risk while the same is in the stock-yards of the first party awaiting shipment on board the cars.

And it is further agreed between the parties hereto that the person or persons riding free, to take charge of the stock, do so at their own risk of personal injury, from whatever cause, and that the said person or persons shall sign the indorsement on the back of this agreement.

And it is further stipulated and agreed between the parties hereto that in case the live stock mentioned herein is to be transported over the road or roads of any other railroad company, the said party of the first part shall be released from liability of every kind after said live stock shall have left its road; and the party of the second part hereby so expressly stipulates and agrees; the understanding of both parties hereto being that the party of the first part shall not be held or deemed liable for anything beyond the line of the Chicago and Alton Railroad Company, excepting to protect the through rate of freight named herein.

And this agreement further witnesseth, that the said party of the second part has this day delivered to said Chicago and Alton Railroad Company _____ to be transported to _____ station on the conditions above expressed.

Station Agent.

Agents will enter the names of parties entitled to passes on the back of this contract. If presented by other than person named, conductor will collect fare.

CARE OF HOGS IN TRANSIT.

When the transit requires more than one day the hogs are fed at intervals of 16 to 36 hours, always receiving corn of good quality, at the rate of 2 to 4 bushels to each car-load. They are watered at the same time with as much good, fresh water from the company's tank as they will drink. A careful examination shows that the water given the stock transported on the railroads is of good quality, being taken from the tanks from which the locomotives are supplied, for which purpose the purest quality is secured. The corn supplied is invariably of good quality.

During hot weather the hogs on all roads are cooled with water, for which purpose there are special arrangements at their tanks by which as much as 50 barrels per minute is poured over them as the train moves slowly past. The maximum distances that hogs are carried varies with different roads from 150 to 500 miles, the time required being usually less than 30 hours.

The cars are not always as clean as they should be when the hogs are loaded into them; in warm weather they are not bedded but have simply a layer of sand sprinkled over the floor, but in winter they are bedded with saw-dust, straw, or hay.

Sufficient care is not given to cleaning the cars; with most companies the rule is to remove the filth at the end of each trip. In no case is any special disinfection practiced with cars on which diseased animals may have been shipped.

The following letter from C. H. Chappell, esq., general manager of the Chicago and Alton Railroad Company, in reply to interrogations (copy of which are given above) addressed to him, regarding the transportation of hogs and their care in transit, is here given:

CHICAGO AND ALTON RAILROAD COMPANY,
GENERAL MANAGER'S OFFICE,
Chicago, January 24, 1884.

E. W. BLATCHFORD, Esq.,
American Pork Commission:

DEAR SIR: Your questions respecting the regulations governing the transportation of hogs on the Chicago and Alton Railroad will be answered as numbered, and in the order asked.

1st question. The company does transport dressed hogs, and I suppose the company will transport dead hogs for short distances to rendering establishments. The company has no tariff rate for such transportation, and if such transportation is desired it will be furnished upon special contract, having in view the circumstances, but no such hogs are ever transported to market, or under circumstances which can in any way affect the hog product of the country. It not unfrequently happens that one or more hogs die in transit to market, and such hogs are uniformly sent to a rendering establishment. For this purpose cars of this company may be employed, but, in fact, I am not aware that they have ever been so employed.

2d question. The company never transports hogs or any other animals apparently having a contagious or infectious disease. Neither this company nor any other, to my knowledge, has an inspector to determine whether animals are diseased or not, but if apparently infected with a contagious or infectious disease the agent would, as a matter of course, reject them.

3d question. The company would carry them to rendering establishments only.

4th question. The Chicago and Alton Railroad Company has not transported any hogs that have died of cholera to Chicago or any other market.

5th question. The station agent assists the shipper to pen and load his hogs, and would notice anything unusual in their condition before receiving them.

6th question. He has authority to observe the law of the land, which I understand requires him not to be instrumental in spreading contagious or infectious diseases.

7th question. Shippers load their own hogs into cars furnished to them for that purpose. The company does not inspect hogs, any further than to know that they are not diseased, and are in fit condition for transportation. The company is supposed to receive hogs for transportation in good order. As common carriers the company considers it is not at liberty to spread infectious or contagious diseases, and, as a matter of self-protection, it does not take property which, in the exercise of reasonable judgment, will perish in transit. Hogs are frequently driven long distances to a shipping station. If they are heavy with fat, they will arrive over-fatigued and feverish. If loaded into a car and cooled frequently with water thrown from a hose, their condition will improve in transit. As a common carrier, the company would not be protected in refusing hogs in this condition, as shippers under their live-stock contracts with this company assume all risks of loss or damage, except that for which employes of this company may be responsible. It is for their interest to provide all needed food and water.

8th question. Hogs vary so much in size that no fixed rule can be profitably enforced.

If a car is crowded the shipper is notified that they will not ride well, and he must take out some before starting.

9th question. Please see contract with this.

[Extracts from special instructions to agents and conductors of the Chicago and Alton Railroad.]

57. Before loading live stock, examine the cars and see that the cross-bars and doors are in proper order. Count the stock as it is being loaded, so as to know the number of animals loaded into each car. While our rules require the owner to load and unload

his stock, agents will render all the assistance they can, consistent with their other duties. See that the cross-bars are in their proper places and the doors securely fastened before the cars leave the station. Agents will not allow hogs, or sheep to be loaded in the same car with cattle or horses. This is imperative.

72. In way-billing live stock, be particular to note on the way-bill the number of animals in the car; also note the kind of stock (whether horses, cattle, hogs, or sheep) If fine or blooded stock, note on the face of the way-bill, "Company released from liability above the value of common stock," as per stipulation in the live-stock contract.

10 M. 10-26-83.

[Form 282.]

Live-stock contract.

Non-enumerative live stock, of all kinds, not shipped under contract, will be charged first-class rates.

Enumerative live stock, in quantities less than car-loads, will be charged as follows: One horse (except stallions), mule, or horned animal, 2,000 lbs. each; two animals, 3,500 lbs.; three animals, 5,000 lbs.; each additional animal, 1,000 lbs., first-class rates; stallions or jacks, 4,000 lbs. each, first-class rates; colts, when with their dam, 500 lbs. each, first-class rates.

Live hogs, calves, and sheep, in boxes, actual weight, once and a half first class; loose, for any distance, calves, 500 lbs., hogs and sheep, 200 lbs. each, once and a half first class; but not less than 75 cents each for any distance; if no partition in car, or not otherwise secured, at car-load rates of price fixed under the table of "special rates."

At the above rates the owner is to feed, water, and take care of his stock at his own expense and risk, and if he fails so to do, the company may, without notice, do the same if it thinks proper, and charge the expense as additional freight; and the owner is also to assume all risk of injury or damage that the animals may do to themselves or to each other, or which may arise from delay of trains.

Two or three cars will entitle the owner or driver to pass on the train with the stock to take care of it. Four to seven cars, inclusive (one owner), two men in charge, eight cars or more, three men in charge, to pass on stock train, which is the maximum number that will be passed on any train from one consignor or party. All persons thus passed are at their own risk of personal injury from any cause whatever. On shipments of hogs only one man will be passed with any number of cars.

No passes will be granted on shipment of single cars.

The company reserves the right of refusing, at the discretion of their agents, passes to any parties accompanying stock, without regard to quantity shipped.

No agent is authorized to make an agreement for the shipment of live stock, fresh provisions or slaughtered hogs at any particular time. Due diligence will be observed in sending them forward.

No. of
cars.

CHICAGO AND ALTON RAILROAD COMPANY,
Station, ———, 188—.

Memorandum of an agreement made and concluded this day, by and between the Chicago and Alton Railroad Company, of the first part, by the station agent at the above named station, and ———, of the second part, witnesseth:

That whereas the said Chicago and Alton Railroad Company transport cattle, hogs, horses, pigs, sheep, lambs, calves, or other live stock, only as per tariff in use at this date for stock, per car load, or when taken less than car loads, as per special rates, published on the tariff of prices.

Now, in consideration that the said party of the first part will transport for the party of the second part such live stock at the rate of ——— dollars per car load, or ——— cents per 100 pounds, and advanced charges ——— and other valuable considerations, the said party of the second part does hereby agree to take the risk of injuries which the animals, or either of them, may receive in consequence of any of them being wild, unruly, weak, escaping, or maiming each other, or from delays, or in consequence of heat, suffocation, or other ill effects of being crowded in the cars, or on account of being injured by the burning of hay, straw, or any other material used by the owner for feeding stock or otherwise, and for any damage occasioned thereby, and also, all risks for damages which may be sustained by reason of any delay in such transportation, and that he will see to it that the cattle, etc., are securely placed in the cars furnished, and that the cars are properly and safely fastened, so as to prevent the escape of the live stock therefrom.

And it is further agreed between the parties that the first party shall in no case be held liable for damages to stock shipped under this contract, in a

greater sum than \$100 for each horse; \$75 for each bull, cow, or ox; \$25 for each sheep, calf, or other animal.

And it is further mutually agreed that should loss or damage of any kind occur to the property, or any part thereof specified in this agreement, while such property is in the possession of said first party under this agreement, said second party shall within five days after such loss or damage has occurred, make out and send to the general freight agent of said first party a written statement of his claim for damages, if said second party shall have any such claim; and unless such written statement is so made and sent within said period of five days, the amount of such loss or damage, or any part thereof, shall not be payable or recoverable, and a suit thereupon shall be forever barred, and the party of the second part hereby so expressly stipulates and agrees.

And it is further mutually agreed that any suit or action against said first party, for the recovery of any claim by virtue of this agreement for loss or damage to the property, or any part thereof herein specified, shall be commenced within sixty days next after such loss or damage shall have occurred, or be thereafter forever barred; and should any suit or action be commenced against said first party, after the expiration of the aforesaid sixty days, the lapse of time shall be taken and deemed as conclusive evidence against the validity of such claim, any statute of limitation to the contrary notwithstanding, and the party of the second part hereby so expressly stipulates and agrees.

And it is further agreed that the said party of the second part is to load and unload said stock at his own risk, the Chicago and Alton Railroad Company furnishing laborers to assist, who will be subject to the order of the owner or the agent while in that service; and that the said party of the second part will assume all risk for damage or injury to, or escape of, the live stock, which may happen to them while in the stock yards awaiting shipment. And that the said second party will assume the charge of feed and water, and take care of the stock enumerated herein, at his own expense and risk, while the same is in the stock yards of the first party awaiting shipment on board the cars.

And it is further agreed between the parties hereto, that the person or persons riding free, to take charge of the stock, do so at their own risk of personal injury, from whatever cause, and that the said person or persons shall sign the indorsement on the back of this agreement.

And it is further stipulated and agreed between the parties hereto, that in case the live stock mentioned herein is to be transported over the road or roads of any other railroad company, the said party of the first part shall be released from liability of every kind after said live stock shall have left its road; and the party of the second part hereby so expressly stipulates and agrees; the understanding of both parties hereto being that the party of the first part shall not be held or deemed liable for anything beyond the line of the Chicago and Alton Railroad Company, excepting to protect the through rate of freight named herein.

And this agreement further witnesseth that the said party of the second part has this day delivered to said Chicago and Alton Railroad Company, ——— to be transported to ——— station, on the conditions above expressed.

Station Agent.

Agents will enter the names of parties entitled to passes on back of this contract. If presented by other than person named, conductor will collect fare.

10th question. Condition not specified unless there is doubt as to their riding well.

11th question. The regulations of the company require the trainmen in charge of trains transporting hogs to see that they do not suffer from heat, crowding, or lack of food and water.

12th question. They are cooled and watered during warm weather as often as they require it, and food is given to them daily.

13th question. The owner or his agent attends to the loading of the hogs, and in case they are billed to Chicago or East Saint Louis markets the owner or his agent accompanies them. If billed to some eastern point each company generally takes care of the hogs while in transit over its line.

14th question. The owner can go or send them in charge of employés as he may select.

15th question. Each time the train comes to a stop the hogs are looked over to see if they are riding well or need any care.

16th question. Corn in the ear.

17th question. Always daily, often more frequently.

18th question. Good as can be obtained.

19th question. As much as they need.

20th question. The water given comes from the fresh-water lakes of the company, where it is collected from grass-covered lands, and is kept perfectly pure for use in the locomotives of the company.

21st question. Daily in winter; as often as they need it at other seasons.

22d question. As much as they require.

23d question. Water is frequently used for cooling, all of the water stations of this company are fitted for cooling hogs, and as they are but 20 miles apart the conductor can comply with his instructions. "During warm weather cool frequently." As a check on the conductors, he is obliged to note in the billing stations at which he has cooled the hogs.

24th question. The company has fitted two hose connections to each water tank on the line and two large streams are thrown into each car loaded with hogs.

25th question. Twenty-four hours is the limit.

26th question. The floor of each car, in summer, is covered with six inches of clean sand. In winter straw and hay is used.

27th question. At the end of each trip.

28th question. As these cars are used on the return trip for the transportation of many articles that would be damaged by filth, they are thoroughly cleaned.

29th question. Not having transported diseased hogs, we have not disinfected cars.

Yours, truly,

C. H. CHAPPELL,

General Manager Chicago and Alton Railroad.

CONDITION AND TREATMENT OF ANIMALS AT STOCK-YARDS.

To the officers of the stock-yards there were personally presented the following interrogatories, to which full replies were in all cases given, and every possible facility offered for the frequent and thorough personal examinations which have been made.

Interrogatories concerning the receipt, condition, care, and disposition of hogs at the stock-yards, with construction, conveniences, care, and inspection of the yards.

1. Is any examination made, before unloading from cars, to detect diseased or injured hogs?
2. If so, what regulations govern such examination?
3. When does "delivery" by railroad company take place?
4. Are any special instructions given in regard to care in unloading?
5. What is done with hogs found to be sick, diseased, bruised, or crippled?
6. What is done with hogs found smothered?
7. What is done with hogs dead from disease?
8. Are they sold?
9. To whom?
10. For what purpose?
11. Where are they sent?
12. How are they transported?
13. What is done with healthy hogs on their arrival?
14. When are they fed?
15. What kind of food is given them?
16. What quantity?
17. How is it furnished to them?
18. Are they watered?
19. When?
20. How is the water furnished to them?
21. What quantity?
22. In the absence of orders by owners or consignees of hogs, have you any regulations authorizing the feeding and watering of hogs?
23. How are the hogs cared for in bad weather?
24. How many hogs die in the yards?
25. From what cause?
26. What is done with them?
27. What is done with diseased hogs if discovered in the pens?
28. How are these hogs disposed of?

CONSTRUCTION.

29. How arranged to receive hogs from cars?
30. What is the size of the pens?
31. How are they protected?
32. Are they drained?
33. How can they be cleaned?
34. What are the regulations in regard to keeping the pens clean?
35. What measures are adopted to disinfect pens where diseased hogs have been?
36. Is there any inspection made of the sanitary condition of the yards, or the condition and care of the hogs?
37. If so, under what authority?
38. Is such inspection sufficient and effective to secure the sanitary condition of the premises, and prevent any hogs, diseased or in improper condition, going into food?
39. What is the amount of business done annually?
40. What are your total receipts?
41. What is the average weight of hogs for the year?
42. What is total value of hogs received?
43. Please state what system of supervision is adopted to prevent any diseased hogs going into food, and under what authority such supervision is exercised, whether municipal, State, or the national or local humane society.

ARRIVAL AT STOCK-YARDS.

When the loaded trains draw up to the platforms at the stock-yards "delivery" by the railroad companies takes place. There is no special examination before unloading to detect diseased or injured hogs. There are more or less dead hogs on nearly every train, the most of which have been smothered in transit. The number varies, but will reach from 0.3 to 1 per cent., and such animals are always sent to the offal rendering works. We find no exceptions to this rule. The stock-yard companies being also interested in the offal rendering establishments, are very particular to prevent any dead animals escaping them. The State and municipal boards of health have also men stationed continually in the stock-yards of Chicago, and most other cities to see that no animals unfit for food shall enter into consumption.

The entrances of these stock-yards are at all times carefully guarded, and no animals are allowed to pass through without a ticket, properly signed and certified to, being given up. These tickets specify the animal, its condition, and the exact division and pen from which it has come, or to which it is being driven.

The following is a blank form of the tickets used in the Chicago stock yards:

Driven into Div. _____

By _____

For _____

Block. Pen. _____ *Cattle.*

" " _____ *Calves.*

" " _____ *Hogs.*

" " _____ *Sheep.*

		GATE ORDER, DIVISION D.			
		Pass out for			
Order of	WM. FALLON, Div. Supt.	B.	P.	Chute.	
		(Block.)	(Pen.)		
					Cattle.
					Hogs.
					Cows.
					Calves.
					Sheep.
		alley			Deliverer.

DISPOSITION OF DEAD OR INJURED HOGS.

The dead hogs at Chicago are loaded into box cars and sent to the Union Rendering Company's offal establishment at Globe Station. At Kansas City they are sent in a similar manner to The Kansas City Dedicating and Refining Company. At Cincinnati they go to fertilizer companies, and at other points they are disposed of in a similar manner. Such dead animals are cut up, put into tanks, and heated by steam for about eighteen hours, when the grease is drawn and the residuum pressed.

There are several qualities of grease made which in the trade are known as "white," "yellow," and "brown" grease. All qualities of grease are put into old tierces and sold upon their merits. The bulk of this grease is used in the manufacture of lubricating oils, candles and soap. The remainder of the carcass is manufactured into fertilizers.

At Chicago and other points, the animals which are bruised or crippled are carted to slaughter-houses and killed. They are then examined by the city health officer, who decides whether they are fit for food.

If condemned, they are rendered into grease. Such animals, if used for food, generally enter into local consumption. The meat of animals at all feverish is liable to become "sour." Sick hogs are always condemned and tanked with the offal.

DISPOSITION OF HEALTHY HOGS.

The healthy hogs when unloaded from the cars are driven across the platform and down a guarded, inclined plane, into the yards. They are then put into covered pens which in most yards are floored. At Chicago the pens allow 500 square feet to each car-load of hogs. At Kansas City they are 18 by 28 feet, and 24 feet square; at Saint Louis they are 16 by 44 feet, and 32 by 44 feet; at Indianapolis they are 30 by 40 feet; and at Cincinnati, 24 feet square.

Each pen is furnished with a watering-trough, which at most places is partly covered to prevent hogs from lying in it. The pens are cleaned by a force of men, with horse-carts, kept constantly at work, who go over each pen once in one or two weeks. No disinfection is practiced beyond cleaning and occasionally washing out the pens.

CARE OF HOGS IN THE YARD.

The hogs are fed on corn at the request of the owner, or if the owner does not accompany them, they are fed by the stock-yard company.

This is seldom neglected, as the corn is furnished by the companies at a price considerably above market rates, and it is to their interest to see that the animals are properly supplied. If for any reason the animals are not fed within a reasonable time, the agent of the Humane Society has power to order that this be done. As a rule the hogs are fed as soon as yarded, with good sound corn, at the rate of two bushels to a car-load. They are also watered at the same time with a plenty of good, fresh water, which is run into the troughs from hydrants. In winter, men are employed in some yards to keep the hogs from crowding upon and smothering each other. The deaths in the yards are very few, not amounting to more than one in a thousand hogs handled, and these are mostly from overheating, smothering, or accidents.

If sick hogs are discovered in the yards at Chicago, Cincinnati, or Kansas City, the health officer has power to kill them at once. At a few points they are kept in pens by themselves, to await results; or are sold to farmers at a low price, who buy them on the chance of their recovery. The hogs that die or are killed as above in the yards at once become the property of the offal rendering companies, who pay a nominal price for them, and they are immediately taken to the rendering establishments.

Replies received from the stock-yard companies at Baltimore, Philadelphia, Jersey City, New York, West Albany, Buffalo, and Boston confirm the information obtained in the West as to the condition of the hogs when they arrive, the small mortality in transit (less than 1 per cent.), and the good care of the animals.

SANITARY SUPERVISION.

At Chicago there are both State and city health officers stationed in the yards; at Cincinnati there are city health officers; the Indianapolis yards are visited occasionally by officers of the board of health; at the City of Kansas an officer is stationed at the yards, who has power to kill diseased animals; at Saint Louis and East Saint Louis there is no effective supervision at present; but one is about being established. At Chicago, Cincinnati, and City of Kansas it is believed that this inspection is sufficient to prevent any diseased animals from being used for food products. At Indianapolis, and particularly at Saint Louis, the inspection is not at present sufficient. We have no facts, however, showing that diseased hogs have been packed at any place, though we have made very particular inquiries in this direction; and from the general opinion among packers that the meat of sick animals cannot be cured without "souring"; and the great care exercised by all the packing companies to buy none but good hogs, we have every reason to believe that this has not occurred. At the same time a more rigid inspection at some of these points is greatly to be desired.

To show the care and scrutiny which is exercised in this department in this country by the State and municipal health boards, there are here inserted the following laws and ordinances, with the penalties for their infringement. These include only the reports obtained up to the date of making this report.

ILLINOIS.

City of Quincy, State of Illinois.—Ordinance No. 83.

DUTIES OF SANITARY OFFICER.

SECTION 5. It shall be the duty of the sanitary officer to keep a correct and complete record of the proceedings of the board of health; to issue all permits author-

ized by the board; to direct and see that the duties of the scavenger are performed as the board shall have provided; to report to the board all nuisances coming under his notice; to examine, at the request of said board, or the mayor, any boat or vessel landing at the harbor in this city, the officers, crew, or passengers which may be supposed to be affected by any contagious or infectious disease; and in all cases when it shall come to his knowledge that any one is afflicted with small-pox, he shall have placed upon or near the house occupied by such person a written or printed notice, viz, "No admittance—Small-pox here"; and shall perform such other duties as pertain to his office.

POWERS OF BOARD.

SECTION 6. The board of health shall have full power to take all steps and use all means necessary to promote the cleanliness and general health of the city, or any part thereof; to order the abating of all nuisances on public or private property; but this shall not be construed to give the board of health any power to spend money not provided for in the annual appropriation for the health department, unless by special order of the council; to use any measure the board may see fit to adopt to prevent the introduction or spread of any malignant, contagious, or infectious diseases in the city; to enter or permit its officers to enter and examine, with reference to the abatement of any nuisance, all premises and all parts thereof within the city limits, and direct any bedding, clothing, or unsound meat, beef, pork, fish, hides or skins of any kind there found to be destroyed, when dangerous to the health of the inhabitants of this city.

Adopted July 19, 1880.

Ordinance No. 160.

AN ORDINANCE concerning dead animals.

SECTION 1. *Be it ordained by the city council of the city of Quincy,* That every person having within his possession or control, or upon any premises owned or occupied by him, any dead animal not proper for food, and liable to become noxious and detrimental to health if not disposed of as provided in and by section 7 of article 3 of chapter XII of the Revised Ordinances of said city, entitled health department, shall, within three hours after the death of said animal, give notice thereof to the officer in charge of the police station, and such officer shall at once cause notice thereof to be given to the board of health.

SEC. 2. That no person other than the officers of the board of health or department of police, or person or persons thereto authorized by the board of health, by contract or otherwise, shall in any way interfere with such dead animals in, or remove the same from, any street or place (unless as provided by section 1); and for the purpose of disposing of or removing any such animal, any person so authorized by the board of health, shall be permitted at all times during the day to enter into or upon any premises in said city.

SEC. 3. The Quincy Fertilizing and Rendering Company, or any person, copartnership of persons, or corporation who shall remove the carcass or carcasses of any dead animal or animals not slain for human food, shall give good and satisfactory bond of two thousand dollars as a guarantee that none of the product of any such carcass or carcasses shall be employed or utilized for human food; and that all grease or other products rendered or manufactured or packed for use or transportation, to or from market in the city of Quincy or elsewhere, shall be branded with a burning brand as follows: "Product of dead animals, Quincy, Ills." And no rendering of the aforesaid carcass or carcasses shall be done within the city limits of the city of Quincy.

SEC. 4. Any person violating any of the provisions of this ordinance shall, upon conviction thereof, be fined in a sum not less than twenty-five dollars nor more than one hundred dollars for each and every offence.

Adopted September 17, 1883.

HENRY A. DIX,
City Clerk.

Approved September 19, 1883.

D. F. DEADERICK,
Mayor.

IOWA.

Health laws of 1880.

FRAUDULENT LARD.

[Chapter 137, Laws of 1880.]

AN ACT to prevent fraud in the sale of lard in certain cases.

SECTION 1. *Be it enacted by the general assembly of the State of Iowa*, That all persons or associations who shall engage in the business of selling lard rendered from swine that have died of hog cholera, or other diseases, shall, selling, or offering to sell any such lard, plainly stamp, print, or write upon the cask, barrel, or other vessels containing such lard, the words "Lard from hogs which have died from disease"; or, if sold without such cask, barrel, or other receptacles, the purchaser shall be informed that the lard is from hogs which have died of disease.

SEC. 2. For a violation of the provisions of the foregoing section, the offender shall, on conviction thereof, be punished by a fine of not less than five dollars, nor exceeding one hundred dollars, or imprisonment in the county jail not exceeding thirty days.

Rules and regulations for the government of local boards of health in the State of Iowa.

DISEASED ANIMALS.

RULE 12. No animal affected with an infectious or contagious disease shall be bought, sold, or kept within the jurisdiction of this board. And any animal affected with glanders shall, after notice from this board, be immediately killed, and buried deep, without removing the hide from the carcass.*

RULE 13. No diseased animal, or its flesh, and no decayed, diseased, or unfit meat, fish, vegetables, or fruit; nor diseased, impure, or adulterated milk, nor other impure, diseased, or adulterated article used for food, shall be sold or offered for sale as food.†

WISCONSIN.

[From the city charter of the city of La Crosse, State of Wisconsin, Laws of 1882.]

19th. To establish public markets and make rules and regulations for the conduct and the government of the same; to appoint suitable officers for overseeing and regulating such markets, and to punish and restrain all persons from interrupting or interfering with the due observance of such rules and regulations; to license and regulate butchers' stalls, shops, and stands for the sale of game, poultry, meats, fish, and other provisions, and to regulate the sale or traffic in merchandise in the city of La Crosse as they may see fit, and have power to grant license for the sale or traffic in merchandise on such terms as they may deem proper.

[From the city ordinances of February, 1881.]

SECTION 4. If any person shall expose for sale any emaciated, tainted, measly, or putrid meat, fish, vegetables, or provisions of any kind; or the flesh of any sick or diseased animal which from these or other causes shall be deemed unwholesome, the person so offering them for sale shall forfeit the penalty of five dollars for each offense; and such unwholesome meat or provisions so exposed for sale, shall be destroyed by the chief of police without delay.

SECTION 7. Whoever shall kill or cause to be killed for the purpose of sale any calf less than four weeks old, or shall have in his or her possession, with intent to sell the same, the meat of any calf killed when less than four weeks old, shall, upon conviction thereof, be punished by a fine of not less than fifty dollars; and all such meat exposed for sale or kept with intent to make sale thereof, may be seized and destroyed by the board of health, or by the chief of police, or by any policeman or health officer acting under his orders.

* See Code of 1873, secs. 4054, 4055, 4046, 4057, 4058.

† See Code of 1873, secs. 4035, 4036-4057, &c.

MINNESOTA.

City of Saint Paul, State of Minnesota.

[From the health ordinance of October 17, 1883.]

SEC. 96. That every butcher, grocer, and milk dealer and their agents shall allow the parties authorized by the health officer to freely and fully inspect their cattle and milk, meats, fish, and vegetables held, offered, or intended for sale, and will be expected to answer all reasonable and proper questions asked by such persons relative to the condition thereof, and of the places where such articles may be.

MISSOURI.

[From the act establishing the State Board of Health.]

SEC. 15. The said board of health shall take cognizance of any fatal disease which may be prevalent amongst the domestic animals of this State, and ascertain the nature and causes of such disease, and shall, from time to time, publish the result of their investigations, with suggestions for the proper treatment of such animals as may be affected, and the remedy or remedies therefor.

Approved March 29th, 1883.

KANSAS.

ORDINANCES OF CITY OF KANSAS.

[Compiled and revised in 1883, from ordinance No. 84.]

SEC. VIII. The owner or possessor, or agent of the owner, of any dumb animal which may die in this city, shall, within twelve hours thereafter, cause the same to be removed beyond the city limits, under a penalty of five dollars for every additional twelve hours he shall allow the same to remain in the city, or dispose of the same as otherwise provided for in this ordinance; and no person or persons shall sell, expose or offer for sale in this city, to be used as food or for culinary purposes, any unwholesome meat, or the flesh of any dead animal that was sick, overheated, or run down by dogs, or trampled upon or injured by any animal or animals, or injured by railroad cars, or otherwise, before the same was butchered or slain, or which died a natural death, or was killed by accident, casualty, or other means than the usual manner of slaying or butchering animals for market or food; nor shall any person or persons sell or offer to sell, to be used as food, any animals while living, which may be sick, or suffering from any of the causes above enumerated, or from any other cause whatever. And it shall be the duty of any and every owner, or other person interested in any such animal or meat to see that such animal or animals, or meat does not pass into the hands of any person or dealer in meats who will or shall sell, or offer to sell the same for food or culinary purposes, and it shall be the duty of said owner, agent, or person above specified to see to and provide that said animal, animals, or meat above specified, is properly disposed of, where and in such manner that said meat or animal will not and shall not be used for food or culinary purposes, and in accordance with the provisions of this ordinance. The sale of any such animal or meat as herein specified, by any person or persons, to a dealer in meats, shall be prima facie evidence in any suit brought for the violation of this ordinance against the person so selling the same, and the selling of any such meat by a dealer in meats to any person shall likewise be prima facie evidence against said dealer, in any suit brought for the violation of this ordinance, and any animal or animals heretofore mentioned, that has or have died or been maimed or bruised so as to be unfit for use, shall be turned over to the person appointed by the mayor (which appointment is herein provided for) for such purposes, and it shall be the duty of said party so appointed to see that said animal or animals or meat passes into proper and safe hands, so that it may not be offered for sale, for food or for culinary purposes, as herein prohibited, and any owner, agent, or person interested in such meat, animal or animals, shall receive just and sufficient recompense for the same, before such person appointed by the mayor, as provided for herein, shall take, or attempt to take such meat, animal or animals, such price or compensation for the same to be determined by the agreement of the owner or agent of such animal, animals, or meat, and the party appointed by the mayor; otherwise, and upon the failure of both the parties aforesaid, or either of them, to agree upon a price or compensation for such animal, animals, or meat, and the terms of payment therefor, said owner, agent, or person interested in the

same, shall immediately cause the same to be removed, as heretofore provided for in this section and ordinance. The mayor shall appoint some suitable person, whose duty it shall be to see that the provisions of this section of this ordinance are carried into effect, and such person shall receive as compensation or remuneration for his services half of each and every fine which may be assessed against any person found guilty of violating the provisions of this section, when the person is arrested and convicted on the complaint of the said person appointed by the mayor. Such person shall hold his office or position until his successor shall have been appointed, or until the mayor shall remove him, and in no case shall the city be liable for anything except as specially herein provided for. Any person or persons violating the provisions of this section shall be deemed guilty of a misdemeanor, and shall, upon conviction, be fined any sum not less than five nor more than one hundred dollars for each offense.

SEC. XI. No person shall slaughter any cattle, sheep, swine, or other animals within this city, except it be in a slaughter-house, under a penalty of three dollars for each and every offense, and no person shall erect or maintain any slaughter-house in this city without first obtaining a license therefor from the city council, under a penalty of five dollars for every day any house, structure or building is used for that purpose.

SEC. XII. Whenever any nuisance shall exist, or be found on any premises or elsewhere in this city, the mayor, city marshal or his deputies, may order the owner or occupant of such premises, or the person occasioning such nuisance, to remove or abate the same; and if the person so notified fail or refuse to remove and abate the same, according to the provisions of this ordinance, then the said officers, or either of them, may abate or remove the same at the expense of the party so failing or refusing; but if the owner, occupant, or agent, of such premises is unknown or cannot be found, then the said officers shall remove the same at the expense of the city; provided, however, that nothing in this section shall be so constructed as to conflict with or prevent prosecution under any other section or under this ordinance.

SEC. XIII. That if any person permit any nuisance or substance not hereinbefore mentioned to remain upon his premises, or upon any private or public grounds within this city, or shall be guilty of any violation of any of the provisions of this ordinance, such person shall be guilty of a misdemeanor, and shall, on conviction, be fined not less than one nor more than one hundred dollars.

SECTION XIV. This ordinance to take effect and be in force from and after its passage and publication in the Wyandotte Gazette.

Approved this the 21st day of February, 1878.

Attest:

ELI TEED, Mayor.

A. H. DEPPE,
City Clerk.

City of Kansas—Additional ordinances—Ordinance No. 216.

[First published December 8th, 1883.]

AN ORDINANCE providing for an elevated roadway viaduct or stock-drive from the corner of Seventh and James streets to the stock-yards of Plankinton and Armour's, on the north side of Railroad Alley.

Be it ordained by the mayor and councilmen of the city of Kansas, Kansas:

SECTION I. That it is deemed necessary and for the public good to build, erect, construct and maintain an elevated roadway viaduct or stock drive, commencing at a point far enough west of James street in stock-yard or lot to make a practical stock drive over James street, to be not less than sixteen (16) feet above the established grade of said street; thence east on the south side of Seventh street to a point opposite the alley between James and Ewing streets, thence northerly over 7th street not less than sixteen (16) feet above the established grade of 7th street; thence through the alley to 6th street; thence over 6th street not less than sixteen (16) feet above the established grade of said street to Railroad Alley; thence over Railroad Alley at the same grade into the lot now owned and occupied by Plankinton and Armour's as a stock-yard.

SEC. II. That the stock drive, when built, shall not be less than twelve (12) feet nor more than sixteen (16) feet wide, and shall not have any more than two spans from curb to curb in crossing any street, which shall rest upon iron columns not less than ten inches square, in center of street, which shall stand on large, flat stones, laid at least two feet below the grade of the street, and the remainder of the posts may be of pine or oak, not less than eight by ten inches square. The floor shall be laid in two thicknesses, joints broken, one of one inch and one of two inches, to prevent dust.

and filth dropping upon the people when passing on the streets; and the sides shall not be less than five (5) feet high, made of two-inch plauk, surfaced on the outside.

SEC. III. All the material used in the construction of the roadway or stock drive shall be of good, sound lumber, free from large knots or other defects, and the work shall be done in a good, substantial, and workmanlike manner, and all material standing in or over 6th, James, and 7th streets, shall be dressed, and shall be painted with at least two coats of mineral paint.

SEC. IV. The entire cost of building, constructing, and maintaining the elevated railway or stock drive shall be borne and paid for by the firm of Plankinton & Armours, and shall be constructed without any material hindrance or obstruction to the traveling public, and they shall hold the city harmless from all damages to person or property caused by any negligence on their part while building said work or operating the same.

SEC. V. It shall be the duty of the parties using the railway or stock drive to at all times to keep the same free from all offal, mud, or other filth, and to prevent the same from becoming a nuisance or damage to adjoining property.

SEC. VI. The above work shall be commenced within ninety days, and be completed within one year from the passage and publication of this ordinance.

SEC. VII. This ordinance shall take effect and be in force from and after its passage and publication in the Kansas City Globe.

Approved Dec. 5th, 1883.

Attest :

R. W. HILLIKER, *Mayor.*

H. C. STOUT,
City Clerk.

Ordinance No. 217.

[First published December 8, 1883.]

AN ORDINANCE to prohibit bringing into this city, or keeping therein for sale, selling, or offering to sell, for any other than tanking purposes, any diseased or unwholesome meat, or any animal or carcass not in a fitting condition to be used as food or for culinary purposes as therein described, and to provide for the inspection of the same.

Be it ordained by the mayor and councilmen of the City of Kansas, Kansas :

SECTION I. No person shall bring into this city, or cause to be brought into it, in any manner, or sell or offer to sell, or keep on hand with a view to sell, or expose for sale (except for tanking purposes), any unwholesome meat, or the flesh of any dead animal that was sick, overheated, or run down or trampled upon, or injured by any animal or animals, or injured in transportation on the cars, or otherwise, before the same was butchered or slain, or which died a natural death, or was killed by accident, casualty, or other means than the usual manner of slaying or butchering animals for market or food, or any cattle with enlarged upper or lower jaws, having ulcers or running sores, commonly called big-jawed cattle, or any animal fevered or emaciated from any known or unknown disease, or suffering from any disease whatever; hogs suffering from cholera, or any animal or animals, or the carcass of any animal of whatsoever kind in a condition unfit for food or culinary purposes: *Provided, however,* that sows heavy with pigs may be brought into this city and sold under the supervision of the inspector.

SEC. II. All such meat and animals described in the previous section brought into or found at any point in this city shall be inspected by the inspector appointed by the city of Kansas, immediately after their arrival or discovery, and if found, on such inspection, to be unfit for food or culinary purposes, the owner or the person claiming to own the same, or the person in charge thereof, shall immediately, on the order of the inspector, remove and sell said meat, carcass, animal or animals to any tanking or rendering establishment exclusively engaged in such business, and if no person can be found to own or claim to own or be in charge of such meat, carcass, or animals, then the inspector shall cause the same to be sold to the highest bidder and removed, and the price recived after deducting expense of removal shall be subsequently paid to the owner or his agent: *Provided, however,* That said inspector may kill cattle found at any stock-yards or other place with large upper or lower jaws, commonly called big-jawed cattle, having ulcers or running sores on them, cattle emaciated from any known or unknown diseases; hogs affected with the cholera or other diseases, or animals with broken limbs, that have become fevered, on the refusal of the owner, or the person in charge, or the person on claiming to own the same, to dispose of them and cause them to be removed after inspection, condemnation, and order of removal to a tanking or rendering establishment by the inspector, as herein provided, and after being killed the carcasses shall be removed as in other cases.

SEC. III. When said meat, or any of the said animals or carcasses above described shall be conveyed into this city, or from any point in this city to any stock-yards

therein, no such meat, animals, or carcasses shall be taken from any such stock-yards before inspection, and any meat, carcasses, or animals condemned by the inspector as unfit for food or culinary purposes shall be transported by cars or other means to a rendering establishment as soon as practicable, and in a manner to conceal them and render their removal as inoffensive as possible to the public. And every stock-yard doing business now in this city shall, within three days from the publication of this ordinance, designate the gates or passage ways, under instruction of the inspector, through which only said meat, animals, or carcasses shall be taken to said cars or conveyances, and by them conveyed from the yards after inspection, when the same are ordered to the tanking establishment. And no stock-yards, or person or employé having authority to issue an order for the removal of any animal or carcasses from the yards, shall issue any such order for removal, or permit any such meat, carcass, or animals as in the first section described to be removed or taken from the yards without first having the written or printed statement or certificate of the inspector that the same were inspected, and when such meat, animals, or carcasses are condemned, no stock-yard agent, officer, or employé thereof shall permit or allow the same to be taken from the stock-yards in any manner, except as hereinbefore provided. And when said meat, carcasses, or animals shall pass through and from the stock-yards, they shall immediately and directly be conveyed to a rendering establishment.

SEC. IV. The mayor and council shall annually appoint an inspector of meats and animals usually offered or sold for food or culinary purposes, who shall be a practical butcher, or skilled in diseases of animals. Such inspector shall hold his office for the period of one year, and until his successor shall be appointed and qualified, unless sooner removed for cause. He shall give bond in the sum of one thousand dollars (\$1,000), with sureties to be approved by the council, and shall perform the following duties, viz: He shall daily attend all stock-yards and other places in this city where meats are sold or offered for sale, and where animals used for food or culinary purposes are slaughtered or kept for slaughter or for sale, or suspected to be kept, and shall make diligent inspection of all meats, carcasses, and animals so kept, found, or offered for sale at any point in the city, and any such meat, carcasses, or animals found unfit for food or culinary purposes he shall condemn and order to a tanking or rendering establishment, and in an especial manner it made his duty to make diligent search at the stock-yards and other places in the city for the classes of meat, carcasses, and animals in this ordinance described, and to inspect the same, and make the proper disposition thereof as provided by this ordinance to prevent the same from being sold or used for food or culinary purposes, through avarice, fraud, or connivance of any parties. The said inspector shall not directly or indirectly become interested in any such meat or animals, as owner or otherwise, nor shall he receive any fee or reward from any owner or person interested in the disposition of such carcasses, meats, or animals.

SEC. V. The said inspector shall receive for his services an annual salary of nine hundred dollars (\$900), payable monthly in the scrip of the city at its face value. He shall have free access to all places, yards, packing-houses, or other places where such meat, carcasses, or animals may be found; and the stock-yards, its agents, officers, and servants, when any such meat, carcasses, or animals are at its yards, shall be diligent to direct the attention of the inspector to them for inspection, and to give information of any failure in the discharge of his duty to the mayor of the city; and it is made its duty to hang up at three or more of the most public places in its yards framed copies of this ordinance.

And the said inspector is hereby authorized to make arrests on view for any violation of this ordinance, with full special police powers and authority as though he were specially appointed and commissioned therefor, and shall bring all parties arrested before the police judge for trial as soon as may be.

SEC. VI. All persons violating any provision of this ordinance, either by a positive act, or a failure, refusal, or neglect to act, or violating any of its provisions in any manner in which they or any of them may be violated, shall be guilty of a misdemeanor, and punished by fine not exceeding one hundred dollars (\$100), or by imprisonment not exceeding three months, or by both such fine and imprisonment.

And the Kansas City Stock-yards, as far as in its province, scope, and sphere lies, is charged with the enforcement of the provisions hereof.

SEC. VII. This ordinance shall take effect and be in force from and after its passage and publication in the "Kansas City Globe."

Approved December 5th, 1883.

Attest:

R. W. HILLIKER, *Mayor*.

H. C. STOUT, *City Clerk*.

MICHIGAN.

Laws relating to the public health, 1875.

[Chapter one hundred and fifty-nine of Revised Statutes of 1846.]

(133.) SECTION 1. If any person shall knowingly sell any kind of diseased, corrupted, or unwholesome provisions, whether for meat or drink, without making the same fully known to the buyer, he shall be punished by imprisonment in the county jail not more than six months, or by fine not exceeding two hundred dollars.— (§7726.)

A BILL to incorporate the Butchers' Slaughtering, Melting, and Cattle-Yard Association of Detroit, and for other purposes.

SEC. 10. Said board of health, mayor, and controller of the city of Detroit are hereby authorized to make whatever regulations may seem to them fit in order to prevent the slaughter and sale of animals unfit for human food.

SEC. 11. Any meat brought to the city of Detroit for sale, except from the slaughter-house of said corporation, shall be first taken by the owner thereof to the central market for inspection by the proper officer, before the same shall be sold or offered for sale. The penalty for violation of this section shall not be less than one hundred dollars nor more than five hundred dollars, or imprisonment in the Detroit House of Correction not less than thirty nor more than sixty days.

SEC. 17. The meat inspector and members of the police of said city shall co-operate with said board in all matters pertaining to the abatement of nuisances and the preservation of the public health, and, upon the requisition of said board, the superintendent of police shall cause the notices of said board to be served and complaints to be made for violations of the health ordinances of said city.

[From the first annual report of the board of health of the city of Detroit, 1882.]

INDIANA.

Laws passed at the Fifty-second regular session, 1881.

SEC. 193. Whoever overdrives, overloads, tortures, torments, deprives of necessary sustenance, or unnecessarily or cruelly beats, or needlessly mutilates or kills any animal; or impounds or confines any animal in any place and fails to supply the same during such confinement with a sufficient quantity of good, wholesome food and water, or carries in or upon any vehicle or car, or otherwise, any animal in a cruel manner, or feeds cows on food that produces impure or unwholesome milk, or abandons to die any maimed, sick, infirm or diseased animal, or being a person or corporation engaged in transporting live stock, detains such stock in railroad cars or compartments for a longer continuous period than twenty-eight hours, after the same are so placed, without supplying the same with necessary food, water and attention, or permits such stock to be so crowded together as to overlie, wound, crush or kill each other, shall be fined not more than two hundred dollars nor less than five dollars.

SEC. 194. Whoever knowingly permits any horse, mare, or gelding, affected with the glanders, to be taken from his or her premises, or to run at large, shall be fined not more than one hundred dollars, nor less than five dollars.

SEC. 195. Whoever drives or in any manner brings Texas or Cherokee cattle into this State at any time before the first day of October, and after the first day of April in any year, and whoever purchases such cattle so driven or brought, shall be fined not more than one thousand dollars, nor less than one hundred dollars, to which may be added imprisonment in the county jail not more than one year; but nothing in this section shall be so construed as to prevent the transit of any cattle through this State on the railroads to other States, nor shall the provisions of this section apply to any cattle that shall have been, during all the previous winter north of the thirty-eighth degree of latitude, and in all prosecutions under this section, the legal presumption shall be that such cattle had not been, during all the previous winter north of the thirty-eighth parallel of latitude.

SEC. 220. Whoever packs, brands, or sells, or causes to be packed, branded, or sold, any salt, beef, pork, flour, tobacco, or hay in barrels or packages, as full barrels or packages, when such barrels or packages do not contain the weight which by law

they are required to contain, shall be fined not more than one hundred dollars, nor less than ten dollars.

SEC. 221. Whoever alters or erases any brand or mark of any inspector, appointed by proper authority, placed on any barrel of salt, flour, beef, pork, or hogshead of tobacco, or other article authorized by law to be inspected and branded, shall be fined not more than one hundred dollars, nor less than five dollars.

OHIO.

[From the sixteenth annual report of the health department of the city of Cincinnati, September, 1882.]

AN ORDINANCE to amend an ordinance entitled "An ordinance supplementary to an ordinance to provide for the abatement of nuisances," passed June 14, 1867.

SECTION 1. *Slaughtering, and slaughtering-pens; how regulated.*—Be it ordained by the city council of the city of Cincinnati, That it shall be unlawful for any butcher or any other person, to kill or slaughter any beeves, calves, sheep, hogs, or other animals, within said city, except in the house, yard, pen, or place where killing shall take place, shall have a perfectly water-tight floor, in which there shall be no breaking of joints nor openings of any kind, for any purpose, excepting such as shall have a water-tight tube with grating, one-half inch holes, making a direct connection with the sewers, and the earth beneath it made sufficiently solid to prevent its becoming the receptacle of filth and offensive matter; also, no hog or any other animal shall be permitted to run or remain under any slaughter-house; and moreover, the whole shall be washed and cleansed at the end of each day; and, further, that each slaughter-house or place occupied for killing of animals, as aforesaid, shall be whitewashed at least once every month, between the first of April and the first of November in each year.

SEC. 3. No person shall kill any cow, sheep, or hog that is pregnant, nor shall any animal be slaughtered while it is in an overheated or feverish condition; and the meat of any such animal shall not be held or sold, or offered for sale for human food in any market, or elsewhere, in this city.

SEC. 4. No person shall bring into the city, or sell, or offer for sale, any cattle unfit for use, or cattle which has been exposed to, or that are liable to communicate the "cattle disease," nor the meat nor milk of any such cattle. All such cattle, meat, and milk shall be confiscated and destroyed.

SEC. 5. No cased, blown, plaited, raised, stuffed, putrid, impure or unwholesome meat, or the meat of any animal that may have died of disease or accident, or fish, or birds, or fowls, shall be held, bought, or sold, or offered for sale for human food, or held or kept in any market, public or private, in this city.

SEC. 6. No calf, pig, or lamb, or the meat thereof, shall be bought, held, or offered for sale for human food, in this city, which when killed was less than one month old.

SEC. 15. No cattle shall be kept in any place of which the water, ventilation, and food is not sufficient and wholesome for the preservation of their health and safe condition for food.

SEC. 2137. *Penalty for violating order of board of health.*—Whoever violates any provision of this chapter, or any order of the board of health made in pursuance thereof, or obstructs or interferes with the execution of any such order, or willfully and illegally omits to obey any such order, shall be fined in any sum not exceeding one hundred dollars, or imprisoned for any time not exceeding ninety days, or both; but no person shall be imprisoned under this section for the first offense.

For a failure to comply with any or all of the foregoing rules and regulations, the superintendent of the sanitary police is directed to cause the arrest of the person or persons so offending, either on view or by warrant from the police court of the city of Cincinnati.

Passed by the board of health November 3, 1881.

A. J. MILES, M. D.,
Health Officer.
W. C. WILLIAMS,
Clerk.

[From the Sanitary Ordinances of the city of Cleveland, 1882.]

SEC. 70. No person or persons shall bring into the city or sell or offer for sale for human food in any market, public or private, any cattle, sheep, hog or lamb, nor any meat, fish, game, or poultry that is diseased, unsound, unwholesome, or that for any other reason is judged to be unfit for human food. The fact of any cattle, sheep, hog or lamb being in any stock-yard or slaughter-house pen shall be considered sufficient evidence that the same is being exposed there for sale; and the fact that the carcass of any cattle, hog, sheep, or lamb, or any part thereof, is found in any slaughter-house

or any public or private market or place, dressed and prepared as such meats usually are for market, shall be deemed sufficient evidence that the same is for sale for human food; and no animal nor any part thereof, nor any fish, game, or poultry, that has been examined and condemned by the inspector or his assistants, shall be held, sold, or offered for sale for human food in any market or place in the city.

SEC. 71. No person or persons shall kill for human food any cow, sheep, or hog that is pregnant, nor shall any animal be slaughtered for human food while it is in an overheated or feverish condition; and the meat of any such animal shall not be held or sold or offered for sale for human food in any market or elsewhere in the city.

SEC. 72. No person or persons shall bring into this city, or sell or offer for sale, any cattle unfit for use for human food, or cattle which have been exposed to or that are liable to communicate the cattle disease, nor the meat or milk of any such cattle.

SEC. 73. No cased, blown, plaited, raised, stuffed, putrid, impure or heated or unwholesome meat, or the meat of any animal, fish, bird or fowl, that may have died of disease or accident, shall be held, bought or sold, or offered for sale for human food, or held or kept in any market, public or private, in the city.

SEC. 74. No calf, pig or lamb, or the meat thereof, shall be bought, held, sold or offered for sale for human food in the city which, when killed, was less than one month old.

SEC. 81. Upon any cattle, meats, birds, fowl, fish, vegetable, or other substances and materials used for human food being found by any inspector or other officer of said board in a condition which is, in his opinion, unwholesome and unfit for human food, or in a condition or of a quality in any ordinance or section of an ordinance of the city condemned or forbidden, he shall cause the same to be examined by two reputable persons, reasonably competent to judge in respect thereto, whom he may conveniently find; and if both said persons disagree with him in opinion in respect thereto, he shall take no action and give no order relative to the same till he has been instructed by the health officer; and if one of said persons agree with him in respect to said articles, then such inspector or officer may forbid the same being offered or exposed for sale, or being sold for human food till the owner or party in charge, or other proper person, has obtained the consent of the health officer, or of said board, to their being so offered, used, or sold. If both such persons agree with him in opinion, he may order the same to be removed, and thereupon, or if said board or health officer shall have approved the judgment of said inspector, it shall be the duty of the owner or party in charge to speedily remove such articles, materials, or substances from any market, street, or place, public or private, and not sell or dispose, or offer to sell and dispose thereof for the purpose of human food. In default of such removal, and also in case of disobedience of such order, and also in all cases where, in the opinion of the inspector of such articles, materials, or substances, by reason of their being in a damaged or offensive condition would, if allowed longer to remain, be dangerous to health, the same may be caused to be removed by any inspector or officer of said board to some suitable place, at the expense of the party who should have removed the same.

SEC. 82. It shall be unlawful for any person or persons to molest or resist any member of said board or their deputies, or its health officer, in the discharge of their duties.

SEC. 109. Upon the death of any animal in the city, the same not having been killed for human food, the owner or keeper thereof, or person killing the same, shall report the same to one of the police stations of this city within eight hours after the death of such animal.

NEW YORK.

City of Buffalo—Ordinances, 1882.

§ 10. Every person who shall keep fresh meat for sale shall keep the place at which the same shall be exposed for sale in a cleanly and wholesome condition, and free from all noxious or offensive odors; and every person offending against the provisions of this section shall forfeit and pay the sum of ten dollars for each and every offense.

§ 11. Every person who shall sell or expose for sale, or cause to be sold or exposed for sale, in this city any unwholesome, stale, emaciated, blown, stuffed, tainted, bruised, putrid, or measly meat, poultry, or provisions, shall forfeit and pay a penalty of twenty-five dollars for each and every offense.

§ 12. Every person who shall sell, offer, or expose for sale, or cause to be sold, offered, or exposed for sale in the city of Buffalo, any bruised or diseased cow, heifer, ox, steer, bullock, hog, sheep, lamb, or calf, shall forfeit and pay a penalty of twenty-five dollars for each and every offense.

§ 25. The board of health shall appoint a scavenger and a cattle inspector. It shall be the duty of the scavenger to remove to such place or places as the board of health shall designate, all dead animals that may be found in the streets, alleys, or public

grounds of the city, and for this purpose he shall report to the street commissioner's office and at police headquarters once each day, Sundays excepted, to receive such orders as may there be given him for the removal of carcasses from the streets. It shall be the duty of the cattle inspector to be present at the arrival of all cattle trains in the city of Buffalo, or as soon thereafter as practicable.

§ 26. He shall immediately notify the owner, agent, or consignee of any dead cattle, hogs, sheep, or lambs that may arrive in the city of Buffalo to take the same to some bone-yard within four hours after the train upon which they arrived is unloaded. In case any such owner, agent, or consignee shall refuse or neglect to so take the same within the time herein prescribed, it shall be the duty of the cattle inspector, and he shall have power to forthwith remove the same to some bone-yard and dispose of the same to the best advantage.

§ 27. It shall be the duty of the owner, agent, or consignee of any diseased or injured cattle, hogs, sheep, or lambs which may arrive in the city of Buffalo, and are unfit to be sold in the market, to cause the same to be immediately killed in some slaughter-house adjoining the cattle-yards and sent to some bone-yard.

§ 28. It shall be the duty of the owner, agent, or consignee of any injured cattle, sheep, hogs, or lambs which may arrive in the city of Buffalo and are fit to be sold in the market, to be immediately slaughtered, dressed, and prepared in one of the slaughter-houses adjoining the cattle-yards when in the judgment of the cattle inspector it is deemed necessary.

§ 30. Any person violating any of the provisions of sections twenty-five, twenty-six, twenty-seven, twenty-eight, and twenty-nine of this chapter, shall forfeit a penalty to the city of Buffalo of not less than five nor more than twenty-five dollars.

[From the rules and regulations of the board of health, city of Albany, April, 1882.]

§ 7. No meat, fish, birds, or fowl, or vegetables, nor any milk not being then healthy, fresh, sound, wholesome, and safe for human food, nor any meat or fish that shall have died by disease or accident, shall be brought within the city of Albany, or offered or held for sale in any public or private market anywhere in said city.

§ 9. No cattle shall be killed for human food while in an overheated feverish, or diseased condition; and all such diseased cattle, and the place where found and their disease shall be at once reported to this board by the owner or custodian thereof.

§ 15. The word "cattle," when occurring in any section or phrase of these ordinances, shall be held to include all animals, except birds, fowl, and fish, of which the body or any part thereof is used for food. The word "butcher" shall be held to include whoever is engaged in the business of keeping, driving, or slaughtering any cattle or in selling any meat.

§ 14. The keeping and slaughtering of all cattle, and the preparation and keeping of all meat and fish, birds and fowls, shall be in that manner which is, or is generally, reputed or known to be best adapted to secure and continue their safety and wholesomeness as food. No slaughtering of cattle shall be permitted in the city of Albany without a special permit from this board.

§ 50. Every person who violates or refuses to comply with or who resists any of the provisions of this Code of Sanitary Ordinances, or any of the rules, orders, sanitary regulations, or ordinances established or declared by this board under or pursuant to any of the provisions of chapter 431 of the Session Laws of 1881, will be liable to the arrest, suit, penalty, fine and punishment in said law provided and declared, of all or which notice must be taken.

MASSACHUSETTS.

[From the Manual for the use of boards of health of the State of Massachusetts. Prepared by direction of the State board of health, lunacy, and charity.]

INSPECTION AND SALE OF PROVISIONS AND ANIMALS INTENDED FOR SLAUGHTER.

102. The mayor and aldermen of cities, and the selectmen of towns, may annually appoint one or more persons to be inspectors of provisions and of animals intended for slaughter. Such inspectors shall be sworn faithfully to discharge the duties of their office, and shall receive such compensation as the city council or the selectmen shall determine.

103. Said inspectors may inspect all animals intended for slaughter, and all meats, fish, vegetables, produce, fruits, and provisions of all kinds, found in said cities or towns or exposed for sale or kept with intent to sell therein; and may for this purpose enter into all buildings or inclosures where said animals, meats, fish, vegetable, produce, fruits, or provisions are kept, stored, or exposed for slaughter or sale. When such animals, meats, fish, vegetables, produce, fruit, or provisions are found on such

inspection to be tainted, diseased, corrupted, decayed, or unwholesome from any cause, said inspectors shall seize the same and cause them or it to be destroyed or disposed of otherwise than for food; but if at the time of the seizure the owner of the property seized notifies, in writing, the inspector seizing the same, of his desire to appeal to the board of health, said inspector shall cause said animals, meat, fish, vegetables, produce, fruit, or provisions to be inspected by said board of health, or by a committee thereof consisting of not less than two members; and if said board or committee find the same to be tainted, diseased, corrupted, or unwholesome, they shall order the same to be destroyed or disposed of otherwise than for food; if said board or committee do not so find, they shall order said animals, meat, fish, vegetables, produce, fruits, or provisions to be forthwith returned to the owner thereof. All moneys received by said inspectors or board of health for property disposed of as aforesaid, shall, after deducting all expenses incurred by reason of such seizure, be paid to the owner of such property.

105. When complaint is made on oath to any police, district, or municipal court, or to a magistrate authorized to issue warrants in criminal cases, that the complainant believes that any diseased animals, or any tainted, diseased, corrupted, decayed, or unwholesome meat, fish, vegetable, produce, fruit, or provisions of any kind, or any veal of a calf killed under four weeks old, are kept or concealed in a particular house or place with the intent to kill, sell, or offer the same for sale for food, the court or magistrate, if satisfied there is reasonable cause for such belief, shall issue a warrant to search for such animals or articles, and all such warrants shall be directed and executed as provided in section three of chapter two hundred and twelve of the public statutes. If, upon hearing, said court or magistrate determines that said animals or articles or any of them were kept or concealed for the purposes aforesaid, the same shall be destroyed or disposed of by the inspector, or by any officer designated by the court or magistrate according to the preceding provisions; if the court or magistrate does not so determine, said animals or articles shall be returned to the owner.

106. Whoever knowingly sells, or offers or exposes for sale, or has in his possession with intent to sell for food, any diseased animal, or any tainted, diseased, corrupted, decayed, or unwholesome meat, fish, vegetables, produce, fruit, or provisions of any kind whatever, shall be punished by imprisonment in jail for not more than sixty days, or by fine of not more than one hundred dollars.

109. Whoever knowingly sells any kind of diseased, corrupted, or unwholesome provisions, whether for meat or drink, without making the same fully known to the buyer, shall be punished by imprisonment in the jail not exceeding six months, or by fine not exceeding two hundred dollars.

[The gist of the offense under this section consists in the guilty knowledge or evil intent of a party in selling what he knows to be unfit for food. The sale, of itself, is not made criminal; but it is the sale coupled with the knowledge of the diseased state of the thing sold which constitutes the offense.]

CONTAGIOUS DISEASES AMONG CATTLE.

143. The mayor and aldermen of cities and the selectmen of towns, in case of the existence in this commonwealth of the disease called pleuro pneumonia among cattle, or farcy or glanders among horses, or any other contagious or infectious disease among domestic animals, shall cause the animals in their respective cities and towns, which are infected, or which have been exposed to infection, to be secured or collected in some suitable place or places within their cities or towns, and kept isolated; and, when taken from the possession of their owners, one-fifth of the expense of their maintenance shall be paid by the city or town wherein the animal is kept, and four-fifths by the commonwealth; such isolation to continue so long as the existence of such disease or other circumstances may render it necessary.

144. The mayor and aldermen and selectmen, respectively, when any such animal is adjudged by a veterinary surgeon or physician by them selected to be infected with any contagious disease, may in their discretion order such diseased animal to be forthwith killed and buried at the expense of such city or town.

145. They may cause all such animals to be appraised by three competent and disinterested men under oath, at the value thereof at the time of the appraisement, and the amount of the appraisement shall be paid as provided above.

146. They may, within their respective cities and towns, prohibit the departure or animals from any inclosure, or exclude animals therefrom.

147. They may make regulations, in writing, to regulate or prohibit the passage from, to, or through their respective cities or towns, or from place to place within the same, of any cattle or other domestic animals, and may arrest and detain, at the cost of the owners thereof, all animals found passing in violation of such regulations, and may take all other necessary measures for the enforcement of such prohibition, and also for preventing the spread of any disease among the animals to their respective cities and towns, and the immediate vicinity thereof.

148. Such regulations shall be recorded upon the records of their cities and towns respectively, and shall be published in such cities and towns in such manner as may be provided in such regulations.

149. They may cause every animal infected with any such disease, or which has been exposed thereto, to be forthwith branded upon the rump with the letter P; and no animal so branded shall be sold or disposed of except with the knowledge and consent of such mayor and aldermen and selectmen. A person who, without such knowledge and consent, sells or disposes of an animal so branded, or sells or disposes of an animal known to be affected with such disease, or to have been exposed thereto within one year previous to such sale or disposal, shall be punished by fine not exceeding five hundred dollars, or by imprisonment not exceeding one year.

150. Any person disobeying the orders of the mayor and aldermen or selectmen, made in conformity with the preceding provisions, or driving or transporting any animals contrary to the regulations made, recorded, and published as aforesaid, shall be punished by fine not exceeding five hundred dollars, or by imprisonment not exceeding one year.

151. Whoever knows or has reason to suspect the existence of any such disease among the animals in his possession or under his care shall forthwith give notice thereof to the mayor and aldermen of the city or selectmen of the town where such animals are kept, and for failure so to do shall be punished by fine not exceeding five hundred dollars, or by imprisonment not exceeding one year.

152. A city or town whose officers neglect or refuse to carry into effect the preceding provisions shall forfeit a sum not exceeding five hundred dollars for each day's neglect.

153. The mayor and aldermen of cities and selectmen of towns, when in their judgment it is necessary to carry into effect the purposes of this chapter, may, within their respective cities and towns, take and hold, for a term not exceeding one year, any land, without buildings other than barns thereon, upon which to inclose and isolate any animals; and they shall cause the damages sustained by the owner in consequence of such taking and holding to be appraised by the assessors of the city or town wherein the lands so taken are situated; and they shall further cause a description of such land, setting forth the boundaries thereof, and the area as nearly as may be estimated, together with said appraisement, to be entered on the records of the city or town. The amount of said appraisement shall be paid, as before provided, in such sums and at such times as the mayor and aldermen or selectmen respectively may order. If the owner of land so taken is dissatisfied with said appraisement, he may, by action of contract, recover of the city or town wherein the lands lie a fair compensation for the damages sustained by him; but no costs shall be taxed unless the damages recovered in such action, exclusive of such interest, exceed said appraisement; and the commonwealth shall reimburse to the city or town four-fifths of any sum recovered of it in any such action.

154. The governor, with the advice and consent of the council, may appoint a board of cattle commissioners of not more than three members, when in his judgment the public safety may require it, and may terminate their commissions when in his judgment the public safety may permit it. The compensation of such commissioners shall not exceed four dollars per day for actual service, in addition to their traveling expenses necessarily incurred.

155. When such commissioners make and publish any regulations concerning the extirpation, cure, or treatment of animals infected with, or which have been exposed to, any contagious disease, such regulations shall supercede those made by mayors and aldermen and selectmen; and mayors, aldermen, and selectmen shall carry out and enforce all orders and directions of the commissioners to them directed.

156. Such commissioners shall have all the power and authority herein conferred upon mayors, aldermen, and selectmen; and, in addition, may establish a hospital or quarantine, with proper accommodations, wherein any cattle selected by them may be detained and treated by veterinary surgeons or physicians. And for this purpose the commissioners may take any land and buildings in the manner before provided.

157. Mayors and aldermen and selectmen, within twenty-four hours after they have notice that any domestic animal in their respective cities and towns are infected with or have been exposed to any such disease, shall give notice thereof in writing to the commissioners.

158. The commissioners may make all necessary regulations for the treatment, cure, and extirpation of such disease, and may direct mayors, aldermen, and selectmen, respectively, to enforce and carry into effect all such regulations as may from time to time be made for that end, and any such officer who refuses or neglects to enforce and carry out any regulation of the commissioners shall be punished by fine not exceeding five hundred dollars for every such offense.

159. The commissioners, when in their judgment the public good requires it, may cause to be killed and buried any domestic animals which are infected with or have been exposed to such disease; and, except as provided in the following section, shall

cause such animals to be appraised in the manner provided above, and the appraised value of such animals shall be paid, one-fifth by the cities or towns in which such animals were kept, and the remainder by the Commonwealth.

160. In all cases of farcy or glanders, the commissioners, having condemned the animal infected therewith, shall cause such animal to be killed, without an appraisal, but may pay the owner an equitable sum for the killing and burial thereof.

161. A person who fails to comply with a regulation made or an order given by the commissioners shall be punished by fine not exceeding five hundred dollars, or by imprisonment not exceeding one year.

162. Prosecutions under the preceding section may be maintained in any county.

163. All appraisements made shall be in writing and signed by the appraisers and certified by the mayors and aldermen or selectmen or commissioners, respectively, to the governor and council and to the treasurers of the several cities and towns wherein the cattle appraised were kept.

164. The commissioners may examine under oath all persons believed to possess knowledge of material facts concerning the existence or dissemination or danger of dissemination of diseases among domestic animals; and for this purpose shall have all the powers vested in justices of the peace to take depositions and to compel witnesses to attend and testify, by chapter one hundred and sixty-nine of the Public Statutes. All costs and expenses incurred in procuring the attendance of such witnesses shall be allowed and paid to the commissioners from the treasury of the Commonwealth upon being certified to and approved by the governor and council.

165. Whenever animals exposed to contagious diseases are killed by order of the commissioners, and upon a post-mortem examination are found to have been entirely free from disease, the commissioners shall cause the same to be sold under their direction, first giving to the purchaser notice of the facts; and if the said purchaser or any other person shall sell said slaughtered animals, or any part thereof, he shall in like manner give notice to the parties to whom such sales are made; and the proceeds of the sales made by order of the commissioners shall be applied in payment of the appraised value of said animals.

166. Whoever violates any of the provisions of the preceding section shall be punished by fine not exceeding one hundred dollars and the costs of prosecution.

167. Cattle commissioners, now or hereafter appointed, shall keep a full record of their doings, and report the same to the legislature on or before the tenth day of January in each year, unless sooner required by the governor; and an abstract of the same shall be printed in the annual report of the State board of agriculture.

City of Boston, State of Massachusetts.

[From the statutes and ordinances relating to the public health, 1873.]

INSPECTION OF PROVISIONS.

99. The mayor and aldermen of cities and the selectmen of towns may annually appoint one or more persons to be inspectors of provisions, who shall be sworn to faithfully discharge the duties of their office, and who shall receive such compensation as the city council of cities or the selectmen of towns shall determine.

100. Said inspectors shall have power to inspect all meats, fish, vegetables, produce, and provisions of all kinds brought into said cities or towns, or exposed for sale or kept with intent to sell therein; and may for this purpose enter into all buildings where said meats, fish, vegetables, produce, or provisions are stored or exposed for sale. When such meats, fish, vegetables, produce, or provisions are found on such inspection to be tainted, diseased, corrupted, decayed, or unwholesome from any cause, said inspectors shall seize the same and cause it to be destroyed or disposed of otherwise than for food: *Provided, however,* That if the owner of the property seized shall at the time of seizure notify said inspector in writing of his desire to appeal to the board of health, said inspector shall cause said meat, fish, vegetables, produce, or provisions to be inspected by said board of health or by a committee thereof, consisting of not less than two members, and if said board or committee shall find the same to be tainted, diseased, corrupted, or unwholesome, they shall order the same to be destroyed or disposed of otherwise than for food. All moneys received by said inspector or board of health for property disposed of as aforesaid, shall, after deducting all expenses incurred by reason of said seizure, be paid to the owner thereof.

101. Said inspectors shall have power to inspect all veal brought into said cities or towns, or offered or exposed for sale or kept with intent to sell therein, and if said veal is, in the judgment of the inspector, that of a calf killed under four weeks old, he shall seize the same and cause it to be destroyed or disposed of, as provided in the

preceding section, subject, however, to the same provisions concerning appeal and the disposal of moneys that are therein contained.

102. When complaint is made on oath to any police court or magistrate authorized to issue warrants in criminal cases, that the complainant believes that any tainted, diseased, corrupted, decayed, or unwholesome meat, fish, vegetables, produce, or provisions of any kind, or any veal of a calf killed under four weeks old is kept or concealed in any particular house or place with the intent to sell or offer the same for sale, the court or magistrate, if satisfied there is reasonable cause for such belief, shall issue a warrant to search for such articles, and all such warrants shall be directed and executed as provided in the third section of chapter one hundred and seventy of the General Statutes.

103. Whoever knowingly sells, or offers, or exposes for sale, or has in his possession with intent to sell as articles of food, any tainted, diseased, corrupted, decayed, or unwholesome meat, fish, vegetables, produce, or provisions of any kind whatever, shall be punished by imprisonment in jail not exceeding sixty days, or by fine not exceeding one hundred dollars.

MANAGEMENT OF STOCK-YARDS.

The time that hogs are held by the owner or consignee in the stock-yards, before sold to the packers, is usually very short. Frequently they are sold on the day of their arrival, but are often held for better prices. The cost of keeping animals at the yards is so high that they cannot be profitably kept for any length of time. No animals can enter or leave the yards without a "gate order" from the company, as previously stated.

In order to ascertain the system of receipt and care of hogs in the stock yards, the municipal regulations and modes of inspection, and also the methods adopted by the Illinois Humane Society in enforcing the laws regarding cruelty to animals, the following questions were addressed to George Titus Williams, esq., the general superintendent of the Union Stock Yards; to John G. Shortall, esq., president of the Illinois Humane Society, and William Mitchell, agent of the same society, and to Oscar De Wolf, M. D., commissioner of health of the city of Chicago, and Matthew Lamb, the meat inspector of the health department, stationed at the stock-yards:

QUESTIONS.

1. Is any examination made before unloading from cars to detect diseased or injured hogs?
2. If so, what regulations govern such examination?
3. When does "delivery" by railroad company take place?
4. Are any special instructions given in regard to care in unloading?
5. What is done with hogs found to be sick, diseased, bruised, or crippled?
6. What is done with hogs found smothered?
7. What is done with hogs dead from disease?
8. Are they sold?
9. To whom?
10. For what purpose?
11. Where are they sent?
12. How are they transported?
13. What is done with healthy hogs on their arrival?
14. When are they fed?
15. What kind of food is given them?
16. What quantity?
17. How is it furnished to them?
18. Are they watered?
19. When?
20. How is the water furnished to them?
21. What quantity?
22. In the absence of orders by owners or consignees of hogs, have you any regulations authorizing the feeding and watering of hogs?
23. How are the hogs cared for in bad weather?
24. How many hogs die in the yards?
25. From what cause?
26. What is done with them?
27. What is done with diseased hogs if discovered in the pens?
28. How are these hogs disposed of?
29. How arranged to receive hogs from cars?
30. What is the size of the pens?

31. How are they protected?
32. Are they drained?
33. How can they be cleaned?
34. What are the regulations in regard to keeping the pens clean?
35. What measures are adopted to disinfect pens where diseased hogs have been?
36. Is there any inspection made of the sanitary condition of the yards or the condition and care of the hogs?
37. If so, under what authority?
38. Is such inspection sufficiently effective to secure the sanitary condition of the premises and prevent any hogs, diseased or in improper condition, going into food?
39. What is the amount of business done annually?
40. What are your total receipts?
41. What is the average weight of hogs for the year?
42. What is total value of hogs received?
43. Please state what system of supervision is adopted to prevent any diseased hogs going into food, and under what authority such supervision is exercised, whether municipal, State, or the National or local Humane Society.

Replies of G. Titus Williams, superintendent of the Union stock-yards.

Question 1. In answer to your first question I have to say there is no examination made in cars. But city and State health officers are here to examine stock after taken from cars.

Question 2. No regulations for examination in cars.

Question 3. When stock is taken from cars.

Question 4. Yes. Employés are directed to handle all stock with care, and State and city humane officers are constantly in the yards to see that all stock is properly treated.

Question 5. State and city health officers condemn all diseased animals and kill them, and they are turned over to the Rendering Company and sent to Globe, 24 miles from here, where they are rendered into grease.

Question 6. Hogs found smothered are all sent to Globe for the purposes aforesaid.

Question 7. Hogs dying from disease are treated the same way as 6.

Question 8. Yes.

Question 9. To Union Rendering Company at Globe.

Question 10. To be rendered into soap-grease and oil-grease.

Question 11. To Globe.

Question 12. In box cars.

Question 13. Yarded in covered and floored pens.

Question 14. As soon as yarded.

Question 15. Corn.

Question 16. About two bushels to a car-load.

Question 17. Union Stock-Yard Company delivers it in pens from wagons.

Question 18. Yes.

Question 19. Soon after arrival.

Question 20. There is a hydrant and trough in each pen, with plentiful supply of pure water.

Question 21. Unlimited quantity.

Question 22. Yes, all stock is fed and watered by the company when no one in charge, or when neglected by owner or consignee.

Question 23. Hogs are kept in covered pens with plank flooring in good and bad weather alike.

Question 24. Not to exceed one in ten thousand.

Question 25. Mostly from being overheated, and other accidents.

Question 26. All sent to Globe, where all dead animals are sent by authority of the Board of Health.

Question 27. When diseased animals are discovered in the pens, the health officers condemn and kill them as above described. A diseased hog is rarely seen in the pens. I have not known of a single diseased hog being in these yards in two years.

Question 28. If any, would be disposed of as above stated in 27, and sent to Globe.

Question 29. Cars are set to a platform even with the car, and a bridge fitted in the doorway, and hogs and other animals driven over platform down an inclined plane into the yards.

Question 30. Pens vary in size; to accommodate from one to five car-loads of hogs, allowing 500 square feet to each car-load.

Question 31. By plank floor and roof.

Question 32. Yes.

Question 33. They are cleaned by men with carts and teams.

Question 34. A sufficient force of men are kept constantly at work cleaning the pens.

Question 35. If diseased hogs should be discovered in any pen it would be thoroughly cleaned before other hogs would be allowed to be put in.

Question 36. A State agent is stationed at the yards, appointed by the governor for that purpose; also city officers.

Question 37. By authority of State; and city of Chicago.

Question 38. Yes.

Question 39. Annual report shows for 1883, \$201,252,772.

Question 40. For 1883, 1,878,944 cattle, 30,223 calves, 5,640,625 hogs, 749,917 sheep, 15,255 horses.

Question 41. For 1883, 247 pounds.

Question 42. For 1883, \$84,609,375.

Question 43. Police officers are stationed at all the gates of the yards during business hours, at all times while the gates are open, and prevent any person taking dead animals from the yards, and compel all such animals to be taken to the said Rendering Company's platform, when they are taken by cars to Globe. No dead animal is allowed to be taken to any other place. The police officers are appointed by the Union Stock-Yard and Transit Company, and act in conjunction with the State agent, who is appointed by the governor of the State, and with the health officers who are appointed by the city of Chicago and the officers appointed by the Illinois Humane Society.

G. TITUS WILLIAMS,

Superintendent of Union Stock-Yards and Transit Company.

Reply of John G. Shortall, President of the Illinois Humane Society.

CHICAGO, January 25, 1884.

DEAR SIR: Herewith please find the answer of this society's officer, Mitchell, in reply to your inquiries.

I have traversed the subject with him, and have the fullest confidence in his reliability and judgment.

Very truly, yours,

JOHN G. SHORTALL,

President Illinois Humane Society.

E. W. BLATCHFORD, Esq.,

Of the American Pork Commission,

Of Department of Agriculture of the United States.

Geo. B. Loring, esq., Chairman.

Replies of William Mitchell, agent of the Illinois Humane Society.

1 and 2. There is no examination made of any hogs that are shipped into the Union Stock-Yards before they are unloaded from the cars.

3. The different railway companies consider their delivery perfect as soon as their cars stop at the platform in the yards.

4. There are special instructions given to the men who unload the cars by John B. Sherman, the vice-president and general manager of the yards. They must not use any clubs or poles with spikes in them upon the cattle, and any person that I find using them I immediately place under arrest and bring them before the police justice, and charge them with the violation of our State laws covering cruelty to animals, a copy of which will be found below, and which I am specially detailed at the yards to enforce by the Illinois Humane Society.

Extracts from laws of the State of Illinois concerning cruelty to animals. Criminal code, chapter 38, section 50.

Whoever shall be guilty of cruelty to any animal in any of the ways mentioned in this section, shall be fined not less than \$3, nor more than \$200, viz:

First. By overloading, overdriving, overworking, cruelly beating, torturing, tormenting, mutilating, or cruelly killing any animal, or causing or knowingly allowing the same to be done.

Second. By cruelly working any old, maimed, infirm, sick, or disabled animal, or causing or knowingly allowing the same to be done.

Third. By unnecessarily failing to provide any animal in his charge or custody, as owner or otherwise, with proper food, drink, and shelter.

Fourth. By abandoning any old, maimed, infirm, sick, or disabled animal.

Fifth. By carrying or driving, or causing to be carried or driven or kept, any ani-

mal in an unnecessarily cruel manner. [L. 1869, p. 115, §§ 1, 2, 3, 4; p. 116, § 11. See "Animals," ch. 8, §§ 33-36.]

SEC. 51. By railroads and carriers. No railroad company or other common carrier in the carrying or transportation of any cattle, sheep, swine, or other animals shall allow the same to be confined in any car more than twenty-eight consecutive hours (including the time they shall have been upon an another road), without unloading or rest, water and feeding for at least five consecutive hours, unless delayed by storm or accident, when they shall be so fed and watered as soon after the expiration of such time as may reasonably be done. When so unloaded they shall be properly fed, watered, and sheltered during such rest by the owner, consignee, or person in custody thereof, and, in case of their default, then by the railroad company transporting them, at the expense of said owner, consignee, or person in custody of the same, and such person shall have a lien upon the animals until the same is paid.

A violation of this section shall subject the offender to a fine of not less than \$3 nor more than \$200. [L. 1869, p. 115, §§ 5, 6; p. 116, § 7.]

5. All hogs that arrive at the yards that are not dead are carted off to the different slaughter-houses, inside and outside of the yards, and killed. The duty of the city health officer is to examine the meat, and, if found unsound, to condemn the same. Condemned meat is rendered at establishments for that purpose.

6. They are sent to the Union Rendering Company's establishment.

7. Sent to the same place.

8. Yes.

9. Union Rendering Establishment.

10. To be made into grease, fertilizers, &c.

11. Union Rendering Establishment, situated at Globe Station, Ill., 24 miles from the yards.

12. By rail, in box-cars for the purpose.

13. They are immediately placed in covered pens, with plank floors.

14. As soon as practicable after arrival.

15. Good corn.

16. Two bushels to car-load, a car-load being from 45 to 70 hogs.

17. Hauled in a cart to the pens, and left on the floor for them.

18. Each pen in the yards is supplied with a water-trough. There are pipes leading from the water works, supplied from two artesian wells (which are situated in the yards) to each trough, so that the water can be turned on or off at each pen without interfering with any other, and each trough is supplied with a hole in the bottom of it, and a plug, so that the dirty water can be allowed to run off and the trough filled with clean water. This water is pure and good.

19. When they come in, and afterwards when needed.

20. By pipes from the water works into their trough.

21. All they can use.

22. There are two officers—one the agent of the Illinois Humane Society, and one agent appointed by the governor of the State—constantly in the yards, looking after the feeding and watering of stock. Any stock that comes in without some person in charge, these officers order feed for, and in case of the absence of the officers the Stock Yard Company will feed them.

23. They are put into good, covered pens with plank floors.

24. A small percentage; cannot answer exactly.

25. From injuries received in transportation, and from different diseases not known to me.

26. Sent to the Union Rendering Establishment.

27. If I find hogs diseased in the pens I report the fact to the city health officer, stationed at the yards. My duties end there.

28. If the health officer condemns them, he sees that they are put into a tank and rendered into grease.

29. The landing platforms around the yards are built the same distance from the ground as the car doors, so that the hogs can walk from the cars to the platform, a little bridge being placed from each car door to the platform, so that the hogs' legs cannot get in between the car and the platform. They are then driven into the pens.

30. There are two sizes of pens—1,500 surface feet, and 500.

31. Fenced all around, roofed, and boarded floor.

32. Yes.

33. Scraped and cleaned by men.

34. They are always kept reasonably clean, and there are thirty carts used daily for hauling the dirt from the pens. Each cart hauls two yards of dirt at a load, and each cart hauls twelve loads per day.

35. Washed out with water from the trough supply-pipe.

36. There are three health officers in the yards who attend to the sanitary condition.

37. The board of health of Chicago.

38. There are three officers of the board of health detailed to look after diseased animals here, but I do not think the force large enough to detect *all* diseased hogs that arrive at the yards. It is true, further, that a large number of sows with young, "piggy sows," as they are called, are sold here for food. It is my opinion that, where animals are in that condition, some time should be determined upon after which their being used for food should be prohibited.

39.

40.

41.

42.

For answers to these questions see the annual report of the Union Stock Yards Company, which I send herewith.

No hogs of any description are allowed to be driven into or out of the yards without an order, so it is impossible for any hogs, whether sick or sound, to get into or out of the yards without being seen by some connected with the yards, for they are all counted; orders have to be given (of which I inclose forms) to the officer stationed at the gates before they are allowed to pass in or out of the yards. If hogs come in diseased, if alive they are sold by the owners or consignees to whoever will buy them; if they die in the yards they go to the rendering establishment. No dead animals are allowed to be taken out of the yards for food.

WILLIAM MITCHELL,

*Agent Illinois Humane Society, stationed at Union Stock Yards
to Enforce the Laws Regarding Cruelty to Animals.*

Replies of Oscar DeWolf, M. D., commissioner of health of the city of Chicago, and Matthew Lamb, meat inspector.

CHICAGO, February 4, 1884.

Mr. E. W. BLATCHFORD,
of American Pork Commission:

DEAR SIR: Your circular letter of the 21st ult. only came to my hand yesterday, on my return from the East.

In reply, I have the honor to inform you that I was appointed Commissioner of Health in February, 1877, and have been in sole charge of the department since that date; that it is made by law my duty to supervise the meat supply of the city, and that I might properly perform this duty, it became necessary to extend the supervision to an examination of live stock arriving at the stock-yards. For this purpose, there are three officers of this department on duty at the yards—all of them experienced judges of stock—who are directed to vigorously cull out and condemn all stock which, from any cause, is unfit for food.

The stock yard authorities and large packers doing business at the yards have always honorably and actively co-operated with this department in this work. They have placed pens and yards at our disposal, over which the health officers have absolute control, and into which the authorities place all animals condemned by the officers, such animals being slaughtered by the officer and turned over to the Union Rendering Company, as explained by officer Lamb. Whenever the force of officers on duty at the yards has been inadequate for the work, I am permitted to employ more men of my own selection, for which service the packers and stock-yard authorities cheerfully pay.

The statute under which we are authorized to act in this direction is section 7, chapter 38, "Revised Statutes of Illinois," 1874, as follows:

"Whoever * * * shall sell or offer to sell or keep for sale any flesh of any diseased animal, or other * * * unwholesome provision shall be confined in the county jail not exceeding one year, or be fined not exceeding \$1,000, or both, in the discretion of the court;" and also section 1399 of the Revised Code of the city of Chicago, as follows:

1389. That no cattle shall be killed for human food while in an overheated, feverish or diseased condition; and all such diseased cattle in the city of Chicago, and the place where found and their disease, shall be at once reported to the commissioner of health by the owner or custodian thereof, that the proper order may be made relative thereto.

Respectfully yours,

OSCAR C. DEWOLF, M. D.,
Commissioner of Health.

By ordinance the word "cattle" includes all animals used for food.

OSCAR C. DEWOLF,
Commissioner of Health.

Replies of Matthew Lamb, meat inspector, Chicago.

1. Is any examination made before unloading from cars to detect diseased or injured hogs?

No.

2. If so, what regulations govern such examination?

None.

3. When does "delivery" by R. R. Co. take place?

Immediately after arrival at stock-yards.

4. Are any special instructions given in regard to care in unloading?

There are strict orders from the superintendent of the stock-yards co. as to care; also, not to use any poles with spears. Should any employé disobey those orders he is forthwith discharged.

5. What is done with hogs found to be sick, diseased, bruised, or crippled.

Those that are unfit for human food are condemned by health officer and consigned to rendering tanks.

6. What is done with hogs found smothered?

They are used for grease.

7. What is done with hogs dead from disease?

They are also used for grease.

8. Are they sold?

Yes.

9. To whom?

The Union Rendering Company.

10. For what purpose?

For rendering purposes.

11. Where are they sent?

They are sent to the Union Rendering Company's establishment at Globe Station, Ill., 24 miles from Chicago.

12. How are they transported?

By railroad, in tight boxed cars.

13. What is done with healthy hogs on their arrival?

They are put in covered pens; said pens have a floor composed of plank.

14. When are they fed?

Generally on arrival.

15. What kind of food is given them?

Corn of the best quality, which is inspected by a corn inspector.

16. What quantity?

As much as they can consume. It is a gain to feed them, as all hogs are sold by weight.

17. How is it furnished to them?

It is fed to them in the pens.

18. Are they watered?

They are; also the water is good, healthy, and a large amount of it, as the yards have a big supply from five artesian wells.

19. When?

The water is turned on when the hogs enter the pen.

20. How is the water furnished to them?

There is a stand pipe in the pen; also a tight trough with a plug inserted in said trough, so when the hogs are after drinking, the plug is withdrawn and fresh water again supplied, if needed.

21. What quantity?

22. In the absence of orders by owners or consignees of hogs, have you any regulations authorizing the feeding and watering of hogs?

Yes; there are two humane officers at the yards who attend to such things; one is a State officer; the other is an officer of the Chicago Humane Society; also the Stock Yards' Company attend to such matters.

23. How are the hogs cared for in bad weather?

They are well cared for.

24. How many hogs die in the yards?

A very small percentage.

25. From what cause.

From overloading in some cases, and a few from disease, also some piggy sows, which in my opinion should not be shipped to market.

26. What is done with them?

They go to the Union Rendering Company's tanks, for grease purposes.

27. What is done with the diseased hogs, if discovered in the pens?

When killed, they are inspected by me, the health officer, and if unfit for human food they are condemned and put into rendering tanks for grease and fertilizing purposes.

28. How are these hogs disposed of?
Condemned and put in tanks for grease and fertilizing purposes.
29. How arranged to receive hogs from cars?
The arrangements are perfect in all divisions.
30. What is the size of the pens?
The pens vary in size from 500 square feet to 2,000 square feet; the first size will contain one car-load, and the latter size four car-loads.
31. How are they protected?
They are roofed over and well protected.
32. Are they drained?
They are well and thoroughly drained.
33. How can they be cleaned?
By a two-horse cart being driven into them and the refuse matter loaded into said cart and it taken therefrom.
34. What are the regulations in regard to keeping the pens clean?
To be cleaned when needed.
35. What measures are adopted to disinfect pens where diseased hogs have been?
Thoroughly washed out with water.
36. Is there any inspection made of the sanitary condition of the yards, or the condition and care of the hogs?
There are three sanitary policemen assigned to do duty at said yards.
37. If so, under what authority?
Those officers belong to the Chicago health department.
38. Is such inspection sufficient and effective to secure the sanitary condition of the premises, and prevent any hogs, diseased or in improper condition, going into food?
It is.
39. Please state what system of supervision is adopted to prevent any diseased hogs going into food; and under what authority such supervision is exercised, whether municipal, State or the national or local humane society?
I am stationed at the Union Stock-Yards from 7 a. m. until 6 p. m. each day, to see that no diseased, crippled, emaciated, or bruised animal is used for human food; to condemn and confiscate forthwith, such animal or animals, and have them consigned to the rendering tanks. I am under the supervision of Oscar C. DeWolf, M. D., commissioner of health of Chicago, Ill.

MATTHEW LAMB,
Meat Inspector at Union Stock-Yards, Chicago, Ill.

JANUARY, 21, 1884.

(See blank form of order of health officer herewith.)

HEALTH DEPARTMENT, CITY HALL,
Chicago, January 21, 1881.

Matthew Lamb, sanitary inspector, is authorized to condemn and remove —, at —, No. — street, as being detrimental to health, and unfit for human food.

PENALTY FOR THE SELLING OF UNSOUND MEATS, ETC.

For the further maintenance of the public health, it is ordered that, if any person shall, on and after June 10, 1868, sell, or expose for sale, in any market-house or elsewhere in said city, any emaciated, tainted, or putrid meat or provisions, which for these or other causes may be deemed unwholesome, such person shall, on conviction, be fined not less than five nor more than five hundred dollars for each and every offense; and it shall be the duty of the sanitary superintendent or health officer to forthwith seize and confiscate all such meat or provisions.

By order of the commissioner of health.

OSCAR C. DEWOLF,
Health Officer.

THE HOG IN THE HANDS OF THE PACKERS; THE MODE OF PURCHASE, SLAUGHTERING, AND CURING.

The following questions were addressed to all the principal packers of the country, either personally or by mail, and the replies were made accordingly.

QUESTIONS SUBMITTED TO PACKERS.

1. Where and how are the hogs purchased?
2. How do you buy your hogs?
3. In selecting hogs, do you reject the following, viz:
4. Diseased?

5. Bruised or abused hogs?
6. Ruptured?
7. Still-fed?
8. Piggy sows?
9. Stags?
10. Crippled hogs?
11. Are hogs usually rejected for these reasons?
12. Is it customary to buy hogs from the general appearance, weight, and evenness of a lot?
13. What is done with rejected hogs?
14. How long are the hogs kept in your pens before slaughtering?
15. Why are they kept this length of time?
16. How do you care for them in your pens?
17. How are these pens constructed?
18. Do any die in the pens?
19. If so, how many and from what cause?
20. What is done with the dead hogs?
21. How are the hogs prepared for slaughtering?
22. How are hogs taken from the pens to the slaughtering room?
23. If hogs are unable to be driven to the slaughtering room, what is done with them?
24. What mode of slaughter do you adopt?
25. What time is allowed the hog to bleed?
26. Is an examination made whether life is extinct before scalding?

TREATMENT OF CARCASS OF HOG AFTER SLAUGHTER.

27. What is the next process with the carcass?
28. What time is allowed the carcass to cool before cutting up?
29. Is the carcass thoroughly cooled before going to the cutting-bench?
30. Is this rule strictly carried out?
31. Why is the thorough cooling of the carcass important before cutting up and commencing to cure?
32. Is there any inspection made to ascertain that it is thoroughly cooled?
33. What is the rule for cutting?
34. Is inspection of meat had at time of cutting up, and for what?
35. Is such inspection sufficiently thorough to detect disease or bruises?
36. After cutting up the carcass, how are the parts treated to effect a cure?
37. How are they piled to secure thorough curing?
38. What is the temperature of the room?
39. What time is required for curing?
40. Is meat ever shipped before being cured?
41. Is it desirable to effect a cure in as short time as possible?
42. Is not the curing of the meat often forced for purpose of making it salable and deliverable in as short time as possible?
43. Do you ascertain by inspection the soundness of your cured meat?
44. To what causes do you attribute unsound or "sour" meat?
45. Do you attribute it to diseased carcass?
46. Do you attribute it to a faulty treatment?
47. What quality of "sour" meat do you have?
48. What is done with it?
49. What, if any changes in modes of curing are adopted for meats destined to markets in different climates?
50. Can as reliable results of curing be had in summer as in winter?
51. What kind or kinds of salt are used?
52. Why do you give this kind or kinds preference?
53. How is meat packed for shipment?
54. What is the quality of the packages used?
55. What is the size of packages?
56. What weight of meat is put in each box?
57. Is any salt put in?
58. How much to each box of meat?
59. What is the rule?
60. Is this rule strictly adhered to?
61. Is not less salt used than the rule calls for to save expense?
62. What is the character of the salt used?
63. Is any care taken that the salt be clean?
64. What is your rule for cutting mess pork?
65. How many pieces in each barrel?

66. What is the weight of meat in each barrel?
67. What kind of salt is used?
68. What quantity of salt is used?
69. How is the quality tested?
70. Where is mess pork stored?
71. What are the regulations regarding its storage?
72. What is the temperature of the warehouse?
73. What examinations are made as to its conditions from time to time?
74. What number of hogs do you kill annually?
75. What is their average weight?
76. What parts of the hog do you use for lard?
77. What do you include as offal?
78. What is done with the head?
79. What is done with the feet?
80. What is done with the entrails?
81. What is done with the heart?
82. What is done with the liver and lights?
83. What is done with the blood?
84. What is done with the refuse from tanks?
85. Is all meat inspected before being shipped?
86. By whom?
87. Under what authority?
88. Is meat ever packed and shipped without being inspected?
89. Under what circumstances?
90. Do you ever guarantee inspection?
91. If so, under what circumstances and to what extent?
92. What course does the inspector take in examining meat?
93. Does he examine each piece?
94. What tests are made?
95. For fully or properly cured?
96. For stags?
97. For piggy sows?
98. For "sour" meat?
99. For bruised meat?
100. For what causes is meat rejected?
101. What is done with meat rejected by the inspectors?

PURCHASE OF HOGS.

Those packing companies which do business in the large cities purchase their hogs in the stock-yards from the shippers, owners, or consignees. Packers in the smaller cities of the country buy directly from the farmers. In all cases the buying is done by experts, who are selected because of their ability to judge of the condition and health of the hogs. Barrows and spayed sows are preferred; "stags" and "piggy" sows are rejected by some, by others they are bought at a reduction of 60 to 80 pounds on the former and 40 pounds on the latter, and cured for domestic markets. Diseased, bruised, crippled, and ruptured hogs, with very few exceptions, are rejected. Still-fed hogs (distillery swill) are also generally rejected, the meat being too soft and oily.

DISPOSITION OF REJECTED HOGS.

The rejected hogs are generally tanked for grease, but "stags" and "piggy" sows often go into consumption as second quality pork. Bruised and crippled hogs which do not seem feverish are also at times cured after slaughter, provided the meat passes inspection as fit for food, but the injured parts are always rejected. As a rule the larger establishments refuse crippled and bruised hogs, and these find their way, when not tanked, into the hands of the city butchers, and unless condemned by the health officers are sold for local consumption.

HOGS IN THE PACKERS' PENS.

All the packers hold the hogs alive for from 12 to 48 hours before killing, in order that the excitement of the journey may be allayed, and that they may have time to rest and cool. If killed sooner than this the animals are more or less feverish and overheated, and the meat cannot be cured without danger of a large proportion becoming "sour," particularly about the joints of the hams and shoulders. During this time the animals are kept in covered and floored pens, with good water constantly before them, as this greatly assists the "cooling," and they are fed with corn until within 24 hours of the time of slaughter. Very few hogs die in the packers' pens, and these mostly from crowding and smothering each other, but the proportion is extremely small, varying from 1 in 5,000 to 1 in 1,000 handled. Such dead hogs go to the tanks for grease.

SLAUGHTERING.

The animals to be slaughtered are driven from the pens up an inclined way to one of the upper floors of the packing house. Those fit to be killed, and too fat or from other cause unable to walk, are hoisted up to the slaughter pen. In most of the larger houses the animals are then lifted by the hind legs, and killed by sticking with the head hanging down. A considerable number of companies, however, knock the hog on the head before sticking or hoisting, as they think better meat is made from hogs killed in this way, the struggles of the animal after being stuck by the other method being supposed at times to cause injuries to the joints. In any case they are allowed to hang and bleed from three to ten minutes, or until dead, when they are dropped into the scalding vat, then scraped, and the entrails removed, when, after washing, they go to the cooling room.

COOLING AND CUTTING.

The carcasses are allowed to hang in the cooling-room from 24 to 48 hours before cutting, and hams and shoulders are frequently cooled 12 to 24 hours longer before salting. The necessity of thorough cooling is well understood by all packers, and they are extremely particular in regard to this part of the process. Some test the meat with a thermometer, others rely upon hourly tests of the temperature of the room, but all agree that the cooling must be thorough, or the meat cannot be cured without "souring"; a careful inspection is generally made before cutting to determine if this has been carried to the proper point. The cutting and trimming differs somewhat, according to the directions of the boards of trade in their respective cities, and the market for which the meat is intended.

The rules established by the Board of Trade of the city of Chicago, State of Illinois, September 1, 1883, are here inserted:

REQUIREMENTS AS TO CUT AND PACKING OF HOG PRODUCTS.

BARRELED PORK.

MESS PORK.

Standard mess pork should be made from sides of well-fatted hogs, split through or on one side of the back-bone, and equal proportions on both sides, cut into strips of reasonably uniform width, properly flanked and not backstrapped.

One hundred and ninety (190) pounds of green meat, and between March 1 and No-

vember 1 two hundred (200) pounds, numbering not over sixteen (16) pieces, including the regular proportion of flank and shoulder cuts, placed four layers on edge, without excessive crowding or bruising, shall be packed in each barrel, with not less than thirty (30) pounds of coarse salt, and barrel filled with brine of full strength, or thirty (30) pounds of coarse salt, and in addition thereto fifteen (15) pounds of salt, and barrel filled with cold water.

PRIME MESS PORK.

Prime mess pork should be made from the shoulders and sides of hogs weighing from one hundred (100) to one hundred and seventy-five (175) pounds net, to be cut as near as practicable into square pieces of four (4) pounds each, the shank of the shoulder to be cut off close to the breast.

One hundred and ninety (190) pounds of green meat in the proportion of twenty (20) pieces of shoulder cuts to thirty (30) pieces of side cuts shall be properly packed in each barrel, with not less than twenty (20) pounds of coarse salt, and barrel filled with brine of full strength; or, twenty (20) pounds of coarse salt, and in addition thereto, fifteen (15) pounds of salt, and barrel filled with water. There shall also be put into each barrel twelve (12) ounces of saltpeter.

EXTRA PRIME PORK.

Extra prime pork should be made from heavy, untrimmed shoulders, cut into three (3) pieces; the leg to be cut off close to the breast, and in all other respects to be cut, selected, and packed as mess pork.

LIGHT MESS PORK.

Light mess pork should be made from sides of reasonably well-fatted hogs; and in all other respects to be cut, selected and packed same as mess pork, except that as many as twenty-two (22) pieces may be put into each barrel.

BACK PORK.

Back pork should be made from backs of hogs after bellies have been taken off, cut into pieces of about six (6) pounds each, and in all other respects to be cut, selected, and packed in the same manner as mess pork.

EXTRA SHOULDER PORK.

Extra shoulder pork should be made from heavy trimmed shoulders, cut into three (3) pieces; the leg to be cut off close to the breast, and in all other respects to be cut, selected, and packed in the same manner as mess pork.

EXTRA CLEAR PORK.

Extra clear pork should be made from the sides of extra heavy, well-fatted hogs, the back-bone and ribs to be taken out, the number of pieces in each barrel not to exceed fourteen (14), and in all other respects to be cut, selected, and packed in the same manner as mess pork.

CLEAR PORK.

Clear pork should be made from the sides of extra heavy, well-fatted hogs, the back-bone and half the rib next the back-bone to be taken out, the number of pieces in each barrel not to exceed fourteen (14), and in all other respects to be cut, selected, and packed in the same manner as mess pork.

CLEAR BACK PORK.

Clear back pork should be made from the backs of heavy, well-fatted hogs, after bellies have been taken off and back-bone and ribs taken out, cut into pieces of about six (6) pounds each, and in all other respects to be packed in the same manner as mess pork.

RUMPS.

Rumps should be trimmed with only enough taken off to make them neat and smooth; the tails to be cut off close, and in all other respects to be cut, selected, and packed in the same manner as mess pork.

PICKLED MEATS.

STANDARD SWEET-PICKLED HAMS.

Standard sweet-pickled hams should be cut short and well rounded at the butt, properly faced, shank cut in or above the hock joint; to be reasonably uniform in size, and to average, in lots, not to exceed sixteen (16) pounds. Three hundred (300) pounds, block weight, shall be packed in each tierce, with either twenty-four (24) pounds of salt, three (3) quarts of good sirup, twelve (12) ounces of saltpeter, and tierces filled with water; or tierce filled with sweet pickle, made according to above standard.

STANDARD SWEET-PICKLED SHOULDERS.

Standard sweet-pickled shoulders should be well cut and trimmed, reasonably uniform in size, and to average in lots not to exceed sixteen (16) pounds. Three hundred (300) pounds, block weight, shall be packed in each tierce. Pickle the same as used for hams.

NEW YORK SHOULDERS.

New York shoulders should be made from small, smooth hogs, shank cut off 1 inch above knee joint, trimmed close and smooth, reasonably uniform in size, and to average, in lots, not to exceed fourteen (14) pounds. Three hundred (300) pounds, block weight, shall be packed in each tierce. Pickle the same as used for hams.

SWEET-PICKLED BELLIES.

Sweet-pickled bellies should be made from nice smooth hogs, well cut and trimmed, to average, in lots, not to exceed fourteen (14) pounds. Three hundred (300) pounds, block weight, shall be packed in each tierce. Pickle the same as used for hams.

BRANDING.

The packer's name, location, number of pieces, and date of packing shall be branded on the head of each package of pickled meats at the time of packing.

UNIFORMITY OF PICKLED MEATS.

All pickled meats should be sized when packed, the light, medium, and heavy separately, as nearly as practicable.

CUT MEATS.

HAMS.

Hams should be cut short, well rounded at the butt, properly faced, cut in or above the hock-joint.

SHOULDERS.

Shoulders should be cut as close as possible to the back part of the forearm-joint, butted off square on top; neck-bone and spare-ribs taken out, blood-vein lifted and cut out, breast-flap to be trimmed off, and foot to be cut off in or above the knee-joint.

BLADED SHOULDERS.

Bladed shoulders should be cut the same as standard shoulders, excepting the shoulder-blade to be taken out and the corners rounded.

ROUGH SIDES.

Rough sides should be made by slitting the hog through or on one side of the back-bone, and an equal proportion of both sides must be delivered on sales to make them standard.

SHORT CLEAR SIDES.

To make short clear sides, the back-bone and ribs should be taken out, hench-bone or breast-bone sawed or cut down smooth and even with the face of the side; feather of blade-bone not to be taken out, and sides not to be backstrapped or flanked.

SHORT-RIB SIDES.

To make short-rib sides, the back-bone should be taken out, hench-bone and breast-bone sawed or cut down smooth and even with the face of the side; feather of blade-bone not to be taken out, and sides not to be backstrapped or flanked.

LONG CLEAR SIDES.

To make long clear sides, the back-bone, shoulder-bones, and ribs must be taken out, leg cut off close to the brisket, hench-bone and breast-bone sawed or cut down smooth and even with the face of the side, and sides not to be backstrapped or flanked.

CUMBERLAND SIDES.

To make Cumberland sides, the side and shoulder should be left together in one piece, leg cut off below the knee-joint; shoulder-ribs, neck-bone, and back-bone taken out; blood-vein lifted and cut out; hench-bone and breast-bone sawed or cut down smooth and even with the face of the side, and sides not to be backstrapped or flanked.

LONG-RIB SIDES.

Long-rib sides should be made same as Cumberlands, except that the shoulder-bones must be taken out and leg cut off close to the brisket.

STRETTFORD SIDES.

Strettford sides should be made from hogs weighing about 140 to 160 pounds net; back-bone and half of the ribs taken out, blade-bone taken out, knuckle left in, and leg cut off close to the breast.

BIRMINGHAM SIDES.

Birmingham sides should be made from hogs weighing about 170 pounds net; back-bone, ribs, and blade-bone taken out, pocket-piece cut out and pocket nicely rounded, knuckle-bone left in, and leg cut off close to the breast.

SOUTH STAFFORDSHIRE SIDES.

South Staffordshire sides should be made the same as Birmingham, except loin taken out full to top of shoulder-blade, leaving only a thin strip of lean along the back; knuckle left in, and leg cut off close to the breast.

YORKSHIRE SIDES.

Yorkshire sides should be made the same as Cumberlands, with ribs out and leg cut off about two inches above the knee.

IRISH CUT SIDES.

Irish cut sides should be made the same as long clear, except top of the pocket cut off, knuckle-bone left in.

LONG HAMS.

Long hams should be cut from the side by separating with a knife the hip-bone from the rump, properly rounded out, foot unjointed at first joint below the hock-joint.

SOUTH STAFFORDSHIRE HAMS.

South Staffordshire hams should be cut short, hip-bone taken out at socket-joint, hock unjointed at first joint below the hock-joint.

UNIFORMITY OF BOXED MEATS.

In packing meats in boxes the pieces should be classified, the light, medium and heavy separately, as nearly as practicable, in packages made to suit the different sizes.

LARD.

CHOICE LARD.

Choice lard to be made from leaf and trimmings only, either steam or kettle rendered, the manner of rendering to be branded on each tierce.

PRIME STEAM LARD.

Prime steam lard shall be standard when made from the head, gut, leaf, and trimmings, in the proportion in which the same came from the hog, but shall not include any material which has been salted.

The rules established by the Chamber of Commerce of Cincinnati, Ohio, are here inserted.

RULES FOR THE CUT AND MANUFACTURE OF THE HOG PRODUCT.

BARRELED PORK.

MESS PORK.

Mess pork shall be cut and packed from sides of well-fatted hogs, in strips; the hog to be first split through the backbone, or, if split on one side, then an equal proportion of hard and soft sides, as they are termed, must be packed, properly flanked, and not backstrapped. One hundred and ninety pounds of green meat, numbering not over sixteen pieces, including the regular proportion of flank and shoulder cuts, four layers placed on edge, without excessive crowding or bruising, must be packed into each barrel, with not less than thirty-five pounds of good foreign, or forty pounds of good domestic, coarse salt, and filled up with good, clear brine, as strong as salt will make it. The pork to be cut reasonably uniform in width. The packer's name and location, the date of packing, and the number of pieces and pounds of green meat in each barrel must be branded on the head with a metallic brand, marking-iron, or stencil brand, at the time of packing.

PRIME MESS PORK.

Prime mess pork shall be made of the shoulders and sides of nice, smooth, fat hogs, weighing from 100 to 160 pounds, net, regularly cut into square pieces, as near four pounds each as possible, the shank to be cut off close to the breast; each barrel to contain one hundred and ninety pounds of green meat, in the proportion of twenty pieces of shoulder and thirty pieces of side cuts, and to be packed with twenty pounds of good, coarse salt, with the addition of eight ounces of saltpeter. The prime pieces should be cut clear of the blade-bone; the shoulder-pieces not to exceed eighty-five pounds in each barrel.

EXTRA PRIME PORK.

Extra prime pork shall be made from heavy, untrimmed shoulders, cut into three pieces, the leg to be cut off close to the breast, to be packed one hundred and ninety pounds of green meat into each barrel, with the same quantity and quality of salt as mess pork.

LIGHT MESS PORK.

Light mess pork shall be made from the sides of reasonably well-fatted hogs, and in all other respects to be cut, selected, and packed the same as mess pork, except that as many as twenty-two pieces may be put into each barrel.

FAMILY MESS PORK.

Family mess pork shall be made from backs of hogs, after bellies have been taken off, cut into pieces about six pounds each, and in all other respects to be selected and packed in the same manner as mess pork.

EXTRA SHOULDER PORK.

Extra shoulder pork shall be made from heavy, trimmed shoulders, cut into three pieces, the leg to be cut off close to the breast, and in all other respects selected and packed in the same manner as extra prime pork.

EXTRA CLEAR PORK.

Extra clear pork shall be made from the sides of extra heavy, well-fatted hogs, the back-bone and ribs to be taken out, the number of pieces in each barrel not to exceed fourteen, and in all other respects to be cut, selected, and packed in the same manner as mess pork.

CLEAR PORK.

Clear pork shall be made from the sides of extra heavy, well-fatted hogs, the back-bone and half the rib next to the back-bone to be taken out, the number of pieces in each barrel not to exceed fourteen, and in all other respects to be cut, selected, and packed in the same manner as mess pork.

CLEAR FAMILY MESS PORK.

Clear family mess pork shall be made from the backs of heavy, well-fatted hogs, after bellies have been taken off and back-bone and ribs taken out, cut into pieces of about six pounds each, and in all other respects to be packed in the same manner as mess pork.

RUMPS.

Rumps shall be trimmed with only enough taken off to make them neat and smooth, the tails cut off close, each barrel to contain one hundred and ninety pounds of green meat, packed in the same quantity and quality of salt as mess pork, and the number of pieces to be similarly branded on each barrel at the time of packing.

PICKLED MEATS.

STANDARD SWEET-PICKLED HAMS.

Standard sweet-pickled hams shall be cut short and well rounded at the butt, properly faced, shank cut just in or above the hock-joint, to be reasonably uniform in size and average. Three hundred pounds, block weight, shall be placed in each tierce

STANDARD SWEET-PICKLED SHOULDERS.

Standard sweet-pickled shoulders shall be well cut and trimmed; shank cut in or above the knee-joint, to be reasonably uniform in size. Three hundred pounds, block weight, shall be packed in each tierce.

NEW YORK SHOULDERS.

New York shoulders shall be made from small, smooth hogs, shank cut off one inch above knee-joint, trimmed close and smooth, reasonably uniform in size, and to average, in lots, not to exceed fourteen pounds. Three hundred pounds, block weight, shall be packed in each tierce.

SWEET-PICKLED BELLIES.

Sweet-pickled bellies shall be made from nice, smooth hogs, well cut and trimmed, to average, in lots, not to exceed fourteen pounds. Three hundred pounds, block weight, shall be packed in each tierce.

BRANDING.

The packer's name, location, number of pieces, and date of packing shall be branded on the head of each package of pickled meats at the time of packing.

UNIFORMITY OF PICKLED MEATS.

All pickled meats shall be sized when packed, the light, medium, and heavy separately, as near as practicable.

CUT MEATS.

HAMS.

Hams shall be cut short, well rounded at the butt, properly faced, cut just in or above the hock-joint.

SHOULDERS.

Shoulders shall be cut at right angles to the side, and as close as possible to the back part of the fore-arm joint, butted off square on top, neck-bone and short ribs taken out, blood-vein lifted and cut out, breast-flap to be trimmed off, and foot to be cut off in or above the knee-joint.

BLADED SHOULDERS.

Bladed shoulders shall be cut the same as "Standard" shoulders, excepting the shoulder-blade to be taken out and the corners rounded.

ROUGH SIDES.

Rough sides shall be made by splitting the hog through one side of the back-bone, and an equal proportion of both sides must be delivered on sales, to make them "Standard."

SHORT CLEAR SIDES.

To make short clear sides the back-bone, breast-bone, and ribs shall be taken out, and hench-bone sawed down smooth and even with the face of the side, feather of blade-bone not to be taken out, edges to be left smooth, sides not to be back-strapped or flanked.

SHORT RIB SIDES.

To make short rib sides the back-bone should be taken out, hench-bone and breast-bone sawed or cut down smooth and even with the face of the side, feather of blade-bone not to be taken out, and side not to be back-strapped or flanked.

LONG CLEAR SIDES.

To make long clear sides the back-bone, shoulder-bones, ribs, and breast-bone must be taken out, leg cut off close to the brisket, hench-bone sawed down smooth and even with the face of the side, and the sides not to be back-strapped or flanked.

CUMBERLAND SIDES.

To make Cumberland sides, the side and shoulder should be left together in one piece; foot cut off in or above knee joint; shoulder-ribs, neck-bone, and back-bone taken out; blood-vein lifted and cut out; hench-bone and breast-bone sawed or cut down smooth and even with the face of the side, and sides not to be back-strapped or flanked. Ribs must not be scribed.

LONG RIB SIDES.

Long rib sides to be made same as Cumberlands, except that the shoulder-bones must be taken out, and leg cut off close to the brisket.

STRETTFORD SIDES.

Strettford sides shall be made from hogs weighing about 140 to 160 pounds, net; back-bone and half the ribs taken out, blade-bone taken out, knuckle left in, and leg cut off close to the breast.

BIRMINGHAM SIDES.

Birmingham sides shall be made from hogs weighing about 170 pounds, net; back-bone, ribs, and blade-bone taken out, pocket-piece cut out, and pocket nicely rounded, knuckle-bone left in, and leg cut off close to the breast.

SOUTH STAFFORDSHIRE SIDES.

South Staffordshire sides shall be made the same as Birmingham, except loin taken out full to top of shoulder-blade, leaving only a thin strip of lean along the back; knuckle left in and leg cut off close to the breast.

YORKSHIRE SIDES.

Yorkshire sides shall be made the same as Cumberlands, with the ribs out, the leg cut off about two inches above the knee.

IRISH CUT SIDES.

Irish cut sides shall be made the same as long clear, except top of the pocket cut off, knuckle-bone left in.

LONG HAMS.

Long hams shall be cut from the side by separating with a knife the hip-bone from the rump, properly rounded out, foot unjointed at first joint below the hock-joint.

SOUTH STAFFORDSHIRE HAMS.

South Staffordshire hams shall be cut short, hip-bone taken out at the socket-joint, hock unjointed at first joint below the hock-joint.

UNIFORMITY OF BOXED MEATS.

In packing meats in boxes, the pieces shall be classified—the light, medium, and heavy separately, as nearly as practicable, in packages made to suit the different sizes.

LARD.

CHOICE LARD.

Choice lard to be made from leaf and trimmings only, either by steam or kettle rendered, the manner of rendering to be branded on each tierce.

PRIME STEAM LARD.

Prime steam lard shall be standard, made from head, gut fat, leaf and trimmings, in the proportion in which the same come from the hog.

* CURRENT MAKE LARD.

Current make lard shall be standard, made from head, gut fat, leaf, and trimmings in the proportion in which the same come from the hog; white and sweet; steam rendered.

RULES FOR THE REGULATION OF THE TRADE IN COOPERAGE.

Rule 1. The board of officers (directors) shall annually appoint a competent inspector of cooperage, who shall inspect all such cooperage as he may be called upon to examine according to these rules, determining with a wind-bellows the tightness of packages to hold liquids, lard, or pickled meats.

Rule 2. The certificate of such inspector shall be binding in the settlement of any differences as to quality that may arise between the buyer and seller, but, in the event of either party feeling dissatisfied with such inspection, an appeal may be made to the committee on provisions or whisky inspection, as the article inspected may properly belong to one or the other, and the decision of such committee shall be final.

Rule 3. The fees to be allowed the inspector shall be as follows:

For seventy-five (75) or a less number of barrels, half barrels, kegs, or tierces	\$1
For lots exceeding seventy-five (75) packages of the same, per package	1½ cents.
For hogsheads, half hogsheads, or boxes, per package	3 cents.

Rule 4. The fees shall in all cases be paid by the party employing the inspector.

PACKAGES.

Cooperage shall be made of well-seasoned white oak, free from objectionable sap.

PORK BARRELS.

For pork barrels, staves shall be five-eighths ($\frac{5}{8}$) of an inch thick, thirty (30) inches long; heads made in an eighteen (18) inch tress, one (1) inch thick in center and three-eighths ($\frac{3}{8}$) of an inch at bevel; hoops of hickory, not more than ten on an end; barrel to be hooped not less than eleven-sixteenths (11-16).

TIERCES.

Tierces for hams, shoulders, or lard shall be thirty-two (32) to thirty-three (33) inches long, heads made in twenty-one (21) inch tress-hoops and same thickness as for barrels; staves may or may not be chamfered at the head, as may be agreed upon by the buyer and seller; shall be three-quarters ($\frac{3}{4}$) of an inch, quality of staves and hoops to be same as for barrels. Tierces to be hooped eleven sixteenths (11-16), and to have not more than ten hoops to an end. Iron-bound tierces, for pickled hams and shoulders, shall be classed as "Standard" if made in compliance with the requirements of this rule as to heading and staves, and hooped with not less than three (3) good hoops on each end; the chime hoops to be $1\frac{1}{4}$ inches in width, the quarter and bilge hoops to be $1\frac{1}{2}$ inches in width, and to weigh, per set, not less than ten (10) pounds to the tierce.

LARD KEGS.

Lard kegs shall be made of same quality of timber as pork barrels and lard tierces; staves to be $16\frac{1}{2}$ inches long and $\frac{5}{8}$ of one inch thick, to be made in $11\frac{1}{2}$ -inch tress-hoops; hoops to be hickory, and the packages to be fully two-thirds hooped.

HALF BARRELS.

Half barrels for pork, beef, and lard shall be made of same quality of timber as barrels and lard tierces; staves to be 24 inches long and $\frac{5}{8}$ to $\frac{3}{4}$ of an inch thick, and the packages to be made in 15-inch tress-hoops; all hoops to be hickory, and packages to be fully two-thirds hooped.

BEEF TIERCES.

Beef tierces shall be made the same as lard tierces, but to be entirely free from sap, and the second hoop from each end to be $1\frac{1}{4}$ -inch iron, oiled or painted.

SLACK HAM TIERCES.

Slack ham tierces shall be made in 22-inch tress-hoops; staves to be 33 inches long, good hickory hoops, 3 hoops at the end and 3 at the bilge.

SLACK AND FLY-TIGHT HOGSHEADS.

Slack and fly-tight hogsheads shall be made in 32-inch tress-hoops; good hickory hoops; staves to be 42 inches long. Slack hogsheads to be hooped with 12 hoops and quarter bound, middle head-piece to be pine or oak. Fly-tight hogsheads to be same as slack, but to be hooped with 16 hoops instead of 12.

HALF HOGSHEADS.

Half hogsheads shall be made in 24-inch tress-hoops; staves to be 34 inches long; good hickory hoops; packages to be quarter bound (12 hoops); middle head-piece to be of pine or oak.

BOXES.

Boxes should be made of sound, common boards, reasonably dry, one (1) inch thick, dressed on one side, not over two (2) strips at each end, and three (3) strips to each side, bottom, or top; to have good, strong, hard wood, white-wood or sap-pine stays inside each corner; shall be well nailed and strapped with birch, oak, or hickory straps around each end, to lap three (3) inches on the cover. All boxes to contain five hun-

dred (500) pounds, net, shall have three straps. Boxes shall be nailed together with ten-penny nails, and the stays nailed in with eight-penny nails.

INSPECTION OF CARCASS WHEN CUT.

At the time of cutting there is generally a rigid inspection by the superintendent of the cutting-room of the packing companies, when all objectionable pieces—bruised and unmerchantable meat—is rejected and either sent to the rendering tanks or put by itself and classed as second quality. It is believed by the packers that this inspection is sufficiently thorough to detect any diseases or bruises that may have escaped notice before the hog was slaughtered; and it certainly would be more profitable to tank the meat at this stage, if such diseased or bruised meat were discovered, rather than attempt to carry it through the process of curing to "sour" in the end, or be detected by subsequent inspections and injure the reputation of the company. The cut meats are either packed in barrels with salt and these filled with strong brine, or they are well rubbed with salt and piled with layers of salt between. At first they are only piled two or three deep, each lot is dated, and they are rehandled as necessary and afterwards piled 4 or 5 deep, and finally the piles are made 6 to 10 layers high. The pressure must not be too great or the curing is retarded. The temperature of the room is kept at 35° to 45° Fahrenheit. If too cold, the meat does not take salt well. The time for curing varies from twenty to ninety days, according to the kind of meat, the market for which it is put up, and the season of the year. Meats free from bone cure quicker than those containing bone; those for Southern markets require more curing than those for markets further north; and less curing is necessary in winter than in summer.

Again, English and French consumers prefer meats with less salt than is used for home consumption or for shipment to the South or the West Indies, while certain brands of hams receive as little salt as possible.

SHIPPING WHEN PARTLY CURED.

Meat is frequently shipped before it is fully cured, but it is believed the age is correctly given by the seller. If thoroughly cooled before cutting it can be shipped within ten days in winter. Barreled pork can be shipped freshly packed, and cures in transit. Meats are also shipped when partly cured in boxes with salt, and also in bulk, packed in cars in the same way, and the curing goes on during transportation.

There are also said to be compounds for accomplishing the same object, but according to our information they are seldom, if ever, used. As a rule it is not considered desirable to hasten the curing; and all meat put up to be transported long distances is fully cured.

INSPECTION OF CURED MEATS.

A thorough inspection is always made of meats when they are taken from the curing floors for packing. Some packers make a double inspection at this time; that is, it is inspected when it is taken from the curing floors, and again when packed.

The object of this inspection is to detect any pieces that may have become unsound or "sour" during the process of curing. All houses reject more or less meats at this time, the quantity rejected varying from 0.05 to 1 per cent. of the whole.

UN SOUND MEAT.

Unsound or "sour" meat is the result of various causes. If animals are slaughtered too soon after arrival in the yards; or if for any other cause they are feverish; or if the carcass is not sufficiently cooled before cutting; or if there is negligence in curing, or careless handling; or if there is an excess of moisture in the atmosphere, a portion of the meat becomes tainted or "sour." If very bad, this rejected meat is tanked, but otherwise it is sold on its merits, and is marketed in the South or in the West Indies, where it is said to bring nearly as much as sound meats.

SUMMER CURING.

Some establishments pack only in winter, but many others are operated the whole year. Where there are proper facilities the summer curing not only equals that done in winter, but it is believed by some to be even more reliable, as by the use of the "refrigerator rooms" the temperature can be better controlled.

SALT USED IN PACKING.

The salts most generally used in packing in the United States are the Syracuse solar salt, of which 2,500,000 bushels were manufactured last year; Michigan solar salt, of which 50,000 bushels were manufactured last year, and Turk's Island salt.

For rubbing hams, either the ground solar salt or the Syracuse factory-filled dairy salt is employed.

Some years the War Department of the United States Government caused some practical tests to be made by having meats packed with Turk's Island and Syracuse solar salt. The meats were afterwards sent to the different ports on the sea-coast, on the Gulf of Mexico, and in the interior.

The result of the experiment demonstrated the fact that the Syracuse solar salt is equal in every respect for packing purposes to the imported Turk's Island sea salt, and since that time the United States Government has required that beef and pork packed for the Army and Navy shall be packed with Turk's Island or Syracuse solar salt.

American packers fully appreciate the importance of good salt, and are very careful in securing the best brands.

The following analyses of American and European salts show that the salts used in this country compare very favorably with those of Europe.

Analysis of salt used in the United States.

	Sodium chloride.	Calcium chloride.	Magnesium chloride.	Sodium sulphate.
1. Turk's Island, sea salt	96.760	.....	0.140	0.640
2. Syracuse, N. Y., solar salt	96.004	0.092	0.089	.....
3. Saginaw, Mich., solar salt	95.831	0.356	0.140	.....
4. Lincoln, Nebr., solar salt	98.130	.....	0.080	0.390
5. Kansas, solar salt	93.060	.....	0.240	0.350
6. Hocking Valley, Ohio, solar salt	97.512	0.234	0.089	.....
7. Petite Anse, La., rock salt	98.882	0.004	0.003	.....
8. Syracuse, N. Y., "factory filled dairy"	97.832	.....	0.037	0.026

Analysis of salt used in the United States—Continued.

	Calcium sulphate.	Magnesium sulphate.	Insoluble matter.	Water.
1. Turk's Island, sea salt	1.560	.....	.....	0.900
2. Syracuse, N. Y., solar salt	1.315	.....	.....	2.500
3. Saginaw, Mich., solar salt	0.316	.....	.....	3.344
4. Lincoln, Nebr., solar salt	0.250	.....	.....	1.200
5. Kansas, solar salt	1.220	0.180	.....	4.950
6. Hocking Valley, Ohio, solar salt .....	.....	.....	.....	2.130
7. Petite Anse, La., rock salt	0.782	.....	.....	0.330
8. Syracuse, N. Y., "factory filled dairy"	1.263	0.023	0.120	0.700

Analyses of European salt.

	Sodium chloride.	Magnesium chloride.	Sodium sulphate.	Potassium sulphate.
9. Lisbon, Portugal, first-crop sea salt	97.075	0.777	.....	.....
10. Lisbon, Portugal, second-crop sea salt	94.633	2.151	.....	.....
11. Aveiro, Portugal, first-crop sea salt	97.251	1.134	.....	.....
12. Aveiro, Portugal, second-crop sea salt	98.618	0.181	.....	.....
13. St. Felice, sea salt	94.072	0.141	.....	.....
14. Velicka, Galicia, rock salt	90.23	0.45	.....	1.35
15. Hall-Tyrol, rock salt	91.78	0.09	.....	1.35
16. Schönebec, Prussian, Saxony	95.40	0.08	.....	0.41
17. Dürrenberg, Saxony	92.642	0.719	0.307	.....
18. Artern, Saxony	94.835	0.616	0.488	.....
19. Halle, Saxony	92.773	0.865	.....	.....
20. Erfurth, Saxony	96.941	0.017	0.049	.....
21. Louisenthal	96.866	0.060	.....	.....

	Calcium sulphate.	Magnesium sulphate.	Insoluble matter.	Water.
9. Lisbon, Portugal, first-crop sea salt	1.538	0.565	0.045	.....
10. Lisbon, Portugal, second-crop sea salt	1.471	2.337	0.008	.....
11. Aveiro, Portugal, first-crop sea salt	0.645	0.903	0.067	.....
12. Aveiro, Portugal, second-crop sea salt	0.640	0.165	0.396	.....
13. St. Felice, sea salt	0.373	0.060	0.116	5.073
14. Velicka, Galicia, rock salt	0.72	0.61	5.88	0.86
15. Hall-Tyrol, rock salt	1.19	1.21	2.49	1.89
16. Schönebec, Prussian, Saxony	0.72	0.47	.....	2.90
17. Dürrenberg, Saxony	1.632	.....	.....	4.700
18. Artern, Saxony	1.061	.....	.....	3.000
19. Halle, Saxony	1.296	.....	0.466	4.600
20. Erfurth, Saxony	2.093	.....	.....	0.900
21. Louisenthal	0.964	.....	0.110	2.000

AUTHORITIES FOR ANALYSES.

Analyses numbered 1 to 8 of salts used in the United States were made by C. A. Goessmann, Ph. D., professor of chemistry in the Massachusetts Agricultural College, and published in a lecture on salt and its uses in agriculture, delivered before the State department of agriculture in Massachusetts.

Analyses 9, 10, 11, and 12, of Portuguese salt is from the *Mechanics' Magazine*.

No. 13 is by Von Stolba, and are from *Oesterr-Zeitschrift für Berg-u. Hüttenwesen*, 1867.

Nos. 14 and 15 are by Von Stolba, and are from *Die chemische Mittheilungen*, Prag, 1880.

No. 16 is by Heine, and is taken from Knapp's *Lehrbuch der chemischen Technologie*, 3d ed.

Nos. 17, 18, 19, 20, and 21, are by Enders, and are from the *Archiv der Pharmacie*, vol. 143, p. 20.

PACKING THE PORK.

Mess pork is packed in barrels with layers of salt around and between the pieces. The salt used for this is usually one of the domestic brands, but the barrel is "capped" either with Turks Island or a very fine quality of coarse salt which comes from Louisiana. The barrel is then filled with brine of full strength. From 35 to 40 pounds of salt is used to each barrel, exclusive of that contained in the brine. For box meats about 10 per cent. of salt is used for curing and 6 per cent. for packing. A few packers are said to have their salt tested by chemists, but the majority rely upon the brand and appearance.

The size and quality of the packages are generally regulated by the boards of trade. Barrels contain from 12 to 16 pieces, or 190 pounds, of meat, boxes from 400 to 750 pounds, and tierces from 325 to 350 pounds. The boxes are made of pine, the barrels and tierces of oak.

The following are the rules regulating packages in force by the Chicago Board of Trade:

PACKAGES.

Cooperage.

Cooperage shall be made of well-seasoned white or burr oak, free from objectionable sap.

Barrels.

For barrels, staves should be five-eighths ($\frac{5}{8}$) of an inch thick, twenty-nine (29) or thirty (30) inches long; heads eighteen (18) inches, one (1) inch thick in center and three-eighths ($\frac{3}{8}$) at bevel; hoops, hickory or white oak, to be hooped not less than eleven-sixteenths ($\frac{11}{16}$).

Tierces.

Tierces for hams, shoulders, beef, or lard, should be thirty-two (32) inches long with a twenty-one (21) inch head, or thirty-three (33) inches long with a twenty and one-half ($20\frac{1}{2}$) inch head; staves to be chamfered at the head. Quality of staves and hoops to be the same as for barrels; staves three fourths ($\frac{3}{4}$) of an inch thick; heads same thickness as for barrels; hooped eleven-sixteenths ($\frac{11}{16}$). Iron-bound tierces for lard, hams, or shoulders, shall be classed as standard if made in compliance with the requirements of this rule, as to heading and staves, and hooped with not less than four good hoops on each end.

Boxes.

Boxes should be made of sound common boards, reasonably dry, one inch thick, dressed on one side, not over three strips to each end, side, bottom, or top; to have good, strong hardwood, whitewood, or sap pine stays inside each corner; should be well nailed and strapped with birch, oak, or hickory straps around each end, to lap three inches on the cover. Boxes should be nailed together with tenpenny nails, and the stays nailed in with eightpenny nails.

Mess pork is stored in warehouses at a temperature of 40° to 50° Fahrenheit. In cold weather it is often left out of doors.

INSPECTION OF PACKED MEATS.

The owners of pork have examinations made from time to time by rolling the barrels from time to time to learn if there has been leakage and loss of pickle. The boards of trade provide for an inspection of all hog products at time of sale, and this is made either by the regular board of trade or city inspectors, or by a private inspector agreed upon by the parties to the transaction. In all cases it is the privilege of the party purchasing to have a thorough inspection of the goods, and in the regular trade this inspection is always made by skilled experts. Very frequently the buyer prefers the inspection of the packers to that of pub-

lie authorities, and the meats are guaranteed down to the consumer. If in this case they are in any way defective from the negligence of the packer deductions are allowed or the goods can be returned.

Generally but 2 per cent. of the pork in barrels is actually inspected at this time, though the buyer can have all inspected if he desires. Meats, either in boxes or in bulk, are examined piece by piece. A steel tryer is forced into every piece and its soundness determined by the appearance and odor of the instrument on its withdrawal.

Inspection is also made at this time for irregularly cut or oily meats, for bruises, for the meat of "stags" and "piggy" sows, and for any form of unsoundness, and all such meats are rejected.

The meat from diseased animals almost invariably "sours" in curing, and cannot be made into first quality goods.

The meat of "stags" is distinguished by the thickness and coarseness of the skin, and that of "piggy" sows by the size of the teats and the general appearance.

The inspector is paid by the buyer, and the inspection is made according to rules and prices adopted by the boards of trade in all the larger cities.

The regulations for the inspection of provisions of the Chicago Board of Trade in force September 1, 1883, are as follows:

REGULATION 1. For the examination of provisions sold as standard it shall be the duty of any inspector properly appointed by the association, on receiving notice, to go to any packing-house or warehouse in the city to examine provisions, in such quantities as may be required, selecting the same in such a manner from the lots specified as, in his judgment, will give a fair sample of the whole.

REG. 2. If, upon examination, the property is found, in all respects, up to the requirements of the classification of the grades adopted by the association, he shall issue a certificate to that effect, which certificate shall state the number of packages, pieces, or pounds examined, and also the number of packages, pieces, or pounds in the lot to which the examination is intended to apply, and that the packages (if any) are in good merchantable order and condition. In the case of lard no certificate for inspection shall be issued unless every package is examined; but, on request of the owner or person ordering the inspection, the inspector may examine a part of a lot, and issue a certificate of such examination, stating the number of packages examined, and also the whole number of packages in the lot.

REG. 3. When necessary to remove property for the convenience of examination, it shall be the duty of the inspector to send for the same, that a fair sample may be obtained. In no case should a certificate be grafted on samples delivered by the seller.

REG. 4. The fees for inspection are established as follows: For inspection by sampling—including repacking and coopering—beef and pork, for the first five barrels, eighty (80) cents per barrel, and for each additional barrel, twenty-five (25) cents. For inspecting S. P. meats, for the first five tierces, one (1) dollar per tierce, and for each additional tierce, twenty-five (25) cents. For inspecting boxed meats, for the first five boxes, one (1) dollar per box, and for each additional box, fifty (50) cents. When the whole of a lot is inspected—labor and coopering to be furnished by the seller—for beef and pork, ten (10) cents per barrel. For S. P. meats, in lots of fifty (50) tierces or more, twelve and a half (12½) cents per tierce; in lots of one hundred (100) tierces or more, ten (10) cents per tierce. For bulk or boxed meats, in car-load lots or more, fifteen (15) cents per one thousand (1,000) pounds. For lard, in lots of one hundred (100) tierces or more, four (4) cents per tierce. For tallow and grease, five (5) cents per tierce. The fees for weighing, not including breaking down and repiling, are established as follows: Lard and grease, in lots of one hundred (100) packages or more, four (4) cents per package. Tallow, in half hogsheads, or smaller packages, five (5) cents per package; in hogsheads, ten (10) cents each. Bulk meats, not including labor, ten (10) cents per one thousand (1,000) pounds. For stripping lard or grease, at regular warehouses, not less than five (5) packages, fifty (50) cents per package. For the labor of breaking down and repiling, the inspector shall be paid three (3) cents per package, the same to be paid to the warehouseman if repiled, or to the party shipping the property if shipped without repiling.

REG. 5. It shall be the duty of the inspector, when requested by the owner, either at any packing-house, warehouse, or in yards provided by the inspector, to overhaul and inspect provisions, according to the qualifications and classifications authorized; two hundred pounds of meat, with abundance of good salt, to be repacked into each

barrel, and cooperage to be put in good order; each barrel of provisions that is sound, sweet, and free from any and every defect, to have grade and date of inspection branded thereon, and the word "Repacked," as hereinafter specified; and any portion that is defective to be branded, in like manner, rusty, sour, or tainted, as the case may be; the said brand to be placed with the inspector's brand across the regular packer's brand; such provisions, according to the grade or quality, to be classed as "Repacked 200 lbs."

REG. 6. The inspectors shall use metallic letters and figures, marking-iron or stencil for their dates and class of inspection.

REG. 7. It shall also be the duty of the inspector to put his metallic brand, marking-iron or stencil on all samples of provisions in tierces or barrels that he inspects; and he shall pass no hog products in tierces or barrels, as standard, unless the real packer's name, location, number of pieces, date, and weight of the products contained therein are branded, according to these rules, on the head of every package.

REG. 8. Should the inspector be called upon to inspect pickled meats, and upon examination he should be of the opinion that the number of pounds required by these rules had not been originally packed, he shall not pass them as Standard, but shall refer the matter at once to the committee on provision inspection, who shall investigate, and if a satisfactory explanation can be given or arrived at, they shall instruct the inspector to proceed and inspect and pass them; but if not satisfactory to the committee they shall, in their judgment, make the fact known to the association in any way they may think most proper.

REG. 9. Contents of each package of pickled meats must show a reasonable uniformity in weight, according to its class.

REG. 10. It shall be the further duty of the inspectors, during the packing season, to visit frequently the different packing-houses to see that provisions are properly dated and branded at time of being packed.

REG. 11. Dry salted rough sides may be made into short rib or short clear sides, and dry salted short rib sides may be made into short clear sides, if, in all other respects, they are up to the requirements, and shall be classed as standard.

REG. 12. All the foregoing regulations, and the requirements as to the cut and packing of hog products, must be justly and liberally construed, and no property shall be rejected or condemned on mere technicalities; but this shall not be regarded as giving license to departure from their general spirit and intent.

The rules adopted by the Cincinnati Chamber of Commerce for governing the provision trade, including inspection, dated August 1, 1882, are as follows:

Rules for the government of the provision trade.

RULE 1. The committee on provision inspection shall act as referees in all cases of complaints against inspectors, or the inspection of any lot of provisions, or any matters of business pertaining to the same; but the buyer shall, in all cases, have the right to designate his own inspector; but in case the seller feels that injustice is being done, he shall have the right to call upon the committee of inspection, whose decision shall be final and binding. Any inspector agreed upon by parties to a transaction, shall be regarded as a regularly authorized inspector, subject to the rules of the chamber, and the committee on provisions shall constitute the committee of reference.

RULE 2. All appeals from inspection must be made before the property leaves the city, packing point, or place of delivery.

RULE 3. Pork products packed between November 1st and March 1st shall alone be classed as "standard."

RULE 4. In sales of fully cured meats, or to be fully cured and delivered at a specified time, the seller must deliver in good faith according to contract, the inspector to be the judge, who shall always be fully informed of the conditions of the contract before proceeding to inspect. Where sales of dry salted meats are made without other specifications, it shall be considered that the sales contemplate meats fully cured, the inspector to be the judge.

RULE 5. In case of no specific agreement, the saltage allowed on bulk meats shall be one (1) per cent. from the 1st of November to the 1st of May; but should the buyer or seller object, the inspector shall sweep as many drafts as he may consider necessary, and the percentage thus obtained shall be binding on both parties. But from the 1st of May to the 1st of November, the tare shall be ascertained by washing in cold water with a cloth, in case of no special agreement to the contrary. A drainage of one (1) per cent. shall be allowed on pickled hams and shoulders.

RULE 6. To determine the tare on lard, the package shall first be weighed gross, the lard then removed, and the empty package subjected to dry heat and drained; after which the empty package shall be weighed, and its weight deducted from the gross weight. The difference thus obtained shall be considered the net weight of the lard.

RULE 7. Three hundred and twenty pounds, net, shall be the average weight of a

tierce of lard, upon which all settlements with contractors shall be based; but the number of packages the contract calls for must be delivered, and the difference, if any, settled at the market price on the day of delivery.

RULE 8. Four hundred to four hundred and fifty pounds, net, shall constitute a box of Cumberland middles, and four hundred and seventy-five to five hundred and twenty-five pounds, net, shall constitute a box of all other English cuts of middles, shoulders, and hams, and all boxes containing over five hundred pounds of meat to have a third strap around the box. All settlements of contracts shall be made on a basis of four hundred and twenty-five pounds per box, net, for Cumberland cut, and five hundred pounds per box, net, for all other English cuts of meats.

RULE 9. If, on inspection of a fair sample of bulk meats, twenty (20) per cent., or over, is found to be sour, the buyer shall not be required to take the lot.

RULE 10. All the foregoing rules must be justly and liberally construed, and no property shall be rejected or condemned on a mere technicality.

RULE 11. The committee on provisions shall not have power of arbitration, but shall be empowered to consider all cases in reference to quality of meats, cooperage, etc., and parties refusing to abide the decision of the committee, while acting in their line of duty, shall be liable to arraignment for unmercantile conduct.

* RULE 12. In case of no specific agreement, contracts for 100 barrels of pork, 100 tierces of lard, 100 boxes dry salted meats, or for a larger amount, deliveries can be made on seller's option, or called for on buyer's option, in lots of not less than 100 packages, as named above, nor less than 100 packages of one brand.

Contracts for 50 hogsheads, or 50 half-hogsheads, of bacon or dry salted meats, or more, deliveries can be made on seller's option, or called for on buyer's option in quantities of not less than 50 hogsheads or 50 half-hogsheads, and not less than this quantity of one brand.

Contracts for 100,000 pounds of bacon or dry salted meats, loose, or for a larger amount, deliveries can be made on seller's option, or called for on buyer's option, in quantities of not less than 100,000 pounds.

Contracts for 100 tierces of hams, or shoulders in pickle, smoked or canvased, or for a larger amount, deliveries can be made on seller's option, or called for on buyer's option, in lots of not less than 50 tierces, nor less than 50 tierces of one brand.

Payment to be made as lots are delivered.

RULE 13. It shall be the duty of the inspector of provisions to weigh stuff when called upon, receiving therefor a fee of five (5) cents per each one thousand (1,000) pounds, in addition to the inspection fee—the party ordering the weighing to be responsible for the fee.

RULE 14. The inspector shall keep a record, in detail, of every examination he may make, that he may be qualified to testify positively in event of a dispute.

RULE 15. For the examination of provisions sold as "regular," it shall be the duty of the inspector (or his deputed assistants), on receiving notice, to go to any packing house or warehouse in the city to examine provisions in such quantities as may be required, selecting the same in such manner, from the lots specified, as in his judgment will give a fair sample of the whole.

RULE 16. If upon examination it is found in all respects up to the requirements, according to the classification or grades adopted by the Chamber of Commerce, he shall issue certificates to that effect.

When necessary to remove property for the convenience of examination, it shall be the duty of the inspector to send for the same, that a fair sample may be obtained.

In no case should a certificate be granted on samples delivered by the seller.

RULE 17. The inspector shall be entitled to receive as compensation for examining provisions, as follows: For beef and pork, in barrels, five dollars for the first five barrels, the inspector furnishing labor and other requirements, and seeing that the property is properly repacked and rebrined, and fifty cents for each additional barrel examined—payable by the buyer if regular, and by the seller if rejected, and cartage when removed; and for bulk, bacon, or boxed meats, fifteen cents per one thousand pounds, payable by the buyer. For inspecting lard, five cents per package, payable by the buyer if accepted, or by the seller if rejected; and for stripping lard, one dollar per package, to be paid by the buyer. Five barrels of pork or five tierces of lard to be sufficient to sample any lot sold, unless otherwise agreed between buyer and seller.

RULE 18. It shall be the duty of the inspector, when requested by the owner, either at any packing house, warehouse, or in yards provided by the inspector, to overhaul and in peck provisions according to the qualifications and classifications authorized; two hundred pounds of meat, with abundance of good salt, to be repacked in each barrel, and cooperage to be put in good order. Each barrel of provisions that is sound, sweet, and free from any and every defect, to have grade and date of inspection branded thereon, and the word "repacked," as hereinafter specified; and any portion that is

* As amended September 27, 1875.

defective, to be branded in like manner "rusty," "sour," or "tainted," as the case may be; the said brand to be placed, with the inspector's brand, across the regular packer's brand, such pork, according to the grade or quality, to be classed as "re-packed, 200 pounds."

RULE 19. The inspector shall use metallic letters and figures or marking-iron for his dates and classes of inspection.

RULE 20. It shall also be the duty of the inspector to put his metallic brand or marking-iron on samples of provisions in packages that he inspects; and he shall pass no pork products as "regular" unless the real packer's name of the product contained therein is branded, according to these rules, on the head of each package.

RULE 21. In all cases of sales of provisions as "regular," the inspector shall examine and inspect when called on; and if the property be up to the requirements, he shall issue a certificate simply for so many barrels or packages of product (naming it), for so many pieces or pounds of meat (naming the kinds).

RULE 22. Should the inspector be called on to inspect pickled meats, and upon examination he should be of the opinion that the number of pounds required by these rules had not been packed, he shall not pass it as "regular," but shall refer it at once to the inspection committee, who shall investigate, and if a satisfactory explanation can be given or arrived at, they shall instruct the inspector to proceed and inspect and pass it; but if not satisfactory to the committee, they shall, in their judgment, make the fact known to the provision trade in any way they may think proper.

RULE 23. All "hog products," to be "regular" must be from corn-fed slaughtered hogs, not frozen before cutting, and shall average not less than 14 pounds for shoulders, or 30 pounds for sides, and must run at least 80 per cent. sweet.

No hogs shall be killed on the same day on which they arrive at the pens of the slaughter-house.

RULE 24. Where meat is in store it shall be weighed and inspected in store; where meat arrives by river, rail, or canal, it shall be inspected and weighed at house of buyer.

RULE 25. All bacon uncanvassed, bulk meats packed between March 1st and November 1st, shall be in fly-tight cooperage.

RULE 26. In all sales of provisions for future delivery either party may call for a margin at any time, unless it is expressly understood between the parties at the time the contract is entered into that such call cannot be made. In the absence of special contract either party shall be entitled to a margin equal to ten (10) per cent. of the market value of the article contracted to be delivered, the same to be kept good; twenty-four (24) hours' notice in writing to residents and forty-eight (48) hours' notice in writing or by telegraph to non-residents shall be given on a call for a margin, and where a party fails to respond to such call within the said time the property may be sold at public auction on the floor of the Merchants' Exchange during 'Change hours on the following day "for account of whom it may concern."

RULE 27.* In settlement of contracts (unless otherwise specified) the following weights shall govern:

	Pounds.
Dry salted meats or bacon:	
Packed in hogsheads—	
Shoulders	1,000
Rib sides	900
Clear rib sides	950
Clear sides	1,000
Packed in half hogsheads—	
Shoulders	550
Rib sides	500
Clear rib sides	550
Clear sides	575
Hams or shoulders:	
Smoked and canvassed, packed in tierces	340
In pickle, packed in tierces (green weight)	300

RULE 28. All barreled provisions offered for sale as "regular" in this market must be cut, selected, and packed in all respects as to quality and condition equal to the classification of inspection as adopted by the Chamber of Commerce.

RULE 29. Unless otherwise stipulated, in all sales made of any of the grades of provisions represented as "regular," the seller shall be bound to fulfill his sale by the delivery of the quality called for by such sale, and which on examination by the inspector has been certified by him to have been packed according to the classification, and is at the time of delivery in good merchantable condition in every respect.

Provisions from which any surplus gain has been removed cannot be classed as "regular."

RULE 30. All provisions sold in this market, in the absence of special agreement, shall be deemed "regular," and the property must comply with the requirements of the rules of inspection of the Board. All provisions sent to this market for sale, which are, in all respects, in conformity with these rules, shall be classed as "regular."

RULE 31. No original weight shall be taken out of any package of provisions without removing the original packer's brand *entirely* from the head of the package, and the brand "repacked" burned in the head distinctly.

RULE 32. In all cases product should be sold "regular," but in case a particular brand is sold, and upon examination the product will not inspect "regular," the buyer shall elect to take another brand, or the difference in value of the special brand shall be settled between the buyer and seller.

RULE 33.* On sales of provisions for future delivery, on buyer's option, if the buyer call before the expiration of the month of contract, the seller, if he so elect, shall in case of barreled meats and lard in tierces have two working days' notice, and for boxed meats, pickled or smoked hams, and shoulders in tierces, or dry salted meats four working days to prepare property for delivery; and when, at the option of seller, the seller tenders before the expiration of the month of contract, the buyer, if he so elect, shall have the same time to prepare for receiving the same.

RULE 34. Buyers of provisions on time contracts shall have the right to inspect before the day of delivery, provided they send an inspector in time to allow the inspection to be completed before the expiration of the contract; but failing to do so the seller shall have the privilege of having the property inspected, the cost to be paid by the buyer.

RULE 35.† Where the buyer of provisions fails to avail himself of the privilege of inspection, in the absence of any special agreement upon the part of the seller to guarantee his product, the liability of the seller shall, as to quality, saltage, and weights cease when the product shall have left his house.

The rules for inspection of provisions adopted by the Saint Louis Chamber of Commerce are as follows:

RULE XII.

INSPECTION AND DELIVERY OF PROVISIONS.

SECTION 1. The board of directors shall appoint inspectors of provisions, not to exceed three, upon the written application or indorsement of not less than five regular dealers in beef or hog product, either on their own account or on commission, members of the exchange, who shall be authorized, when called upon, to inspect in person or by assistants, and report the actual condition of the property inspected. The inspectors may appoint competent assistants, said assistants in all cases to be approved by the board of directors, but the certificate of inspection must be signed by an appointed inspector, though the inspection was made by an assistant under his direction, and the inspector signing shall be accountable to the same extent as if the property had been actually inspected by himself. Each inspector shall give bond for the faithful performance of his duty as indicated by the rules of the exchange, or by order of the board of directors, which bond shall be satisfactory to the board of directors and their successors, and approved by them before he shall enter upon his duties, for the use and benefit of any person or persons who may be aggrieved or injured on account of his official acts. Inspectors shall receive for their services the fees for inspection as established and fixed by the board of directors. The board shall also appoint five members of the exchange as a committee on provision inspection, who shall act as referees in all cases of complaint against inspectors for the inspection of any lot of provisions, or any matters of business pertaining to said inspection. The buyer, however, shall in all cases have the right to select his own inspector from the inspectors appointed by the board of directors; but in case the seller feels that injustice is being done, he shall have the right to call upon the committee on inspection, whose decision shall be final and binding. In the absence of such committee, arbitrators may be substituted. Buyers of provisions shall have the right to inspect before the day of delivery, provided they send an inspector in time to allow the inspection to be completed before the expiration of the contract; but, failing to do so, the seller shall have the privilege of having the property inspected by an inspector appointed by the board of directors, the cost to be paid by the buyer. All appeals from inspection must be made before the property leaves the city, packing point, or place of delivery. The committee shall be allowed one dollar each for every case decided by them, to be paid by the parties in default.

* Adopted February 8, 1877.

† Adopted September 27, 1875.

SEC. 2. The inspector shall keep a record, in detail, of every examination he may make, that he may be qualified to testify positively in the event of a dispute.

SEC. 3. In case of no specific agreement, the saltage allowed on bulk meats shall be (1 per ct.) one per cent. from the first of November to the first of May; but, should the buyer or seller object, the inspector shall sweep as many drafts as he may consider necessary, and the percentage thus ascertained shall be binding on both parties; but from the first of May to the first of November the tare shall be ascertained by washing in cold water with a cloth, in cases of no special agreement to the contrary. A drainage of (1 per ct.) one per cent. shall be allowed on pickled hams, shoulders, and mess pork, and they shall be free from salt.

SEC. 4. To determine the tare on lard, the package shall first be weighed gross, the lard then removed, and the empty package subjected to dry heat and drained, after which the empty package shall be weighed, and its weight deducted from the gross weight; the difference thus obtained shall be considered the net weight of the lard.

SEC. 5. Three hundred and twenty pounds, net, shall be the average weight of a tierce of lard, upon which all settlements on contracts shall be based; but the number of packages the contract calls for must be delivered, and the difference, if any, settled at the market price on the day of delivery.

SEC. 6. Pickled hams and shoulders shall be sized when packed, the light, medium, and heavy, separately, as near as practicable. Number of pieces and green weight, packer's name and location, and date of packing, shall be branded on the head of each package, the date to be branded with metallic letters, marking-iron, or stencil, at time of packing.

SEC. 7. In English meats the pieces shall be classified, and the light, medium, and heavy packed separately as nearly as practicable, in boxes made to fit the different sizes. Four hundred to four hundred and fifty pounds, net, shall constitute a box of Cumberland middles; four hundred and seventy-five to five hundred and twenty-five pounds, net, shall constitute a box of all other English cuts of middles, shoulders, and hams; and all boxes containing over four hundred and fifty pounds of meat to have a third strap around the box. All settlements of contracts shall be made on a basis of four hundred and twenty-five pounds per box, net, for Cumberland cuts, and five hundred pounds per box, net, for all other English meats.

SEC. 8. If on inspection of a fair sample of bulk meats twenty (20) per cent. or over is found to be sour, the buyer shall not be required to take the lot.

SEC. 9. Dry salted rough sides may be made into short ribs or short clear sides, and dry salted short rib sides may be made into short clear sides, if in all other respects they are up to the requirements, and shall be classed as standard.

SEC. 10. On all contracts for boxed meats, it shall be understood that the meat may not be fully cured, but shall have been from fifteen to twenty days in salt before boxing.

SEC. 11. On all contracts or sales of barreled pork, not less than fifty barrels of one brand shall be delivered.

SEC. 12. If, in the opinion of the inspector, one hundred and ninety pounds of green meat shall have been packed in a barrel of pork, then it shall be classed as standard, and should there be sufficient overweight to cover any irregularity of packing, then in that case it should also be passed as standard.

SEC. 13. In no case should a duplicate inspection certificate be issued by the inspector, except on sufficient evidence of the loss of the original.

SEC. 14. On all deliveries on contracts for bulk meats and pickled meats other than barreled pork, the inspection certificate shall hold good for five days, and on barreled pork for ten days.

SEC. 15. Pork product, to be standard and delivered on contracts, must be sound, fully cured, and cut, as is required by the rules of the exchange. Barreled pork, to be standard, must be packed between the first of November and the first of March, and barreled pork and hams in pickle shall not be standard or deliverable on contracts after the first day of January following the packing season in which they are made. Repacked pork shall not be classed as standard or deliverable on contracts; but this shall not apply to pork examined and repacked by an authorized inspector for the purpose of passing upon the condition thereof. No certificate of beef or hog product shall be recognized as regular unless it is signed by an inspector appointed by the board of directors.

SEC. 16. In case property does not pass inspection, the fees shall be paid by the seller. No original weight shall be taken out of any barrel or tierce of provisions without the inspector's removing the original packer's brand entirely from the head of the package.

SEC. 17. All deliveries of beef or hog products sold for future delivery, in the absence of special agreement, shall be by the delivery of warehouse receipts, issued from such warehouses or places only, as shall have been declared a regular warehouse, or other place, for the storage of such property under the rules of the Merchants' Exchange by the board of directors. Such places of storage, in all cases, shall be suitable for

the preservation of the property, and all deliveries shall be accompanied by the certificate of inspection of an inspector of provisions, appointed by the board of directors, which inspection shall conform to the rules of the Merchants' Exchange, governing such property. Any person or persons, or corporation desiring to have their warehouse or places declared regular, shall make application therefor to the board of directors, stating his or their location, insurance, facilities for shipping, and shall furnish such other information as may be required by the board of directors, and shall also give a good and sufficient bond in such sum as the board of directors may require, that property placed in his or their or its care shall have the necessary attention for its preservation. Any place declared and designated as regular may, for good and sufficient reasons, satisfactory to the board of directors, be declared by said board no longer a regular warehouse for the storage of provisions, under the rules of the exchange, provided, however, that property already in store in such warehouses, shall continue to be regular on delivery so long as it remains in such warehouse.

The meat rejected by the above inspection is selected according to its condition; the worst quality, including all that may be unfit for food, is consigned to the offal tank, and the remainder sold on its merits, usually going to the markets of the South and the West Indies.

LARD.

There are a number of grades of lard made at packing establishments :
1. Choice lard made from leaf and trimmings, which may be either kettle or seam rendered, and has the method of rendering stamped on the packages. 2. Prime steam lard from the hog "round," which includes nearly everything from the hog not mentioned in No. 1, but should contain no salted trimmings. 3. "Off grade" lard from salted trimmings.

OFFAL.

In the offal is included the blood, hair, head, feet, heart, lungs, liver, kidney, stomach, and intestines. The blood is boiled until coagulated, it is then pressed for the grease, ground, dried, and sold for fertilizers, the price of this being regulated by the per cent. of ammonia. The hair is sold to curlers. The tongues are pickled. The cheek meat is made into "bawn" or sausage. The head, heart, lungs, kidneys, liver, stomach, and such of the intestines as are not used for sausage casings are tanked for grease. The residue from tanks is dried for fertilizer. The feet are made into glue or pickled.

In addition to the general statements received from numerous packers in the country, a large amount of specific information was received from Messrs. Armour & Co., of Chicago, probably the most extensive packing house in the world.

The correspondence and the questions and replies are here inserted in full.

CHICAGO, January 22, 1884.

E. W. BLATFORD, Esq., *Chicago, Ill.* :

DEAR SIR: We are in receipt of your favor of yesterday with its inclosures, all of which have our consideration. We take pleasure in complying with your request and beg to bid you with this our answers to your various inquiries; we have endeavored to make them as explicit and comprehensive as possible, for we fully appreciate their importance; and if you should desire further information in connection with this matter, please be assured that our services are at your command.

Very respectfully, &c.,

ARMOUR & CO.

The following are the questions and answers :

Q. 1. Where and how are the hogs purchased?—A. At the stock-yards, from shippers and drovers by careful, experienced men.

Q. 2. How do you buy your hogs?—A. Through our own buyers in the yards, whose instructions are positive concerning quality and condition, and to make careful selections.

- Q. 3. In selecting hogs what do you reject?—A. They are told to reject everything objectionable.
- Q. 4. Diseased animals?—A. Yes; invariably.
- Q. 5. Bruised animals?—A. Yes, they are useless for our purposes.
- Q. 6. Ruptured animals?—A. Yes; we avoid them.
- Q. 7. Still-fed animals?—A. Yes, wherever it can be discovered.
- Q. 8. Pregnant sows?—A. Yes, if too far advanced.
- Q. 9. Stags?—A. Yes, unless at reduced valuation, and for special uses and markets here.
- Q. 10. Crippled hogs?—A. Yes, they are always avoided.
- Q. 11. Are hogs usually rejected for these reasons?—A. Yes, for packing purposes.
- Q. 12. If not rejected what do you do with them?—A. They are usually put into the offal tanks.
- Q. 13. Is it not customary to buy hogs from the general appearance, weight, and evenness of a lot?—A. Yes, frequently.
- Q. 14. What is done with rejected hogs?—A. They are either resold or put into the offal tanks.
- Q. 15. How long are the hogs kept in your pens before slaughtering?—A. About twenty-four hours.
- Q. 16. Why are they kept this length of time?—A. To cool off and to improve their condition.
- Q. 17. How do you care for them in your pens?—A. Give them plenty of fresh water and corn.
- Q. 18. How are these pens constructed?—A. They are covered and have wooden floors.
- Q. 19. Do any die in the pens?—A. Occasionally, but they are closely watched.
- Q. 20. If so, how many, and from what cause?—A. The number is insignificant; the cause is smothering.
- Q. 21. What is done with the dead hogs?—A. They are put into the offal tanks invariably.
- Q. 22. How are the hogs prepared for slaughtering?—A. By being rested, watered, and fed.
- Q. 23. Is the condition of the hogs at all observed or considered before slaughtering?—A. It is, always.
- Q. 24. How is the proper condition of the hog assured at time of slaughter?—A. By examination and general appearance.
- Q. 25. How are the hogs taken from the pens to the slaughtering-room?—A. They are driven a short distance.
- Q. 26. If hogs are unable to be driven to the slaughtering-room, what is done with them?—A. Unless healthy and in good order they are killed and put into the offal tank.
- Q. 27. What mode of slaughter do you adopt?—A. They are bled to death by cutting the main arteries in the throat.
- Q. 28. What time is allowed the hog to bleed?—A. Until he is dead.
- Q. 29. Is an examination made whether life is extinct before scalding?—A. Yes.
- Q. 30. What is done with the carcass when coming out of the scalding tub?—A. It is scraped; the entrails are removed, and it is sent to the cooling room.

TREATMENT OF CARCASS OF HOG AFTER SLAUGHTER.

- Q. 31. What time is allowed the carcass to cool before cutting up?—A. From thirty-six to forty-eight hours.
- Q. 32. Is the carcass thoroughly cooled before going to the cutting bench?—A. Yes; thoroughly.
- Q. 33. Is this rule strictly carried out?—A. Yes; very carefully.
- Q. 34. Why is the thorough cooling of the carcass important before cutting up and commencing to cure?—A. In order to remove all animal heat, and to prevent souring.
- Q. 35. Is there any inspection made to ascertain that it is thoroughly cooled?—A. Yes.
- Q. 36. What is your rule for cutting?—A. After hanging for forty-eight hours.
- Q. 37. Is inspection of meat had at time of cutting up, and for what?—A. Yes; to detect all objectionable pieces.
- Q. 38. Is such inspection sufficiently thorough to detect disease or bises?—A. Yes; entirely so.
- Q. 39. After cutting up the carcass how are the parts treated to effect a cure?—A. Well salted, and covered with brine.
- Q. 40. How are they piled to secure thorough curing?—A. In cold cellars.
- Q. 41. What is the temperature of the room?—A. About 35° Fahrenheit.
- Q. 42. What time is required for curing?—A. About forty to sixty days.

- Q. 43. Is meat ever shipped before being fully cured?—A. Very seldom.
- Q. 44. Is it desirable to perfect the curing of the meat in as short a time as possible?—A. We think not.
- Q. 45. Is not the curing of the meat often forced for the purpose of making it saleable and deliverable in as short a time as possible?—A. We think not.
- Q. 46. Do you ascertain by inspection the soundness of your cured meat?—A. We do, always.
- Q. 47. To what causes do you attribute unsound or "sour" meat?—A. Negligence in curing, and careless handling, and cutting before the cooling is completed.
- Q. 48. Do you attribute it to a diseased carcass?—A. No, not necessarily.
- Q. 49. Do you attribute it to a faulty treatment?—A. Yes, usually.
- Q. 50. Do you attribute it to a want of care?—A. Yes, generally.
- Q. 51. What quantity of "sour" meat do you have?—A. It is infinitesimal.
- Q. 52. What is done with it?—A. It is put into the offal tanks, or sold on its merits to home markets.
- Q. 53. What, if any, changes in modes of curing are adopted for meats destined to markets in different climates?—A. No changes; but careful selections.
- Q. 54. Can as reliable results of curing be had in summer as in winter?—A. Yes, with proper care and ice facilities.
- Q. 55. What kind or kinds of salt are used?—A. Both foreign and domestic, coarse and fine.
- Q. 56. How do you give this or that kind preference?—A. Coarse for pickling; fine for dry salting.
- Q. 57. How is meat packed for shipment?—A. In boxes, sprinkled with salt, and also in brine.
- Q. 58. What is the quality of the packages used?—A. Pine boxes, and oak barrels and tierces.
- Q. 59. What is the size of packages?—A. Boxes hold about 500 pounds; barrels, 200 pounds; tierces, 300 pounds.
- Q. 60. Is any salt put in?—A. Yes.
- Q. 61. How much to each box of meat?—A. About 50 pounds.
- Q. 62. What is the rule?—A. No special rule; the custom is from 40 to 50 pounds.
- Q. 63. Is this rule strictly adhered to?—A. We think it is.
- Q. 64. Is not less salt used than the rule calls for to save expense?—A. We think not.
- Q. 65. What is the character of the salt used?—A. Fine salt.
- Q. 66. Is any care taken that the salt be clean?—A. Yes.
- Q. 67. What is your rule for cutting mess pork?—A. From well fattened hogs; uniform strips, according to board of trade rules.
- Q. 68. How many pieces in each barrel?—A. About sixteen pieces.
- Q. 69. What is the weight of meat in each barrel?—A. 190 pounds packed in winter, and 200 pounds packed in summer.
- Q. 70. What kind of salt is used?—A. Coarse salt.
- Q. 71. What quantity of salt is used?—A. About 30 pounds of coarse salt, and the barrel filled with brine.
- Q. 72. How is the quality of the salt tested?—A. By analysis, and the use of the salometer.
- Q. 73. Where is the mess pork stored?—A. Generally in cool cellars.
- Q. 74. What are the regulations regarding its storage?—A. That it shall be in warehouse well located.
- Q. 75. What is the temperature of the warehouse?—A. Generally about 40° or 50° Fahrenheit.
- Q. 76. What examinations are made as to its condition from time to time?—A. Packages unrolled to ascertain about the pickle; occasionally opened, and cooperage also examined.
- Q. 77. What numbers of hogs do you kill annually?—A. About one million in our Chicago house.
- Q. 78. What is their average weight?—A. From 260 to 280 pounds live weight.
- Q. 79. What parts of the hog do you use for lard?—A. Leaf and trimmings.
- Q. 80. What do you include as offal?—A. Portions of the entrails and general refuse.
- Q. 81. What is done with the head?—A. The meat is made into head-cheese and the balance is put into the offal tanks.
- Q. 82. What is done with the feet?—A. Some are thrown into the offal tank, others are cooked and pickled.
- Q. 83. What is done with the entrails?—A. Some are cleaned for sausage casings, and the balance thrown into the offal tank.
- Q. 84. What is done with the heart, liver, and lights?—A. Some are used for sausages, and the balance thrown into the offal tank.
- Q. 85. What is done with the blood?—A. It is dried and used as a fertilizer.

Q. 86. What is done with the refuse from tanks?—A. It is dried and made into fertilizers.

Q. 87. Is all meat inspected before being shipped?—A. Yes, as a rule.

Q. 88. By whom?—A. By the Board of Trade and other inspectors, and by ourselves.

Q. 89. Under what authority?—A. Of the Board of Trade and mutual agreement.

Q. 90. Is meat ever packed and shipped without being inspected?—A. No, except by possible oversight.

Q. 91. Under what circumstances?—A. By mistake or oversight.

Q. 92. Do you ever guarantee inspection?—A. Yes.

Q. 93. If so, under what circumstances, and to what extent?—A. When buyers have our confidence and rejections can be returned.

Q. 94. What course does the inspector take in examining meat?—A. He goes in person, or by deputy, by mutual consent and arrangement of buyers and sellers.

Q. 95. Does he examine each piece?—A. Yes.

Q. 96. What tests are made?—A. He uses a "tryer," made for this purpose.

Q. 97. For fully or properly cured?—A. Yes, both.

Q. 98. For stags?—A. Yes.

Q. 99. For piggy sows?—A. Yes.

Q. 100. For sour meat?—A. Yes.

Q. 101. For bruised meat?—A. Yes.

Q. 102. For what causes is meat rejected?—A. For the above; also for irregular cuts, and for imperfect cure.

Q. 103. What is done with meat rejected by the inspector?—A. It is selected, sold on its merits to home markets, or put into offal tanks, according to its condition.

Q. 104. What do you say to inspection?—A. We respectfully suggest that a Government inspection of exported (or other) meats would no doubt meet with general approval, and it could doubtless be harmonized or merged into the present authorized systems in each important market.

Similar questions were addressed to the leading packing houses in Baltimore, Philadelphia, Jersey City, New York, Boston, West Albany, and Buffalo. The answers in all cases were essentially the same as those received from Armour & Co., of Chicago.

PURCHASE AND SALE OF HOG PRODUCTS.

The ordinary course of purchase and sale of hog products is as follows:

When a purchase of these products is made of a packing firm, an order is issued in favor of the buyer for the number of packages or pieces of meat sold; also an order to permit the buyer's inspector to make a satisfactory inspection of the meats. The purchaser hands the order for the meats to the agent of the railroad company, and the order for inspection to his inspector, or the regularly authorized inspector, as he sees fit, giving to each such instructions as will best carry out the terms of his purchase.

The rules and regulations for the purchase and sale of provisions and their inspection, adopted by the Saint Louis Chamber of Commerce, of December 18, 1883, are as follows:

SEC. 14. All provisions offered for sale as "standard" in this market must be cut, selected, and packed in all respects as to quality and condition equal to the standards established by the board of directors, and the seller shall be bound to fulfill his sale by the delivery of the quality called for by such sale, which, on examination by the authorized inspector, has been certified by him to have been packed according to the established classification, and is at the time of delivery in good merchantable condition in every respect. Provisions from which any surplus gain has been removed cannot afterwards be classed as "standard."

SEC. 15. In sales as standard of a particular packer's brand or cut, if the property does not pass inspection, the buyer shall elect either to take the lot tendered at contract price or require that some other brand or cut be substituted therefor that will pass inspection, or to receive the difference in value between the property tendered and such as called for by the contract; and such election shall be binding upon, and be carried out by, both parties as a settlement of the contract.

SEC. 16. In all cases of sales of provisions as "standard" the inspector shall examine and inspect, when called upon, and shall decide if the property be up to the require-

ments; and he shall issue his certificates, stating correctly the condition and quality of the property inspected and specify the defects, if any exist therein.

SEC. 17. In sales of fully cured meats, or to be fully cured and delivered at a specified time, the seller must deliver in good faith, according to contract, the inspector to be the judge, who shall always be fully informed of the conditions of the contract before proceeding to inspect. Where sales of dry salted meats are made without other specifications it shall be considered that the sales contemplate meats fully cured, the inspector to be the judge.

SEC. 18. On sale of provisions for future delivery, "at buyer's option," if buyer calls before expiration of contract, the seller, if he so elect, shall have at least five working days to prepare property for delivery, in the case of bacon and bulk meats. Purchasers of provisions shall have three days free of storage to remove property when in store.

The rules of the Chicago Board of Trade governing the purchase and sale of hog products and their inspection, adopted September 1, 1883:

RULE XXV.

PROVISIONS.

SECTION 1. The board of directors shall appoint five members of the association as a committee on provision inspection, who shall have and exercise a general control over the inspection of provisions, and shall act as referees in case of complaint against the chief inspector of provisions, or the inspection of any lot of provisions, or any matter of difference pertaining to the same; except as hereinafter provided. The committee shall be authorized, in determining the correctness of any inspection they are called upon to revise, to adopt any measures they may deem necessary under the circumstances for the ascertainment of its true character. The committee shall be entitled to fees amounting to \$3 each for each case of appeal decided by them, to be paid by the party against whom the decision shall be made.

SEC. 2. The board of directors shall also appoint a suitable person as chief inspector of provisions, who shall be required to give a bond in such amount as may be prescribed by the board of directors, for the faithful performance of his duties as indicated by the rules of the Board of Trade or by order of the board of directors. Said bond shall be satisfactory to the board of directors and be approved by them before the said chief inspector shall be entitled to enter upon the discharge of his official duties. Said bond shall be made to the president of the Board of Trade and his successors in office, for the use and benefit of any parties having legal claims for damages against said chief inspector on account of any of his official acts.

SEC. 3. The chief inspector of provisions shall appoint, to be confirmed by the committee on provision inspection, a sufficient number of competent deputy inspectors, who shall be under his control and subject to his orders in all matters pertaining to the performance of official duty.

SEC. 4. The chief inspector, through and by his deputies, shall furnish the necessary labor and materials for inspection. The several deputy inspectors shall make a report in detail of every inspection or examination they may make, which report shall be returned to the chief inspector, and be by him preserved for future reference.

SEC. 5. The board of directors shall also appoint a competent person as registrar of Provisions, whose duty it shall be to provide and cause to be kept suitable books in which shall be registered all warehouse receipts for beef and hog product issued as "regular" or for the "regular delivery" of such property in the Chicago market under the rules of the Board of Trade; such receipts, after being so registered, shall be stamped or written across their face with the word "registered," and the date of such registry, and signed, in writing, by the said registrar or some person duly authorized by him for that service. All warehouse receipts, before being registered, shall be plainly numbered, and shall indicate on their face the number or mark of the particular lot of property intended to be covered or represented by such receipt. All such receipts issued from or by each warehouse or other place of storage shall be consecutively numbered, and no receipts of duplicate numbers issued from the same place of storage shall be registered. All property covered or represented by registered warehouse receipts shall be plainly marked in such manner as will clearly distinguish it from all other property stored in the same warehouse or place of storage, and by such marks, numbers, or characters as may be approved by the registrar of provisions; such marks to be so arranged as to avoid the possibility of duplication or uncertainty as to the identity of the property so receipted for. No warehouse receipt shall be registered until a report shall have been received at the office of the registrar of provisions from a duly authorized deputy that the property represented by the receipt is actually in the place of storage and is marked as indicated in the receipt; such reports shall be in a form prescribed by the registrar, and shall be preserved by him

for future reference. No second warehouse receipt for the same property shall be registered unless the original is presented at the time and its registration canceled by the registrar. In such case new receipts, either for the whole or parts of lots, or the consolidation of different lots, may be registered upon the report of a deputy that the property is in the place represented, and is marked as represented. All new receipts so registered shall bear the same date, as near as may be, with the originals so canceled, and no receipts differing in date more than thirty days shall be consolidated into a new receipt.

No property shall be removed from the place of storage indicated by any registered receipt issued to represent it until the registration of such receipt has first been canceled in the office of the registrar of provisions by writing or stamping across its face the words "registration canceled."

SEC. 6. The chief inspector shall receive for his services and for the compensation of the deputy inspectors employed by him, the fees for inspecting as established by the Board of Trade. The registrar shall receive, as compensation for his own services and the necessary expenses of his office, such sum, to be paid from the funds of the association, as may be determined by the board of directors.

SEC. 7. All claims for errors of inspection, or damages resulting from improper inspection, shall be made to the chief inspector, and in case of dispute as to the validity of any claim so made the question shall be decided by the committee on provision inspection, or by a special arbitration, if either of the parties so prefer. In the latter case the arbitrators shall be chosen either by mutual agreement, or an equal number, not exceeding two, may be selected each by the chief inspector and the claimant; and the persons so chosen shall select an additional arbitrator. Arbitrations, either by the committee on provision inspection or special arbitrators, shall be conducted under substantially the same form of proceedings as regular arbitrations under the rules of the Board of Trade, and shall be subject to all the provisions of regular arbitrations, except that they shall not be subject to appeal.

SEC. 8. All deliveries of beef or hog product in store, in the absence of special agreement, shall be by the delivery of registered warehouse receipts, issued from such warehouses or places only as shall have been declared a regular warehouse for the storage of such property, under the rules of the Board of Trade, by the board of directors; such places of storage, in all cases, to be under cover, and such as is suitable for the proper preservation of the property. All such deliveries shall be accompanied by a certificate of inspection of the chief inspector of provisions, which certificate shall state the number of packages or the number of pieces, together with their weight, in the lot to which it applies, the place where the same is stored, and the distinguishing marks upon it; also the number of packages or pieces examined, and that the same was found to be in good merchantable condition and of standard quality. In the case of barreled pork, the number of pieces and the weight in each barrel shall be stated; also the date of its packing as indicated by the packer's brand upon the packages. Such certificate shall be dated within five (5) days of such delivery; the required number of days shall include both the day of date and the day of delivery.

SEC. 9. No warehouse receipts for beef or hog product shall be registered except such as have been issued by or from a warehouse or place of storage declared to be a regular warehouse for the storage of such property by the board of directors of the Board of Trade; and before any warehouse or storage place shall be declared a regular warehouse for such property the proprietors thereof shall file a bond with the Board of Trade for such an amount as may be deemed sufficient, and with sureties approved by the board of directors; such bond shall be made payable to the president of the board or his successors in office, for the use of any person or persons suffering damages by reason of the neglect of duty, fault, or fraud of the proprietor or manager of such warehouse, and such bond may be prosecuted in the name of the president of the Board of Trade, for the use and benefit of persons aggrieved or damaged by the acts of such warehouse proprietor or manager. All such bonds shall be conditioned upon the faithful and honest performance of his or their duties by the proprietor or manager of his or their warehouses, as defined by the laws of this State, or by the rules of the Board of Trade not inconsistent therewith.

RULE XXVI.

SALE OF PROVISIONS.

SECTION 1. All provisions sold in this market, in the absence of special agreement, shall be deemed standard, and the property delivered must comply with the requirements of the regulations of inspection established by the association. And all provisions sent to this market for sale, which, upon examination, shall be found to have been manufactured, handled, or packed, in all respects and to all appearances, in conformity with those rules, shall be classed as standard.

SEC. 2. All provisions sold as standard shall be cut, selected, and packed, in all respects as to quality and condition conformably to the classification of inspection as adopted by the association; and, unless otherwise stipulated, on all sales made of any of the grades of provisions as standard, the seller shall deliver the parcels of the kind and quality called for by such sale, which any duly appointed inspector of the association has examined, and has certified to have been packed according to the classification, and is at the time of delivery in good merchantable condition in every respect; or, failing to so deliver, he shall be bound to settle his contract under the provisions of Rule XXIV of the association: *Provided*, That in all sales specified as for cash, the buyer shall not be bound to pay inspection fees unless he orders the inspection of the property.

SEC. 3. Lard, hams, or shoulders may be packed in tierces, either wood or iron bound, or bound partly with both. Provisions from which any gain has been removed shall not afterward be classed as standard.

SEC. 4. All hog product to be classed as standard shall comply in all respects with the requirements of the rules of inspection adopted by the Board of Trade, and if delivered on or after January 1, shall include only such as has been packed on or after the first day of the previous November, and, in the case of barreled pork, shall include only such as has been packed between November 1 and March 1."

SEC. 5. No original weight shall be taken out of any package of provisions which is afterward to be offered for sale by the package, without removing the original packer's brand entirely from the head of the package, unless the property be repacked and so branded by the party repacking.

SEC. 6. Buyers of provisions on contracts, deliverable on the demand of the buyer within a specified time, shall have the right to inspect the same before the day of delivery, provided they send an inspector in time to allow the inspection to be completed before the proposed delivery; but failing to do so the seller shall have the privilege of having the property inspected, the cost to be paid by the buyer.

SEC. 7. On sales of provisions deliverable at the pleasure of the seller within a specified time the seller shall have the privilege of delivering, at any time during the life of the contract without previous notice to the purchaser, by the tender of a registered regular warehouse receipt, together with a certificate of inspection by an inspector of the association (such inspection having been made within the last five days), such a delivery shall be held to be regular, and the buyer shall receive and pay for the same together with the fees for inspection. If, however, within the next forty-eight (48) hours the buyer shall produce the certificate of the committee on provision inspection that the property so delivered is not standard, the seller shall immediately receive the property back, paying all accrued expenses, and substitute other property that is standard: *Provided*, That the evidence of the committee on provision inspection, as herein referred to, shall be furnished during the next forty-eight (48) hours, or as soon as said committee can report, they having been called for such examination, and the seller so notified, within the next twenty-four (24) hours. On sales deliverable on the demand of the buyer, if such demand be made, if the buyer calls before the expiration of contract, the seller, if he so elect, shall, in the case of pickled meats, have twenty-four (24) hours to prepare the property for delivery, and on bulk or boxed meats, four (4) working days.

SEC. 8. On sales of barreled meats or lard, if more than one brand is tendered, the purchaser shall be required to pay such inspection fees only as would be proper were it all of one brand.

SEC. 9. On sales of provisions as standard, or of a particular packer's brand, in case the property does not pass inspection, the buyer shall elect either to take the lot named at contract price, after being regularly inspected at cost of seller, or to require that some standard lot be substituted, but the buyer shall receive the one or the other if tendered within a reasonable time.

SEC. 10. In sales of fully cured meats, or to be fully cured and delivered at any specified time, the seller must deliver in good faith, according to contract; the inspector to be the judge, who shall always be informed of the conditions of the contract before proceeding to inspect. Where sales of dry salted meats are made without other specifications, it shall be considered that the sale contemplates meats fully cured; the inspector to be the judge.

SEC. 11. In sales of provisions, when an article is substituted or delivered inferior in quality to the sample exhibited, or which had been passed upon by the inspector as standard, the seller shall be responsible for any damage resulting from such exchange or substitution. All examinations or inspections are to be made within a reasonable time, and proper care of the property is to be taken by the owner or his agent.

SEC. 12. Joints cut from hogs that have been frozen shall not be classed as standard.

SEC. 13. In case of no specific agreement, the saltage allowed on bulk meats shall be 1 per cent.; but should the buyer or seller object, the inspector shall sweep as many drafts as he may consider necessary, and the percentage so determined shall be

binding on both parties. But from June 1 to November 1 the tare shall be ascertained by washing in cold water with a cloth, in case of no specific agreement to the contrary. One per cent. for drainage shall be allowed on pickled meats.

SEC. 14. To determine the tare of lard, the package shall first be weighed gross, the lard then removed, and the empty package subjected to dry heat and drained, the empty package to be then weighed and its weight deducted from the gross weight. The difference so obtained shall be considered the net weight of the lard.

SEC. 15. In case lard in tierces be delivered of a weight more or less than 320 lbs. net per tierce, the shortage or excess shall be settled for at the current market price, but the full number of packages contracted for shall be delivered. In the settlement of contracts for lard, 320 lbs. net shall be taken as the average weight of a tierce.

SEC. 16. Provisions, if desired by the purchaser, must be delivered at cars or on teams, from packing-house or store, free of charge. All deliveries of provisions in store shall be free of storage to the buyer for five (5) days, or, if in packing-houses, for three (3) days, except when the first day of the month falls on Sunday or a holiday; in which case receipts shall be regular to the buyer, if free of storage, for four days, or, if in packing-house, two days from the time the seller signifies his readiness to deliver, and any extra expenses attending the examination of provisions are to be paid by the party ordering the same.

SEC. 17. The standard net weight of meats packed in boxes shall be between 450 and 525 pounds for each box, and in all settlements or deliveries of boxed meats an average of 500 pounds net per box shall be made the basis for settlement, and the excess or shortage from said average shall be settled at the market value of the property delivered at the time of its delivery. But in case of delivery the full number of packages contracted for must be delivered.

SEC. 18. Long clear sides shall not average less than forty-five (45) pounds; short clear sides shall not average less than forty (40) pounds; and short rib sides shall not average less than thirty (30) pounds, and dry salted shoulders shall not average less than twelve (12) pounds, to be standard and regular on delivery, either loose or boxed.

SEC. 19. On an examination by an inspector of dry salted meats, in bulk or for boxing, if over twenty (20) per cent. turns out rejected, he shall not be required to take the lot in that condition.

SEC. 20. A delivery of sweet pickled hams or shoulders shall be considered regular if they average not over two (2) pieces unsound per tierce, and a deduction of twenty-five (25) per cent. on the price shall be made on the unsound.

SHIPMENT OF HOG PRODUCTS TO SEABOARD.

The railroad agent having received the order for delivery, orders a sufficient number of cars sent to the packing-house or warehouse. When loaded a receipt is given by the proper officer of the railroad company in charge of the loading, for the number of packages or pieces put on board. This receipt is attached to an invoice accompanied by a list of the individual weights and tares, and handed to the buyer. On this receipt a bill of lading in duplicate is issued, giving name of line or lines by which shipped, date of shipment, from whom received, marks or brands, destination, gross weight, and rate of freight per 100 pounds.

Shipments of bacon are usually made by all-rail routes to the seaboard; very seldom in any other way.

Pork and lard are shipped by lake steamers to Buffalo, and thence by canal to seaboard by rail.

Lard, and sometimes pork, is shipped in quite large quantities by lake steamers to Buffalo, and thence by canal to seaboard. This method, however, is of comparatively recent adoption.

The lard, when it reaches the canal, is placed on flat barges, or on the decks of canal boats, covered with an awning, and, in warm weather, frequently sprinkled with water.

Experience shows that these products invariably reach the seaboard in excellent condition.

On arrival at seaboard, if intended for export, the products are held in the cars or on the boats, and the consignee, or the agent of the steamship line with which the contract has been made, are notified of their

arrival. If a steamer is ready to receive the shipment, it is placed (if in cars) on board of lighters and towed to the steamer's side, or the dock, and loaded.

In case no steamer is ready, the property is sent to a warehouse to await the arrival of the next steamer. It is the custom in the trade with foreign markets to make sales upon a price that covers the cost, freight, and insurance to destination, and orders are usually made on this basis. It is also customary for buyers to state how and by what routes the goods are to be shipped.

As the reimbursement to the seller for export depends on all the conditions being strictly adhered to, he is very careful to see that they are carried out; and no documentary exchange is complete unless the original and duplicate bills of lading and certificates of insurance and inspection accompany the draft.

The following are the usual forms of inland and foreign bills of lading:

INLAND.

[Form 100 H.]

(N) NATIONAL LINE.

(Through freight line, owned and operated by the Pennsylvania Company. All rail. Via C., St. L. and P. R. R. and Pan Handle route.)

<p>[Cut.]</p> <p>(N) Nat'l Line.</p> <p>6,000.</p> <p>Marks.</p> <p>This bill of lading</p> <p>from</p> <p>Chicago, Ills.,</p> <p>to</p> <p>_____.</p> <p>The rate of freight through</p> <p>is to be</p> <p>_____ per 100 pounds.</p> <p>_____ per barrel.</p>	<p>No. —.] CHICAGO, ILL., ———, 188—.</p> <p>Received from ———, the following packages (contents and value unknown), in apparent good order, viz:</p> <p>Marked and numbered as in the margin, to be transported by the National Line, and the steamboats, railroad companies, and forwarding lines with which it connects, on the following term and conditions, viz:</p> <p>It being expressly understood and agreed that the National Line reserves the right, in consideration of issuing a through bill of lading, and guaranteeing a through rate to forward said goods by any railroad line between points of shipment and destination.</p> <p>It is further agreed that the rates given on bulk freight are given on the understanding that not less than 24,000 pounds will be loaded in each car, and that such minimum weight may, at the option of this line, be charged for, whether that quantity is placed in the car or not.</p> <p>It is further agreed that all weight in excess of 30,000 pounds per car will be charged double the rate named in this bill of lading.</p> <p>It is further agreed that the said National Line, and the steamboats, railroad companies, and forwarding lines with which it connects, and which receive said property, shall not be liable for leakage of oils or any kinds of liquids; breakage of any kind of glass, earthen or queensware, carboys of acids, or articles packed in glass, stoves and stove furniture, castings, machinery, carriages, furniture, musical instruments of any kind, packages of eggs, or for rust of iron and of iron articles, or for loss or damage by wet, dirt, fire, or loss of weight, or for condition of baling on hay, hemp, or cotton; nor for loss or damage of any kind on any article whose bulk requires it to be carried on open cars; nor for damage to perishable property of any kind, occasioned by delays from any cause or by change of weather; nor for</p>
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loss or damage on any article of property whatever, by fire or other casualty, while in transit or while in depots or places of transshipment, or at depots or landings at point of delivery; nor for loss or damage by fire, collision, or the dangers of navigation while on seas, rivers, lakes, or canals. All goods or property under this bill of lading will be subject, at its owner's cost, to necessary cooerage or baling, and is to be transported to the depots of the companies or landings of the steamboats or forwarding lines, at the point receipted to, for delivery.

It is further agreed that unless this bill of lading, properly indorsed, be delivered to the agent of the National Line at destination, on or before the arrival there of the hereinabove described property, the said line is authorized to deliver the said property to the consignee, or to the party to whose care it is by this bill of lading consigned; and after such delivery, the said line shall be no longer responsible for or on account of this bill of lading or for or on account of any assignment or transfer thereof.

It is further agreed that the said National Line and the steamboats, railroads, and forwarding lines with which it connects shall not be held accountable for any damage or deficiency in packages after the same shall have been receipted for in good order by consignees or their agents, at or by the next carrier, beyond the point to which this bill of lading contracts. Consignees are to pay freight and charges upon the goods or merchandise in lots or parts of lots as they may be delivered to them, and upon the weight as ascertained by the line's scales. The goods transported shall be subject to a lien, and may also be retained for all arrearages of freight due on other goods by the same consignee or owners.

It is further stipulated and agreed that in case of any loss, detriment, or damage done to or sustained by any of the property herein receipted for during such transportation, whereby any legal liability or responsibility shall or may be incurred, that company alone shall be answerable therefor in whose actual custody the same may be at the time of the happening of such loss, detriment or damage, and the carrier so liable shall have the full benefit of any insurance that may have been effected upon or on account of said goods.

And it is further agreed that the amount of the loss or damage so accruing, so far as it shall fall upon the carriers above described, shall be computed at the value or cost of said goods or property at the place and time of shipment under this bill of lading, except the value of the articles has been agreed upon with the shipper, or is determined by the classification upon which the rates are based.

It is further agreed that all weights furnished by shippers are subject to correction.

This contract is executed and accomplished, and the liability of the companies, as common carriers thereunder, terminates on the arrival of the goods or property at the station or depot of delivery (and the companies will be liable as warehousemen only thereafter), and unless removed by the consignee from the stations or depots of delivery within twenty-four hours of their said arrival they may be removed and stored by the companies, at the owner's expense and risk.

NOTICE.—In accepting this bill of lading, the shipper or other agent of the owner of the property carried, expressly accepts and agrees to all its stipulations, exceptions, and conditions.

— — — — —, Agent.

FOREIGN.

[Form 743.—Foreign. N. Y.—Special.]

STAR UNION LINE,

Via Pennsylvania Railroad and ——— from Chicago to ———.

Shipped in apparent good order by ——— ———, the following property, marked or numbered as below (weight, measure, gauge, quality, condition, quantity, brand, contents and value unknown), weight subject to correction:

Marks and numbers.	Merchandise.
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To be delivered in like good order and condition, unto ——— ———, or ——— assigns, upon payment in cash of freight due thereon, immediately on landing the property, at the rate of ——— ——— cents, American gold, per 100 pounds gross weight, with all charges and average accustomed, without any allowance for credit or discount, one pound sterling being considered equal to four dollars and eighty cents (\$4.80) American gold, under the following terms and conditions, viz:

1. That said Union Line, and its connections, which receive said property, shall not be liable for breakage of packages of eggs, or for rust of iron, and of iron articles, or for loss or damage by wet, dirt, fire, or loss of weight, or for condition of baling on hay, hemp, or cotton; nor for loss or damage of any kind on any article whose bulk requires it to be carried on open cars; nor for damage to perishable property of any kind, occasioned by delays from any cause, or changes of weather; nor for loss or damage on any article or property whatever, by fire or other casualty, while in transit or while in depots or places of transshipment, or at depots or landings at all points of delivery; nor for loss or damage by fire, collision, or the dangers of navigation while on seas, rivers, lakes, or canals. All goods or property under this bill of lading will be subject, at its owner's cost, to necessary cooperage or baling, and is to be transported to the depots of the companies, or landings of the steamboats or forwarding lines, at the points receipted to for delivery.

2. It is further agreed that said Union Line, and its connections, shall not be held accountable for any damage or deficiency in packages after the same shall have been receipted for in good order by consignees, or their agents, at or by the next carrier beyond the point to which this bill of lading contracts. Consignees are to pay freight and charges upon the goods or merchandise in lots or parts of lots, as they may be delivered to them.

3. It is further stipulated and agreed that in case of any loss, detriment, or damage, done to or sustained by any of the property herein receipted for during such transportation, whereby any legal liability or responsibility shall or may be incurred, that company alone shall be held answerable therefor in whose actual custody the same may be at the time of the happening of such loss, detriment, or damage, and the carrier so liable shall have the full benefit of any insurance that may have been effected upon or on account of said goods.

4. And it is further agreed that the amount of loss or damage so accruing, so far as it shall fall upon the carriers above described, shall be computed at the value or cost of the said goods or property at the place and time of shipment under this bill of lading.

5. And it is further agreed that the carriers shall not be liable for any discrepancy between the contents of the packages and the description of the same in the bills of lading, nor for any discrepancy between the mill brands of flour, as stated in the margin hereof, and those actually delivered.

6. And it is further agreed that from and after the arrival of said goods at the port of New York, and while said goods remain on the wharf or wharves waiting for further conveyance, the Union Line shall not, nor shall any of its connections—inland or ocean—be liable for delay, nor shall they, or any of them, be liable in respect of said goods otherwise than as warehousemen. It is also agreed that the said Union Line reserves the right not to forward said goods or property by first steamer or steamers, and to ship by any steamship or steamship line other than the one named herein.

7. And it is further agreed that this contract, on the part of the Union Line is accomplished, and the liability of the Union Line as a common carrier or forwarder thereunder as limited in and by the foregoing terminates, on the delivery of the goods or property to the steamship, her master, agent, or servants, or to the steamship line at port of New York, when the responsibility of the steamship or steamship line begins, and not before.

8. And it is further agreed that the above mentioned property shall be transported from the port of New York to the port of —, by the said steamship or steamship line, with liberty to ship by any other steamship or steamship line, subject to the following exceptions and restrictions, viz: That the carrier shall not be liable for damages arising out of the act of God, public enemies, pirates, robbers, thieves, by land or at sea, barratry of master or mariners, restraint of princes, rulers, or peoples; loss, or damage resulting from vermin, rust, sweating, wastage, leakage, breakage, mortality, or from rain, spray, coal, or coal dust, insufficiency of strength of packages, inaccuracy, indistinctness, illegibility, obliteration or omission of marks, numbers, brands, or addresses, or descriptions of goods, injury to wrappers however caused, or from corruption, frost, decay, stowage, or contact with or smell or evaporation from other goods, or from loss or damage caused by heavy weather, or pitching or rolling of the vessel, or from inherent deterioration, risk of lighterage to or from the vessel, transshipment, jettison, explosion, spontaneous combustion, fire before loading in the ship, or after unloading, heat, boilers, steam, or steam machinery, including consequences of defect therein or damage thereto, collision, stranding, straining, or other perils of the seas, rivers, steam and steam navigation, or land transit of whatsoever nature or kind, nor for damage, loss, or injury arising from the perils or matters above mentioned, and whether such perils or matters arise from the negligence, default, or error in judgment of the pilot, master, mariners, engineers, stevedores, or other persons in the service of the carrier; nor shall the carrier be held accountable for weight, contents, value, length, measure, or quantities or condition of contents, nor for money, documents, gold, silver, bullion, specie, precious metals, jewelry, precious stones, statuary, paintings, or other highly valued goods, or beyond the amount of one hundred pounds sterling for any one package, unless bills of lading are signed therefor and the value therein expressed, and the freight paid accordingly. The carrier is not to be liable for any damage to any goods which are capable of being covered by insurance, nor for any claim, notice of which is not given before the removal of the goods, nor for any claims for damage or detention of goods under through bill of lading, where the damage is done or detention occurs whilst the goods are not in the possession of the carrier, nor in any case for more than the known or invoiced value of the goods, whichever shall be least. Goods of an inflammable, explosive, or otherwise dangerous character, shipped without permission, and full disclosure of their nature and contents, may be seized and confiscated or destroyed by the carrier, at any time before delivery without any compensation to the shipper or consignee. In case any part of the within goods cannot be found for delivery during the vessel's stay at the port of destination, they are when found, to be sent back by first steamer, at ship's expense, the steamer not to be held liable for any claim for delay or sea risks. The only condition upon which glass will be carried is that the carrier shall not be held liable for any breakage which may occur from negligence or any other cause whatever. The goods to be taken from alongside by the consignee immediately the vessel is ready to discharge, or otherwise they may be landed by the master and deposited at the expense of the consignee, and at his risk of fire, loss, or injury in the warehouse provided for that purpose, and the carrier to have a lien on the goods for such charge. Parcels for different consignees, collected and made up in single packages, addressed to one party, for the purpose of evading payment of parcel freight, will be charged with the proper freight on each parcel. The steamer shall have liberty during the voyage to call at any port or ports to receive fuel, to load or discharge cargo, or for any other purpose whatever; to sail with or without pilots, to tow and assist vessels

in all situations, and in the event of putting back to New York, or into any other port, or being otherwise prevented in the ordinary course of her voyage, to transship the goods to any other steamer. Further, subject to any other conditions and restrictions expressed in the customary forms of bills of lading in use at the time of shipment by steamship or steamship line carrying this property.

(On the margin:)—Attention of shippers is called to act of Congress of 1851: "Any person or persons shipping oil of vitriol, unslacked lime, inflammable matches, or gunpowder, in a ship or vessel taking cargo for divers persons on freight, without delivering at the time of shipment, a note in writing, expressing the nature and character of such merchandise to the master mate, or officer or person in charge of the loading of the ship or vessel, shall forfeit to the United States one thousand dollars.

NOTICE.—In accepting this bill of lading, the shipper or other agent of the owner of the property carried expressly accepts and agrees to all its stipulations, exceptions, and conditions.

In witness whereof, the agent signing for the said railway and steamship companies hath affirmed to — bills of lading, all of this tenor and date, one of which being accomplished, the others to stand void.

Dated in Chicago, Ills., ———, 188—.

Agent severally but not jointly.

PART III.

CONCLUSION.

III.

EXTENT OF TRICHINIASIS IN AMERICA AND EUROPE.

This subject being in the present attitude of certain foreign governments in regard to American pork products the most important of all the questions that have received our attention, we have given it a very careful consideration. The alleged frequency of trichiniasis in American hogs has been *the* reason insisted upon by the various countries which have prohibited the importation of such products; for while it is true that other objections have been advanced, particularly in France, none of these have sufficient foundation in fact to stand the test of even a superficial examination. It is, however, not a question of the prevalence of trichiniasis here and its absence in other countries, since this parasite has been found infecting the hogs and other flesh-eating animals in the most widely separated portions of the earth. Dr. Manson examined 225 specimens of Chinese pork and found 2 or nearly 1 per cent. infected.* Dr. Wartable has described epidemics near the sources of the Jordan resulting from eating the flesh of the wild-boar,† and in every European country in which inspections have been made, a very considerable proportion of trichinous animals have been discovered.

Certain writers have pretended that the animals of France have never been infected with trichiniasis,‡ but this conclusion seems to have been reached without any investigations. A large proportion of the rats of Paris were long since found to be infected,§ and in 1879 a serious epidemic of trichiniasis, known as that of Crépy-en-Valois, occurred, in which sixteen persons sickened from eating the flesh of a native animal.||

That trichinæ also exist in America and infest a small proportion of American hogs is a fact that must be admitted, but it is a more difficult matter to compare the frequency of American and European infection than has usually been supposed. American hogs have usually been examined by microscopists who were competent to do the work and who would not overlook a single case, while in Germany there has been an immense number of inspectors employed (18,581 in 1881), many of whom were utterly incompetent. An examination in 1877 showed that many of the microscopes were useless, that glasses used were too dirty to permit the examination, and that some of the inspectors were incapa.

* Imp. Customs Med. Report, Shanghai XXI (1881), p. 26.

† Lancet, August 4, 1883.

‡ J. Chatin, *La Trichine et la Trichinose*.

§ Davaine, *Traité des entozoaires*, &c., p. 755.

|| Gazette des Hopitaux, February 20, 1879.

ble of detecting the parasite.* Even as late as 1881 there were complaints in regard to the incompetency of inspectors, and the continued recurrence of trichiniasis among people from eating inspected meats demonstrates that these complaints were not made without reason.† Even the German inspections of American meats cannot be taken as a fair comparison with the average of their inspections of indigenous animals, for the reason that our meats are examined in their larger cities and by their most competent inspectors. It is absolutely necessary to bear these facts in mind, in considering the figures which are given as representing the results of the microscopic examination of American and European pork.

PROPORTION OF AMERICAN HOGS INFECTED WITH TRICHINIASIS.

The hogs in Dearborn County, Indiana, seem to be infected in a larger proportion than anywhere else in the country, or at least were in 1874. Drs. Harding and Robbins examined 245 animals slaughtered near Lawrenceburg, and found that 40, or 16½ per cent., contained this parasite. This seems to be far beyond the average, however, even in this center of infection, for Drs. Gatch and Miller examined 200 animals at the same place and only found 13 infected, or 6.5 per cent.‡

In 1866 Belfield and Atwood are reported to have found 2 per cent. of the hogs slaughtered in Chicago infected, and in 1878 an examination of 100 animals at the same place, indicated that 8 per cent. contained trichinae.

From 1879 to 1881, Dr. F. S. Billings, of Boston, examined 8,773 hogs, of which 347, or 4 per cent., were reported as containing trichinae.

Dr. Deveron, of New Orleans, inspected 5,400 hogs in 1881 of which only 22, or 0.4 per cent., were trichinous.§ Of these animals, 529 came from Saint Louis, and among them were 18 infected ones, being 3.4 per cent.; 241 came from Louisville and 2 of these, or 0.83 per cent., contained trichinae; 484 from unknown parts of the West, had but 2 infected, or 0.4 per cent., while the remaining 4,146, mostly from the South, were free from this parasite.

Dr. C. A. Simpson examined 30 hogs at Atlanta, which were mostly from Tennessee, without finding any infected, and Dr. R. W. Steger examined 180 at Nashville, Tenn., all of which were also free. Dr. William Myers examined 330 hogs at San Antonio, Texas, finding trichinae in but 2, or 0.6 per cent.||

Dr. H. J. Detmers has examined from August to December, 1883, for the Department of Agriculture, 3,331 at Chicago; of which 80, or 2.4 per cent., were found to be infected. Of this number 1,126 were from unknown districts of the West; 46, or 4.08 per cent., containing trichinae; 50 were from Michigan, among which 4 contained the parasite; 831 were from Iowa, of which 19, or 2.27 per cent., were infected; 50 were from Dakota, of which 1 was infected; 520 were from Illinois, among which were 7, or 1.35 per cent., containing trichinae; 304 were from Wisconsin, with but 2 infected, or 0.66 per cent.; 350 came from Nebraska, having but 1 infected, or 0.28 per cent.; 100 were from Minnesota, and were free from infection.

* Vierteljahrschrift f. Ger., Med., &c., N. F. XXX, p. 175-181.

† Loc. cit. XXXVII, p. 345-351.

‡ A Report on Trichiniasis as observed in Dearbon Co. Ind. in 1874. By George Sutton, M. D., Aurora, Ind.

§ Report of American Health Assoc., vol. 7, p. 136.

|| Report of American Health Assoc., vol. 7, p. 138-145.

In the laboratory of the Department of Agriculture specimens from 300 hogs have recently been examined, and of these 5, or 1.66 per cent., were found to contain this parasite.

We have above the records of the examination of 18,889 hogs from various parts of the United States, of which 517, or 2.7 per cent., contained trichinæ. It is evident from these records that a considerable proportion of the hogs from some sections of the country are trichinous, while those from other sections are practically free from infection. While it may be difficult to outline the trichinæ districts and to trace the infected animals to the farms on which they were raised, it is believed that such a study would do much to clear up the origin of this infliction.

In addition to the inspections detailed above, Drs. Osler and Clement examined at Montreal 1,000 hogs from Western Canada, finding 4 infected.* The French inspectors report the examination of 103,528 pieces of American meat, containing 2,080, or about 2 per cent., infected.† The German inspectors, during the year 1880, examined 78,880 pieces of American pork, of which we have record, and found 1,265, or 1.6 per cent., to contain trichinæ; and in 1881 they examined 96,485 pieces, finding trichinæ in 2,414, or 2.5 per cent.‡

Taking all the examinations of American pork thus far made, both at home and abroad, and we have a total of 298,782, during which trichinæ were found 6,280 times, being 2.1 per cent., or 1 to 48.

It would seem that this number of pieces, considering the close agreement between the results reached by American microscopists over this limited territory and those obtained by the inspectors of American pork in Europe, perhaps represents the condition of American pork so far as examined.

In Europe there are some localities where the inspections have shown a greater proportion of infection than the average in the United States. At Stockholm 2,000 hogs contained 58 infected ones, or 2.9 per cent.; at Tannefors 300 hogs contained 10 infected ones, or 3.3 per cent.; and in 112 Bavarian hams 3 were trichinous,§ while Dr. Rine, of Linten, reported 4 infected animals in 45, or nearly 9 per cent.|| In Prussia, where the only really effective inspection is made, the proportion found infected with trichinæ was, in 1876, 1 to 2,000; in 1877, 1 to 2,800; in 1878, 1 to 2,000; in 1879, 1 to 1,632; in 1880, 1 to 1,460; in 1881, 1 to 1,839; in 1882, 1 to 2,056.¶ The number of inspectors in 1882 is placed at 20,140. Several inspectors at Erfurt were removed on account of incapacity, and complaints were made as to the condition of the microscopes. Indeed, it seems that the village barber is usually trusted with the inspection of hogs in the smaller towns and villages, and that he is required to make but three preparations from each animal.

Frequently, or generally, the specimens for examination are taken from the hams and hard muscles, where the trichinæ are least abundant, instead of from the pillars of the diaphragm and tenderloin, where they are most easily found. Since the great epidemic of trichiniasis in Saxony it seems to be admitted that these inspections are totally inade-

* An Investigation into the Parasite in the Pork Supply of Montreal, 1883, page 6.

† Chatin, *La Trichine et la Trichinose*, Paris, 1883, page 217.

‡ H. Eulenberg. Ueber die im Jahre, 1881, auf Trichinen und Finnen untersuchten Schweine. *Vierteljahrschrift, f. Ger. Med., &c.*, 1882.

§ Warfvinge, *Nord. Med. Ark.*, 1875, VII, 3, No. 18.

|| Meissner, *Schmidt's Jahrbücher*, No. 130, page 118. Quoted by Glazier Rep., page 68.

¶ H. Eulenberg, *Vierteljahrschrift f. Ger. Med.*, 1877 to 1883.

quate, and in order to make them more efficient the magistrates have awarded sums varying from 15 to 30 marks for each trichinous animal discovered. As a result of the rewards, and possibly of the fear excited by the recent terrible outbreaks of the disease in people, an increased number of infected hogs seem so have been discovered.* These facts, as well as the extraordinary number of people recently infected from eating pork which had been inspected, are sufficient to demonstrate that large numbers of trichinous hogs pass the inspectors without being discovered, and that consequently the figures given above are not a correct representation of the proportion of hogs which are infested with this parasite.

In nearly every country of Europe hogs have been examined and a certain number found to contain trichinæ, but the records do not seem to have been carefully kept; the data are not fully given, and there is reason to doubt the accuracy of the work. It is difficult, therefore, to reach any satisfactory conclusion as to the proportion of infected hogs. We may safely assert, however, that no country can with reason claim that its hogs are free from trichinæ, while the probability is that European hogs generally are infected in a much larger proportion than is at present admitted.

In some parts of Europe rats seem to have been examined more carefully than pigs; thus in Saxony one-half of the rats from flayers contain trichinæ, and 20 per cent. of all those caught are similarly infected; in Moravia, sixteen out of one lot of twenty rats were infected, nine of a second lot of twelve were infected, seven of a third lot of eight were infected. In Klederling, a suburb of Vienna, seven out of forty-seven, and at Untermeidling two out of thirty-one were infected.† In France, where the authorities now deny the existence of trichinæ except as imported, and where one of the reasons for prohibiting American pork is the alleged fear of scattering this parasite over the country,‡ the only outbreak of trichiniasis on record was caused by the flesh of a native hog; and the rats from the ditches and sewers of Paris, examined by Drs. Goujon and Legros, were infected in a very large proportion, one lot of thirty-two contained three with trichinæ, and of seventy-two rats, five were full of these parasites.§

EFFECT OF THE CURING PROCESS ON THE TRICHINÆ.

If we admit that about two per cent. of American hogs contain trichinæ, it becomes a matter of the greatest importance for us to inquire into the condition of the parasite after it has been subjected to the action of salt a sufficient time to enable the pork to be carried from the packing-houses in this country to the consumers abroad. And here the effect on the consumers is entitled to more weight as a matter of evidence than those scientific experiments which are simply designed to prove the life of the parasite; for the trichinæ may sometimes still be living but not have sufficient vitality to develop and reproduce itself. Such trichinæ would be perfectly harmless even though the pork were eaten without previous cooking.

In France it is said in the report of Academy of Medicine of Paris, that 95,000,000 kilograms or 200,000,000 pounds of American pork pro-

* Dispatches of A. A. Sargent, American minister at Berlin, to State Department, dated October 26 and November 12.

† Dr. Glazier, Report on Trichinæ and Trichiniasis, Washington, 1881.

‡ J. Chatin, Trichine et Trichinose, p. 153, foot-note.

§ Thèse de Paris, 1866, and Davaine Traité des Entozoaires, p. 755.

ducts had been consumed from 1876 to 1881 without causing a single case of disease. And notwithstanding the fact that large quantities of such pork have been consumed for a number of years, the one outbreak of trichiniasis at Crépy, which was clearly traced to a French hog, is the only instance of the appearance of this disease among people that is recorded in that country.

In Germany, where it is the habit of the people to eat pork without cooking, trichiniasis among people is common, and it has been very frequently asserted in some quarters that many of these cases were due to American pork. During the recent terrible epidemic at Emersleben and neighboring towns, Dr. Brouardel, of the Paris Academy of Medicine, went to Prussia to investigate the origin and nature of the disease and learn what he could in regard to the healthfulness of American pork. Not only did he find that these particular cases of trichiniasis were due to German hogs, but such eminent and well-known authorities as Professors Virchow and Hertwig, who have charge of the pork inspection at Berlin, asserted most positively that no case of trichiniasis in Germany had ever been clearly traced to American pork, although the people, as is their habit, persist in eating it raw.*

The so-called outbreak of trichiniasis on board the English reformatory school-ship Cornwall has been much quoted as illustrating the danger of American salted pork, but when closely investigated it proves to be an illustration of jumping at conclusions without evidence, as always seems to have been the case where trichiniasis has been attributed to our meats. This outbreak of disease occurred between September 23 and October 23, 1879, and forty-three boys were attacked out of a total of two hundred and sixty-two boys and fifteen officers on the ship. The idea that the disease was trichiniasis seems to have been an afterthought, for the only examination made was of the body of one of the boys two months after it had been buried. Doctors Powell and Cory thought they found trichinæ in the muscles, and concluded the disease must have originated from the American pork, which was used on board the ship; but no examination of this pork appears to have been made, and we are not at all certain that English pork was not used as well. Fortunately, specimens taken from the corpse were submitted for examination to that well-known scientist, Dr. Charlton Bastian, and he pronounced the worms not trichinæ at all, but a hitherto unknown nematoid which he classed with the genus *Pelodera*, calling the species *Pelodera setigera*. Dr. Cobbold, who is one of the very best authorities on this subject, asserts very positively that the worm was the *Pelodera teres*, and had probably invaded the body after death.† As this worm has never been known to exist as a parasite in the hog, the assumption that the disease was produced by eating pork is an entirely gratuitous one, and the further assumption that it was due to the American pork is evidently without the least foundation.‡

England has been one of the largest consumers of American bacon, hams, and pork, taking even in 1880 and 1881, when this trade reached its largest proportions abroad, five times as much as either France or Germany. Belgium has also been a large consumer. The *Comité consultatif d'hygiène publique de France* said in a recent official report that in order to determine the danger from the use of American pork they

* P. Brouardel L'Epidemic de trichinose d'Emersleben. Bul. de l'Acad. de Méd., Paris, 1883, p. 1501.

† Veterinarian, 1884, p. 4.

‡ Power, W. H. Outbreak of Fever proved to be Trichiniasis on board Reformatory School-ship Cornwall. Rep. Med. Off. Local Gov. Bd., 1879. London, 1880.

had recently made new inquiries in England and Belgium. In England they were told that trichiniasis was so completely unknown that it was never mentioned, either in the newspapers, the hospitals, or in teaching medicine. And this was also the case in Belgium.*

We may conclude, therefore, that notwithstanding the enormous quantity of American pork which has been consumed in Europe, there is no reliable evidence that any cases of trichiniasis have ever originated from its use.

We can now consider more intelligently the conflicting testimony in regard to the condition of the trichinæ in American salted meats when they reach Europe. In 1879 it was stated in the German reports that although a very considerable number of examinations had been made at Minden, no living trichinæ had been demonstrated in preparations of American pork.† This statement was repeated in 1880 by the same authority.‡ In France Colin and most others who have experimented with the trichinæ of American meats have found them dead and incapable of producing any injurious effects when fed to other animals. It was also found that even slight salting killed all the trichinæ within two months. Colin concludes, therefore, that the danger from eating American pork, considering the time that it must have been in salt before it can reach Europe, is slight or inappreciable.§ Fourment|| and Chatin¶ have contested these results, but their opinions are so extremely radical as to lose much of their force on this account. It is not impossible that in certain very rare cases the capsules containing the trichinæ may have become so dense or so impregnated with lime salts as to protect the parasites for a longer time than usual against the action of the brine; but the complete innocuousness of our pork as demonstrated by its use on so large a scale in England, France, Belgium, and Germany, with no cases of disease clearly traced to it, is the strongest possible evidence of the destruction of the trichinæ during the process of curing.

Dr. Brouardel, of the Paris Academy of Medicine, who investigated the recent outbreaks in Ermsleben, has furnished new and very important evidence on this point.** He learned that the meat of the diseased hog was chopped and mixed with sufficient salt to preserve it, and those who ate of this meat soonest after the killing of the animal were not only more severely affected, but their symptoms appeared in a shorter time. The animal was killed the 12th of September, and of those who partook of this meat on the 13th 33 per cent. died, while of those who did not eat of it until the 18th and 19th none died. In fact, there was a very regular gradation in the intensity and fatality of the cases when they were classified according to the number of days which had elapsed between the killing of the animal and the eating of the meat. It was very evident that the parasites were rapidly losing their vitality and their power to produce disease. M. Colin thought this was due to the effects of the slight salting, and M. Brouardel seemed willing to admit this.

If, then, so marked a result is produced in a single week by the slight salting which this chopped meat received it is very plain that the high

* H. Bouley, *Bul. de l'Acad. de Med.*, Paris, 1884, p. 33.

† Eulenberg, *Vrtljhrscht. f. ger. Med.*, 1879.

‡ *Loc. cit.*, 1880.

§ G. Colin, *Comptes Rendus*, xcvi (1882), 886-'8.

|| L. Fourment, *Comptes Rendus*, xciv (1882), 1211-'13.

¶ J. Chatin, *La Trichine et la Trichinose*, Paris, 1883, 164-190.

** Brouardel, *Bul. de l'Acad. de Med.*, 1883, 1501.

degree of salting to which our packed meats are subjected must be sufficient in the vast majority of cases to completely destroy all trichinæ and to make the meats perfectly safe. The question cannot be narrowed down for this reason to a comparison of the proportion of animals affected with trichinæ in America and Europe, even if this were actually determined, which is not the case, but it necessarily turns on the healthfulness of the meats of these countries at the time when they are offered for consumption. And when the matter is viewed from this stand-point the very great superiority of American salted meats over even the inspected German hogs is too apparent to be questioned by unbiased scientific men.

In the latest discussion on this subject in the Paris Academy of Medicine M. Proust said :

The question is not a determination if American meats contain trichinæ, but in what condition these trichinæ are found ; if they are alive or dead ; if they are injurious or not ; in a word, if the consumption of American salted meats is dangerous or not to the public health.

In this connection I ask permission of the academy to read a passage from a most interesting letter that I received this morning from Dr. Gibert, a health officer and distinguished sanitarian of Havre :

"In 1881," says M. Gibert, "American salted meats entered largely into the food supply of the working class of Havre ; but in regard to this it is important to divide the consumers into two classes :

"1. The people buying American salted meat for family consumption always cooking it and never eating it raw. The inhabitants of the quarters of Eure and Saint François nourished themselves exclusively with it.

"2. The workmen employed in handling the packages of salted meat, who during fifteen years continued to eat this meat raw. MM. Bouley and Chatin could easily have seen in their walks on the wharves of Havre workmen breakfasting on a piece of bread and a slice of raw bacon, eating not only the fat but all parts of the meat. Any one could repeatedly see these workmen day after day, even when at work, eating pieces of raw salt pork without fear.

"It is certain, then, that at Havre, for more than fifteen years, hundreds of workmen consumed salted meats trichinous as well as not trichinous, and never during this long period of years has a single workman been incommoded by this food.

"No physician in Havre has seen a disease resembling in the least the Ermsleben disease described by MM. Brouardel and Grancher. Such an assertion demands some proofs which it is easy for me to give.

"I would remark, in the first place, that if the meat consumed raw had affected the health of the workmen employed in such large numbers handling salted meats the directors would have soon discovered the vacancies in the ranks of the workers. After an investigation carefully made by me, and which it is easy to make anew officially, it was found that never had there been a knowledge of such a fact in any of the large importing houses of Havre.

"The workmen, after the arrival of the Paris savants, took pleasure in eating the pieces themselves that were pronounced trichinous, so certain were they of their perfect harmlessness. And neither during the stay of these gentlemen at Havre nor afterwards was there a single case of disease, or even a simple indisposition.

"In the second place, I would remark that during this period of fifteen years we have had no serious epidemic of typhoid fever. That of 1880-1881, the only one at all serious which has occurred in our city, affected the quarters occupied by the well-to-do or rich people, while the quarters where the American meat was consumed suffered very little. There was then no possibility of an error on the part of the physicians, even if such a gross error could have been committed.

"It follows, from the facts that I have just related, that the salting of American pork is sufficient to kill the trichinæ ; and if, in addition to this cause of security which has been experimented upon by the workmen of Havre for fifteen years, we add the cooking, as it is practiced everywhere in France, the conclusion is forced upon every one not prejudiced in advance that American salted meats are absolutely incapable of producing trichiniasis in the consumers."

In the same discussion M. Leblanc said :

The discussion appears to me exhausted ; however, I ask permission of the academy to communicate in support of the note of Dr. Gibert the following observation. It was furnished to me by the principal meat inspector of Paris :

The veterinarians under his direction examined during six months in 1881 5,000

kilograms (11,000 pounds) of American salted meat per day. Sixty thousand kilograms were seized as trichinous, and a large part was shipped to England. During these six months the employés and draymen of the dealers in salted meats who came to the station of Batignolles ate meat in presence of the inspectors which was notoriously infected with trichinæ. Not one of them became sick.

One of these, M. R., employed by Calman, 11 Rue Bergère, was accustomed to this, and took pleasure in eating the parts of the pork in which the microscope had demonstrated the presence of trichinæ. To-day, after three years, he is well; more than this, having been received at Beaujon as a patient of our colleague M. Tillaux, for a fractured arm, and having related his bravado, he was the subject of a special examination; his muscular tissue was recognized to be healthy, and no trichinæ could be found in it.*

EFFECT OF COOKING ON TRICHINÆ.

If the trichinæ of American pork are destroyed by the curing process in a time much shorter than is necessary for such meats to be shipped from our packers to any of the consumers in Europe, it may seem superfluous to go into a consideration of the effect of cooking, and yet it is not wholly so. Under certain conditions it would appear that the trichinæ do resist the curing process for a considerable time; and though these conditions occur so seldom that uninspected salted meats are much safer than inspected fresh ones, it is still worth our while to inquire if perfect safety against infection cannot be guaranteed where a reasonable degree of cooking is practiced.

There is some conflict of opinion as to the temperature necessary to destroy trichinæ, and yet the results of experiments do not differ so widely. Vallin† concluded that a temperature of 54° to 56° C. (129 to 133° F.) kills most of them, and that 60° C. (140° F.) is safe. Fiedler's experiments show that trichinæ are quickly killed at 62.5° C. (144.5° F.) Fjord's investigations show that the interior of a ham weighing 8 pounds reaches 65° C. (149° F.) after boiling two hours and seventeen minutes; one weighing 10 pounds, after three hours and six minutes; one weighing 14½ pounds, after four hours and eleven minutes; and one weighing 16 pounds, after four hours and thirty-seven minutes. Vallin found that a ham weighing 12 pounds had an interior temperature of 65° C. after three and a half hours' boiling. These results, therefore, correspond very closely. Hein‡ found that a 2.2 pound roast reached a temperature in its interior of 69° C. after one and a half hours. Rupprecht observed that rapidly fried sausage only had an interior temperature of 53.5° C., and was still capable of producing infection. Colin§ had a steak weighing half a pound boiled for ten minutes, when its appearance on cutting was white, without any red points. It still contained living trichinæ, however, which, being fed to a bird, were afterwards found developed in the intestine.

The indications from these experiments are that while fresh meats may not always be cooked sufficiently to kill trichinæ, salted meats are almost invariably cooked for more than the necessary time. This conclusion seems also to be borne out by the experience of people in all parts of the world. Trichiniasis from cooked meats is an exceedingly rare disease. In the United States, where pork in its various forms is

* Bulletin de l'Academy de Medecine, 1884, No. 6 (February 5), pages 241 and 247.

† E. Vallin. De la resistance des trichines à la chaleur et de la temperature centrale des viandes préparées. Rev. d'hyg. Paris, 1881, III, 177-182.

‡ C. Hein. Rep. of a case of trichiniasis, with remarks on diagnosis and prophylaxis. Mitth. d. ver. d. Aertzte in Nied Pest, 1883.

§ G. Colin. Sur les trichines. Bulletin de l'Acad. de Med., 1881, 243.

consumed to as large an extent as in any part of the world, and where more than one-fourth of the hog product of the world is eaten, it is seldom, indeed, that we hear of any infection among our native population, because the habit of eating raw meats, particularly when fresh, does not prevail. The few cases which occur from time to time are nearly always among Germans and are traced to the ingestion of pork in some form, which has not been cooked at all.

In this connection Dr. Brouardel brought out a very interesting fact in his investigation of the epidemic at Ermsleben. No cases of disease occurred there except with those who ate the meat raw. The family of Herr Heine, the mayor of Ermsleben, consisting of five persons, consumed some of this same meat in the form of sausage on the 15th of September. The sausage was cut in pieces about $1\frac{1}{2}$ inches in diameter and was cooked by placing in boiling water for only five minutes. Not one of this family suffered in the least degree, but the cook who ate a small piece of the sausage before it was cooked, contracted the disease. Boiling for so short a time has never heretofore been considered sufficient to destroy this parasite, and yet in this instance it undoubtedly protected the consumers from the infection.

At the session of the Paris Academy of Medicine, January 29, 1884, a report was presented by the special committee appointed to consider (1) the report of M. Brouardel in regard to his mission to Ermsleben, (2) the communication of M. Grancher on the symptoms and pathological anatomy of the epidemic of Ermsleben, and (3) a letter from the minister of commerce asking the advice of the academy in regard to the question of trichiniasis. In this report appear the following points of interest:

A considerable invasion of German rats has been noticed of late years after the freezing of the Rhine, and M. Brouardel no longer sees the same species of rats at the morgue that he formerly found there. M. Laboulbene and M. Colin had occasion to observe quite a large number of trichinous rats that had been found in the sewers of Paris. Finally, we are also invaded by the trichinæ which penetrate France with the German hogs, which are infected in the proportion of 1 to 1,000 to 1 to 2,000.

Without doubt we do not know precisely, scientifically, the degree of activity of the trichinæ according to the time that they have been encysted in American meats, their vigor, the condition of the meat and the stage of the curing—desiderata which future experiments can alone supply.

The same ignorance exists in regard to our own hogs—are any of them trichinous? If so, what proportion? What is the condition of those in the suburban zone surrounding Paris which, nourished like the sewer rats, may be trichinous like them.

It remains for us to speak of the action of American salted meats in the production of the epidemics of trichiniasis in Germany which have been observed at Dusseldorf, Rostock, and Bremen, but our information in this respect is entirely insufficient, and according to the indications that M. Brouardel has already presented to the academy the exotic origin of these epidemics is denied by several of the principal German savans, and particularly by M. Virchow. Our Government might address the German Empire in regard to this in order to have official documents; but the results of such an inquiry have for us, from the stand-point now under discussion, an almost secondary importance. If in fact we, like the English and the Belgians, have been free from epidemics of trichiniasis although we received salted trichinous meats and even fresh or slightly salted pork of German origin more dangerous than that which comes from Chicago or Cincinnati, since it had only to cross the Rhine and the Vosges, this is because our culinary habits are entirely different. Let us remark also that in America it is above all the Germans who are affected with trichiniasis—an additional proof of the effect of culinary habits.

But already we can conclude from the developments which precede that no case of trichiniasis having been noticed either in France or in England from the consumption of American salted pork, the importation of these meats may be authorized in France. This decision has been reached by the commission by a vote of 5 to 1.

At the same session of the academy M. Lunier presented the following table, showing the importation of salt pork products for eight years in kilograms :

Year.	United States.	England.	Germany.	Other countries.	Total.
1876.....	3,269,960	1,875,736	702,530	1,047,920	7,896,146
1877.....	12,462,078	1,889,905	994,234	1,078,505	16,424,722
1878.....	28,102,290	1,454,884	921,167	1,314,437	31,792,778
1879.....	31,784,913	1,107,691	1,039,678	1,742,854	35,675,131
1880.....	34,246,195	1,233,228	846,174	2,387,671	38,713,268
1881.....	17,123,767	686,525	723,465	1,182,474	19,716,231
1882.....	4,611	1,109,870	1,055,783	1,074,259	3,244,523
1883.....	52,396	.....	1,136,793	2,091,779	3,274,966

It follows from this table that the importation of American salted meats, which had augmented rapidly from 1876 to 1880, began to diminish in 1881, after the decree of February 18, 1881, which prohibited the importation of salted meats from the United States into all the French territory. The 4,611 kilograms which appear in the year 1882 came from a stock taken from the warehouses December 31, 1882. The 52,396 kilograms of 1883 were introduced after the promulgation of the decree of November 27, 1883, which removed the interdiction.

The same gentleman presented the following table, which shows the number of live hogs imported into France in the years 1877 and 1882, and the countries from which they came :

Countries.	1877.	1882.
Germany.....	15,983	16,165
Belgium.....	57,806	68,716
Spain.....	4,234	2,204
Italy.....	66,366	9,567
Switzerland.....	964	1,586
Other countries.....	941	913
Total.....	146,294	99,148

In this connection he remarked, "It is then, to-day, Belgium and Germany which furnish us the greatest number of living hogs. Is it not from this direction that there is reason to fear the invasion of trichinæ and trichiniasis?" *

TRICHINIASIS IN AMERICA AND EUROPE.

The number of cases of trichiniasis occurring among people in the United States is actually very small. The records of these have not been brought together in a thorough manner, but, as far as we have been able to ascertain, the disease has never occurred in more than three or four localities in a single year, and during the last twenty years there does not appear to have been more than thirty different outbreaks. In none of these outbreaks have a sufficient number of people been attacked to allow of the term epidemic being applied to them in any proper sense of the word. Usually but two to four people have been affected at a time, and never so far as we have been able to learn, more than ten. All have resulted from eating raw or very imperfectly cooked meat, and in very few of the instances had the pork undergone any preliminary curing. Some of the cases reported as trichiniasis were never demonstrated to

* Bulletin de l'Académie de Médecine, 1884, pp. 189-211.

be this disease, but seem to have been the result of poisoning by meat which had been preserved without sufficient salting until it had undergone partial decomposition. It has long been known that extremely virulent poisons are produced during putrefaction of flesh, and the effects of these have been observed so often in Germany when sausages were eaten that they have received the special name of *wurstgift* or sausage poison. This does not seem to be understood by many American physicians, and so nearly every case of sickness arising from the consumption of the raw or imperfectly cooked flesh of hogs in the various forms in which it is preserved is reported as trichiniasis. So that while it may be true that some cases have not been reported or brought to our notice it is equally true that not all the cases reported as trichiniasis were really due to trichinæ.

In the debate which occurred in the French Senate June 20, 1882, M. Festelin referred to seven epidemics produced by American pork.* One of these so-called *epidemics* consisted of a single case of the disease which occurred in New York. Another was the disease on the English ship Cornwall, which was at first supposed to be typhoid fever, and was only decided to be trichiniasis when a body was exhumed two months after burial, and worms, which the examining physician took to be trichinæ, were found in the muscles. But we have it on the very best authority that these worms were not trichinæ, and there is no evidence even that they caused the disease. The most probable theory is that they gained access to the body after burial. No trichinæ or other parasites were found in the American meat consumed on this vessel.

Another epidemic he referred to as having occurred at Bremen, in which forty persons became diseased from eating an American ham. M. Chatin has mentioned this outbreak again and again, and insists that it is a demonstration of the dangerous character of American meats. The charge was so serious that it has been investigated as carefully as possible. M. Testelin does not give the authority who is responsible for this statement, nor does he so much as say in what year the outbreak occurred. M. Chatin is more definite, however, and says the disease was observed in 1875.† He refers to the *Traite d'hygiène publique et privée*, by Pronst, published in 1877, as his authority for asserting that forty persons were affected at this place as the result of eating an American ham. By consulting the yearly health report of Bremen for 1875 we find that no cases of trichiniasis in man are recorded during that year. There is simply a statement that two trichinous hogs (native animals) were discovered near Bremen. The outbreak of trichiniasis referred to by Testelin and Chatin seems to have been one that occurred at Hastedt, near Bremen, in 1874, during which forty-two persons suffered, but all recovered. This epidemic was first announced August 15, and was caused by eating the flesh of a hog that had been slaughtered July 31. The diagnosis was confirmed by microscopic examination of a piece of muscle from one of the sufferers.‡ There had been a habit here, as in most other parts of Germany, of attributing all cases of this disease to American pork without investigation, and this may have been the origin of the story so industriously circulated by M. Chatin. At all events this is the only extensive epidemic of trichiniasis which is recorded as occurring at or in the vicinity of Bremen from 1873 to 1877, inclusive, and there is no question but that this was caused by a native animal.

* Chatin, *La Trichinee*, &c., p. 210.

† Chatin, *La Trichine*, &c., p. 165.

‡ Dritter Jahresbericht über den öff. Gesundheitszustand, &c., in Bremen, in Jahre 1874.

One of the other epidemics referred to occurred in Madrid, and another in Liège, in Belgium. It is doubtful if, in either case, the trouble was traced to our pork; but no facts in regard to them have yet been obtained.

M. Chatin, in his recent work on trichinæ and trichiniasis, states that "such is actually the frequency of trichiniasis in the United States that the newspapers consider themselves happy if they have but a few deaths to record each week." Whether any one in France believes this remarkable exaggeration may be considered questionable, but still it is seriously advanced by a scientific man as a reason for prohibiting our pork. Those who see the American papers know very well that not only weeks but months elapse when no deaths are recorded from this cause. And if it were not for our foreign population, who have brought with them their dangerous habits of eating uncooked pork, America would be as free from trichiniasis among her people to-day as is France.

When we examine the records of Germany, however, we find that, in spite of the small proportion of infected hogs which they admit, in spite of the inspection, there occur a very large number of cases of this disease. In 1877 there were 16 in Königsberg, 1 in Potsdam, 6 in Berlin, 98 in Stettin, 1 in Oppelu, 61 in Merseberg, and 52 in Minden. In 1878 there were 27 in Königsberg, 8 in Marienwerder, 102 in Potsdam, 50 in Stettin, and 30 in Merseberg. In 1879 there were 55 cases in Königsberg, 93 in Frankfort-on-the-Oder, 82 in Berlin, 7 in Marienwerder, 3 in Schleswig, 60 in Erfurt, 7 in Merseberg, and several in at least three other places. In 1880 there were 149 in Merseberg, 83 in Erfurt, 49 in Frankfort-on-the-Oder, 3 in Marienwerder, 29 in Königsberg, and 16 in Berlin. In 1881 there were 3 in Marienwerder, 15 in Berlin, 10 in Frankfort-on-the-Oder, an indefinite number in Posen, 4 in Stettin, 148 in Merseberg, and 58 in Erfurt. In 1882 there were 3 cases in Berlin, 60 in Cologne, 4 in Merseberg, 4 in Heiligenstadt, and several in Posen.* In 1883 the remarkable epidemic in Saxony occurred from eating pork which had been slaughtered and inspected in the town of Ermsleben. In Ermsleben 257 persons contracted the disease, and 50 died.† In Deesdorf there were 40 cases and 9 or 10 deaths; in Nieu-hagen 80 cases and 1 death. There were a number of other epidemics during the year, the statistics of which have not yet been published, but we have already recounted sufficient to show that trichiniasis is incomparably more frequent in Germany than in America.

Indeed, for the seven years from 1877 to 1883, inclusive, the very incomplete statistics given above show that 1,835 people contracted the disease, being an average of 262 cases per annum. When in addition to this we consider that the United States is really the greatest pork-eating nation in the world, that we consume more than four times as many hogs as are raised in Prussia, that a considerable portion of our population consists of Germans who retain their habit of eating raw pork, the wonder is, not that we have a half dozen or a dozen cases of trichiniasis in a year, but that we do not have many times this number; and we see no way of explaining the comparative immunity which our people enjoy except by the conclusion that our pork, even when fresh, is not so much more dangerous than the German article, as the results of microscopic examination thus far published would lead one to suppose.

* Eulenberg, *Vrtljrscht. f. ger. Med. N. F.*, XXVIII-XXXVII.

† *Deutsche Med. Woch.*, 1884, No. 1, p. 7.

REPORTS OF BOARDS OF HEALTH.

The commissioners prepared and forwarded copies of the following circular letter to the various State and city boards of health:

With a view to ascertaining the extent to which trichiniasis prevails in the United States, the following questions have been formulated, to be addressed to the secretaries of the various State and city boards of health.

As it is desirable that the report of the commission should be presented to Congress at once, the undersigned would beg as speedy a response as possible:

1. How many cases of trichiniasis have come to the knowledge of your board? Please give dates as far as practicable.
2. In how many cases was there a microscopic identification of the trichinæ in the human subject and in the suspected meat?
3. How many of the cases were fatal?

Responses have been received from thirty-nine of these boards; of this number twenty-two give negative replies; they were as follows: Alabama, Arkansas, California, Delaware, District of Columbia, Kentucky, Louisiana, Maryland, Minnesota, Missouri, Albany (N. Y.), Ohio, Pennsylvania, Rhode Island, Tennessee, and Virginia.

The secretary of the State board of Alabama says that no case has ever occurred in that State, though infected meat has been reported.

The secretary of the health department of Maryland says that after an examination of the records from January 1, 1834, to December 31, 1883, covering a period of fifty years, he finds no cases of trichiniasis reported.

The health officer of Cleveland, Ohio, says that in 1872-'73 there were some cases of trichiniasis reported in that city, but no definite record of them can be found.

CASES OF TRICHINIASIS REPORTED.

Cases of trichiniasis are reported by the following boards, viz:

Connecticut.—Three in 1882, all from the same pork and at the same time. The suspected meat was examined by Mr. C. W. Chamberlain, of Hartford, secretary of the board, and others. No deaths resulted.

Illinois.—The registrar of vital statistics for the city of Chicago says:

Three deaths from trichiniasis have occurred in this city within the last ten years. Two of these occurred in December, 1880, and the last one in January, 1882. There was a microscopic identification in the two first cases, and probably also in the last.

The secretary of the State board of health says:

Between 1866 and 1881 there had been seven outbreaks of trichiniasis in Illinois, resulting in eleven deaths out of some seventy or eighty cases. Since 1881 there have been two deaths in Chicago; three outbreaks, resulting in three deaths, and some twenty-five or thirty cases in 1883, and one in Fulton County in 1884, details of which have not yet been received. In nine of the fatal cases the disease was identified by microscopic examination of the human subject, and of the suspected meat in all cases.

Iowa.—The secretary of the State board of health reports as follows:

Since 1880, in compiling deaths, I have found 3 recorded as from trichiniasis; in 1880, 2 in Adams County, probably genuine cases; in 1881, 1 in Butler County, a very doubtful case. None of the cases were identified by microscopic examinations.

Massachusetts.—The health officer for the State board of health for Massachusetts says:

The number of cases of trichiniasis that have come to the knowledge of the board are as follows:

	Cases.
In Saxonville, Mass., February, 1870.....	3
In Lowell, Mass., March, 1870	6
In Framingham, Mass., December, 1872.....	3
In Becket, Mass., May, 1873	4
In Wakefield, Mass., March, 1880.....	3
Total number of cases.....	19

One death occurred in the outbreak at Saxonville.

Identification of trichinæ was made in the fatal case at Saxonville by *post mortem*. In the Lowell cases trichinæ were identified in the pork, as also in the Framingham cases. In the seven remaining cases at Becket and Wakefield the evidence was symptomatic and by exclusion, *i. e.*, members of families who had not partaken of uncooked pork were exempt from infection. The evidence, however, was satisfactory to the board.

Michigan.—The secretary of the State board of health of Michigan gives the following detailed report of ten outbreaks of trichiniasis in that State since December, 1866:

1. A fatal case of trichiniasis occurred in Detroit, Mich., in December, 1866. Upon *post mortem* examination large numbers of trichinæ were found in the abdomen, and a lesser number in the muscles of the leg. (Dr. Herman Kiefer.)

2. Five cases occurred in Port Huron, Mich., in January, 1874, with 2 deaths. The cases occurred in one family, and were caused by eating salted smoked ham. (Reported by Dr. M. Northup, Port Huron, Mich.)

3. Several cases of trichiniasis occurred near Flint, Mich., in the fall of the year 1875. Cases also occurred there in June, 1876. In the last outbreak, at least, trichinæ were found by microscopic examination in the meat, and also in a particle of muscle of the leg of one of the patients. (The cases were in the practice of Dr. A. B. Chapin, of Flint, Mich., now of Detroit.)

4. Five cases occurred in Otsego Township, Allegan County, Michigan, in February, 1877. All recovered. All were in one family, the members of which had eaten raw ham. Members of another family ate a small quantity of the meat, and were also sick, but recovered without medical attendance. Trichinæ were found in the meat by microscopic inspection.

5. Three cases, with one death, occurred in the city of Iona, Mich., in 1878, in the family of Mrs. Strunck. The meat was eaten raw. A microscopic examination of the meat was made, and, I believe, trichinæ were also identified in the human subject.

6. I am informed that cases, and one or more deaths, occurred in the vicinity of Iona, Mich., in the summer of 1880, in the practice of Dr. H. B. Barnes. Trichinæ were found in the pork, and also, I believe, in the muscles of those who died.

7. Five cases and two deaths occurred in the family of a German named Rumsock, in Lansing, Mich., in the last of January, 1881, and the first of February, 1881. The cases were in the practice of Dr. Dolan, of Lansing, who has since died. Great numbers of non-capsuled trichinæ were seen by Dr. George E. Ranney, myself, and others, in the muscles of a boy who died. (I still have slides showing the trichinæ as taken from the muscles of a person in the family who died.) Part of the meat was eaten raw. It was not examined for trichinæ; but the hog was sick and was killed to avoid loss of the animal.

8. Five cases of trichiniasis occurred in Vickeryville, Montcalm County, Michigan, in December, 1883. All resulted from eating the flesh of one hog. One death occurred. The boy who died had at different times eaten small pieces of pork only partially cooked by holding them on a fork before the fire. He had also eaten raw, on several occasions, little bits of sausage made from the flesh of the hog. Two others had eaten the meat cooked, but probably rare-done. The other person had eaten raw a little bit of sausage, perhaps half an ounce, but the rest of what he ate was well cooked. Trichinæ in abundance were found in the pork, specimens of which are now in this office. (Reported by Dr. J. Tennant, Carson City, Mich.)

9. Four cases occurred in January, 1884, in the city of Niles, Mich. One death has occurred and three persons are now seriously sick. The pork contains great numbers of trichinæ, as determined by observations made at Niles, Ann Arbor, and in this office.

Further details as to the five cases occurring at Port Huron, and also of the case

at Detroit, are given in the published report of this board for the year 1875; and of those occurring in Otsego, in the report of this board for the year 1877.

Such answers as I am able to give to the four questions asked by your commission, have been summarized from the foregoing particulars, and are given with each question, as follows:

"Question 1. How many cases of trichiniasis have come to the knowledge of your board? Please give dates as far as practicable.

"Answer 1. I am able, at this time, to send you facts concerning ten outbreaks of trichiniasis occurring in Michigan. In three of these the number of cases was not stated. In seven outbreaks there was a total of twenty-eight cases. The dates are given in most instances, in the report accompanying this.

"Question 2. In how many cases was there a microscopic identification of the trichina in the human subject and in the suspected meat?

"Answer 2. In two outbreaks the observer did not state whether any microscopic examination was made. It is believed that the human muscles were examined in five of the outbreaks, and in each of them trichinae were found; in three of these it is positively known that trichinae were found present. In seven outbreaks the pork was examined, and in each of the seven trichinae were found in the pork. In the other outbreak, microscopic examination was made only of the muscles of the human subject, in which trichinae were found.

"Question 3. How many of the cases were fatal?

"Answer 3. In one outbreak it was stated that there were no fatal cases; in one outbreak, where fatal cases occurred, the number was not stated; in one outbreak it was not stated whether any fatal cases occurred; in another outbreak, now in progress, one death has already occurred; and in six other outbreaks seven deaths were reported; making in all, in which the number was reported, eight deaths."

New Jersey.—The records of the State board of New Jersey extend from January 1, 1875, to date, a period of about nine years. During this period but one death from trichiniasis has been reported. This was in May, 1881, and was a female. The method by which the diagnosis was determined is not known.

New York.—The following report is furnished by the secretary of the board of health of New York City:

A few cases of alleged trichiniasis have come to the knowledge of the board, but there is no record of the number or dates.

In two families, during the past eighteen years, there has been, within the knowledge of this board, microscopic identification of trichinae in the human subject.

During the past ten years five deaths attributed by attending physicians to trichiniasis have been reported to this board, one in 1875, one in 1878, one in 1880, and two in 1881.

The secretary of the board of health of Brooklyn, N. Y., says that five cases of trichiniasis have occurred in that city, of which a full history may be found in the proceedings of the Medical Society of Kings County for 1879.

North Carolina.—The secretary of the State board says that an equivocal case of trichiniasis occurred in Wilmington in that State, but no microscopical examination was made. It was in the person of a boy of German parentage, habituated to using raw ham.

West Virginia.—The health officer of the city of Wheeling reports five cases—father, mother, and a child of same, aged two and one half years, and two females of other families. All ate of same meat—raw, smoked ham—on March 4, 1870. No microscopic identification was made in the human subject.

Wisconsin.—The secretary of the Wisconsin State board of health says that some cases of trichiniasis have occurred in Milwaukee, but does not give the number or dates.

CAUSE AND PREVENTION OF TRICHINÆ IN SWINE.

The worm known as the *trichina spiralis* has no stage of its existence outside of the animal body, and cannot multiply or even remain alive for any considerable time, so far as has ever been ascertained, after it

quits its host. Every infected animal must become infected either by eating the muscular tissue of another animal which has previously obtained the parasite in the same way, or possibly by taking food which has been soiled by the excrement of an animal recently infected. It is generally admitted that eating flesh which contains the parasite is the most frequent, if not substantially the only, way in which trichinæ find their way into the body. A few cases have been advanced to show that pastures and feeding places may be infected and be dangerous for a considerable time; but, according to our present knowledge of the natural history of this parasite, it may be doubted if many instances of this kind occur.

When meat containing trichinæ is taken into the stomach the capsule or cyst which surrounds the worm is dissolved by the digestive liquids, the parasite is set free, develops into its mature form, the females are impregnated, and each give birth to one thousand or more young. The young trichinæ penetrate the intestinal walls and find their way into the various muscles of the body while the mature worms, and doubtless many of the young as well, are voided with the excrement. Now, it may be admitted that a large number of the mature parasites will be passed from the bowels before they have brought forth their young, and that if taken into the stomach of another animal the act of reproduction would continue; but it seems doubtful if enough of such mature worms would be consumed in this manner to cause any serious infections. We do not know, however, how long the worms are able to live outside of the body in this developed condition; if they can exist but a few days the danger from them would be very slight, but if this period can be prolonged for weeks or months the danger would be more serious, and we might have at least a partial explanation of the many cases of infection occurring where the condition of life among the hogs seems to be all that could be desired.

The young trichinæ or larvæ which are produced in such enormous numbers in the intestines within a few days after infected meat has been eaten, and many of which are doubtless voided with the excrement, are practically incapable of dangerously infecting grounds or feeding places. These cannot reproduce themselves until they have found their way into the muscular system, and have been encysted for a time, so that even a considerable number of such larvæ taken into the stomach would produce no appreciable effects.

In the present condition of knowledge the tendency is to conclude that by far the larger part of trichinous hogs are infected by eating the flesh of some animal which has previously been infected in the same way. Trichinæ cannot develop or live for any considerable time in the bodies of insects, cold-blooded animals, or birds, and, consequently, the infection must result from some of the warm-blooded animals, which either habitually or occasionally eat flesh. Among these cats, rats, and mice are the ones most frequently suspected; but an inquiry into the conditions under which hogs are raised in the West has led us to doubt if the infection could occur in any considerable number of cases in this way. Hogs are usually kept in grass fields, where rats and mice are not common, and where cats certainly do not abound, and in no part of the hog-raising country is it a custom, so far as could be ascertained, to run the hogs in corn-fields, where there would be an opportunity of their finding rats and mice.

It has been charged that there was a custom of feeding the hogs which died from disease to the well animals, and that this accounted for the trichinous infection. After an extensive investigation, however

we feel authorized to state that this assertion is not correct. Such a practice seems to have been followed to some extent a half dozen or more years ago, but as the contagious character of hog cholera became better understood, and as the demand increased for the cheap grease rendered from such dead animals, they were more generally sold to rendering establishments at a price considerably beyond what they would be worth for animal food. The trichinæ of to-day must therefore be acquired from some other source than the hogs which die upon the farms.

The French and German authors have not hesitated to assume that our hogs were infected by feeding upon offal from the slaughter-houses, but this assumption could only have been made in complete ignorance of the actual condition of affairs in the hog-growing sections of the country. Practically all of the hogs which go to the packing-houses are raised upon farms miles, and generally hundreds of miles, from any large city where offal could be obtained, and they are never fed upon anything but vegetable food. The blood and offal at the large packing-houses is dried at a high temperature and sold for fertilizers, and is never fed to the hogs even in the stock-yards. The foreign microscopists have the proof of this in their own hands, if they would only give the matter a little consideration before accepting the absurd statements of ignorant and prejudiced parties.

During the killing season as many as 60,000 hogs are received at the Chicago stock-yards in a single day, and it is evident that it would be impossible to furnish accommodations for holding this enormous number for any considerable time before killing. Now the trichinæ which are found in American pork are in the vast majority of cases encysted, and for this condition to be reached time is required, and much more time than it is possible to hold hogs in the cities where alone offal for feeding them can be obtained. It is four weeks after infection before cysts are formed, and it is six weeks to two months before they reach the condition in which they are generally found by the microscopic examination of our meats. While we know from our own observation in all the cities where hogs are packed that the animals are not fed upon offal previous to killing, we have here in the condition of the trichinæ themselves the best and the most incontrovertible evidence that the animals were not infected by offal fed while they were held at the packing houses before slaughter.

It is evident from what has just been said that we are unable at present to give a satisfactory explanation of the manner in which Western hogs become infected with trichinæ, for the conditions of life, at least so far as we were able to see, appear in the vast majority of cases to be all that can be desired. The infected hogs must be traced to the counties from which they come, and even to the farms on which they are raised, and the conditions studied as they exist on known infected premises before it will be possible to give a solution to this difficult question. And until this is done no effectual rules for prevention can be formulated farther than in a general way to recommend that the hogs have no access to any animal matter except what has been thoroughly cooked.

ORIGIN, NATURE, AND EXTENT OF SWINE PLAGUE OR HOG CHOLERA IN THE UNITED STATES AND EUROPE.

All cases of sickness among the hogs of this country, as a rule, are spoken of as cholera, and the deaths from all causes are grouped together in the statistics as the results of this disease. Hogs, however, like

other animals, are subject to the various diseases which arise from meteorological conditions, from exposure, from improper food and surroundings, from parasites, and from injuries; but farmers are unable to discriminate between many of these conditions, and therefore all are classed together. There is no doubt that there exists an infectious malady of hogs, which at times is very destructive, and to which the term swine plague can be properly applied, but the statistics as at present compiled give an exaggerated idea of the ravages of this plague.

The disease known as hog cholera or swine plague appears to have had a comparatively recent origin in this country, and there is no direct evidence to show that it originated, or that it now originates, *de novo*. On the contrary, hogs were raised in large numbers under conditions substantially the same as now for many years before the appearance of this disease. It was not until some time between 1850 and 1860 that hog cholera, so-called, first appeared in the States of North and South Carolina, Georgia, and Alabama, and then it was clearly traced to droves from Kentucky and Tennessee. If we go back a few years earlier we find the malady seems to have been unknown even in the Western States, and consequently there were many years during which our farmers enjoyed an immunity from this the principal infectious disease of the hog. Now, however, that the infection has been widely disseminated over the country there are many outbreaks which cannot be traced to their origin, and hence the theory of its spontaneous generation becomes more and more popular with a large class of our population.

It is the old story over again which it seems must be fought out separately for each of the contagious diseases.

Rinderpest was believed to arise spontaneously on the steppes of Russia until an investigation was made, and then it was found that the originating point drifted farther and farther toward the east, but could never be found. Lung plague for many years was said to occur spontaneously in many countries of Europe, but as more determined efforts were made to exterminate it and to trace the outbreaks to their origin there were fewer and fewer who accepted this belief, until now it has but a handful of adherents in the whole of Europe. Glanders was thought to arise very frequently from badly-ventilated stables and overwork, but to-day he who was the most eminent advocate of the theory admits that these conditions are powerless to produce the disease unless the virus has been introduced from an affected animal. And this we believe is also true of swine plague. If it was unknown in America it has existed from time immemorial in the various countries of Europe, and might easily have been introduced with the improved animals brought from there. Indeed, its appearance in this country dates from about the time when the first earnest efforts were being made to improve our hogs by infusing the blood of pure-bred animals from abroad; and the fact that this disease is known in at least one instance in recent years to have been imported in this way is sufficient evidence that the same may have occurred in earlier years.

The fact that hog cholera exists in a country is therefore no evidence that the hogs are improperly fed or cared for; but it rather indicates that the people do not sufficiently appreciate its contagious character, and do not enforce sufficiently stringent measures in regard to it. The investigations made under the direction of the United States Department of Agriculture during the past five years have thoroughly convinced our hog growers that this trouble arises from contagion, and the precautions which they have observed to prevent the infection of their herds have had an extraordinary effect in lessening the amount of this

disease. In fact, the malady has hardly existed in an epizootic form since 1879, and the comparatively few outbreaks which have occurred have been far apart and have not covered any great extent of territory. The ravages of the disease appear to be steadily decreasing, and it is believed that, with the continued observance of the precautions against infection, it will never again assume the importance that it has in the past.

There seem to be no accurate records of the extent of swine plague or hog cholera in any of the nations of Europe with the exception of Great Britain. That it is frequently very destructive in most parts of the continent is shown by the veterinary literature and by the recent attempts in France to confer immunity on the hogs by vaccination. In Great Britain a record is now published of the number of animals affected and the number which die, and we learn from this that during the first twenty-one weeks of the year 1883, 3,607 animals were attacked, and 731 died. As there are about eighteen times as many hogs in the United States as in Great Britain, this would be equivalent to about 65,000 cases here in the same time, providing our hogs were diseased in the same proportion. It is evident from these figures that the disease is by no means confined to the United States, and if it has caused more discussion here than abroad, this was occasioned by the determination of our farmers to learn some way of preventing its ravages.

The conditions under which our hogs are generally raised are so good that the origin of diseases cannot be explained by them. They run upon large grass fields and are fed largely upon Indian corn and other vegetable food; and it is difficult to see how any substantial improvement can be made upon this mode of feeding.

It has been frequently suggested that our pork would be firmer and of better quality if part of the corn now fed were replaced with pease or similar concentrated food, containing a large proportion of nitrogenous constituents. That such a change would have a desirable effect upon the quality of the pork is scarcely to be doubted, for we know that mast-fed hogs, the nuts constituting the food of which contain but a very small proportion of nitrogenous matter, produce soft, oily meat, which shrinks very much more in cooking than corn-fed pork. The proportion of the nitrogenous to non-nitrogenous constituents in the nut which forms the food of the mast-fed hogs is about 1 to 15, in that of the corn-fed hogs it is about 1 to 8, and if a further change in this direction could be made until the nutritive ratio reached 1 to 6 the quality of the pork would, according to prevailing opinion among scientists, not only be improved, but the hogs would gain more rapidly in weight. Barley is said to make remarkably fine pork, and this is evidence in favor of the view just mentioned, for in this grain the nutritive ratio is 1 to 6½. While, therefore, it is not necessary to recommend a change in the present manner of feeding on the ground of healthfulness alone, it is probable that a change in the direction suggested above would have a desirable influence on the hardiness of the animals, cause them to lay on flesh more rapidly, and improve the quality of the pork. Whether such a change can be economically made or not is a question which every farmer will have to decide for himself.

RELATION OF SWINE PLAGUE TO HUMAN HEALTH.

While swine plague is a disease apparently common with the hogs of all nations, it has been brought forward, particularly in France, as one of the reasons for rejecting American pork. It has been asserted that the disease was communicable to mankind, that it is caused by a micro-

organism, which develops spores, and in that state resists the most unfavorable condition for an indefinite time, and that our pork is dangerous to human health abroad because of infection with this parasite.

In regard to the first point there is no evidence that the two or three cases of diphtheria referred to as occurring in the West were produced by the ice from the creek where dead hogs had been thrown, or that this had any connection whatever with the malady affecting the animals. Diphtheria among children has become a very common disease in most parts of the country, and in most parts of the civilized world in fact, and there was no more reason for concluding that these two or three isolated cases originated from swine plague than there would be in attempting to trace the measles and scarlet fever of the Western States to the same source.

In the second place, the disease is not caused by a bacillus, as was so confidently asserted, but by a micrococcus, which does not form spores, and this organism very soon loses its virulence outside of the living animal body, and is very sensitive to heat and other unfavorable conditions of existence. It is doubtful if this parasite could survive a single day in salted pork, and it is very certain that the slightest degree of cooking would destroy it, as it is unable to resist a temperature of 140° F. for fifteen minutes.

A review of all the evidence satisfies us that the virus of swine plague is not in the least degree injurious to human health. Both English and American investigators have frequently made post-mortem examinations of hogs dead from this disease, when cuts and abrasions upon their hands were covered with this virus in the most virulent form, and in no case has any discomfort resulted. It would seem that no more severe test could be made of the dangerous qualities of a virus than this, and in connection with the lack of evidence that any disease among people has ever originated from the sick or dead hogs it is sufficient to show the absurdity of such baseless rumors.

Again, it seems to be impossible for the flesh of diseased hogs to enter the market for human food. There are health officers in nearly all stock-yards, whose duty it is to see that such animals are not killed for food. The skin and flesh of diseased animals is so discolored that it would be detected at once, either before or after curing; and packers are unanimous in their testimony that the meat of feverish or diseased animals cannot be cured without its developing a disagreeable odor, which at once reveals its character. There are, consequently, many substantial reasons for asserting that the fears so vigorously expressed abroad in this connection are groundless, and that the trade inspections which every buyer has the privilege to order to be made by his own experts are sufficient to protect the consumer.

COST AND PRACTICABILITY OF INSPECTION.

Although many objections have been urged against the use of American pork, the only one of these that has sufficient weight to be used as a reason for prohibition is the fact demonstrated by microscopic examination that a small proportion of our hogs contain trichinae. The only form of inspection that can remove this cause of complaint and make our meat satisfactory to foreign governments is, therefore, a microscopic inspection of the hogs that are to be packed for shipment to those countries which have placed restrictions upon this trade. This would doubtless be an undertaking of considerable magnitude, considering the large number of animals to be examined; but there is nothing impossible about it. It is simply a question of expense. If the profits in shipping

hogs to the countries are sufficient to pay the cost of inspection and leave a balance that will induce the trade, then it would undoubtedly be an advantage to the pork industry to establish such a system of inspection, providing this remains necessary to secure the admission of our pork products. We have already demonstrated that American pork without inspection is safer when it reaches Europe than are the native hogs which have undergone inspection there; and it is our opinion that this fact should be sufficient to secure the free admission of our pork to every part of the world without the expense of a microscopic examination. But if this free admission cannot be obtained without such examination, then it would be desirable to consider if a microscopic inspection can be made practicable under the conditions which exist in this country, and particularly at the packing centers. The inspection need cause no delay in any of the processes of packing, since the carcasses in any case should be allowed to hang from twenty-four to forty-eight hours in the cooling room before cutting, and this would be amply sufficient for the inspection. It is probable that certain packers would make special arrangements for packing and shipping to countries that have now prohibited our pork as soon as they were assured that the inspection required by the United States Government could be made at a reasonable sum per head and in guaranteeing the meat free from trichinæ would satisfy foreign Governments and restore the trade.

CONCLUSION.

In conclusion, we would say that after carefully studying every circumstance that in any way affects the condition of the American swine, from the hour of their birth to the landing of the cured meat in foreign ports, we are free to say that our exported pork in all its forms is fully equal, perhaps superior, in its freedom from taint of every kind, either from disease or deterioration after slaughtering, to the pork of France or Germany, or any other country in which the hogs are confined within a narrow compass, and do not enjoy that free run and pasturage which they get in the hog-growing regions of the United States. There is no general prevalence of disease among swine in any portion of this country. Microscopic examinations show that here, as in all other countries, a small percentage of the swine is affected with trichiniasis; probably a smaller percentage than in the countries of Europe. That the occasional presence of trichinæ in our pork is a comparatively unimportant fact is shown by the rarity of trichiniasis among human beings, as indicated by the returns from the State and city boards of health. Another very important fact is the almost certain destruction of the trichinæ when present in pork by the curing process before it can be landed in foreign countries. Nevertheless, while we believe that no legitimate grounds exist for the restrictions imposed in some foreign countries on the importation of American pork, we are satisfied that microscopic inspection of all pork for export can be secured at the packing-houses, if such inspection should be demanded, as we have already fully explained.

Respectfully submitted.

The Parkes Museum

PRESENTED BY

THE I. H. E.



GEO. B. LORING,
E. W. BLATCHFORD,
C. F. CHANDLER,
F. D. CURTIS,
D. E. SALMON,
Commission.





