## THE PACKING INDUSTRY OF CHICAGO.

BY DAY ALLEN WILLEY.

The industry of killing and packing beef, pork and mutton has reached such proportions at Chicago—the greatest center of this industry in the world—that the most modern processes have been introduced for the purpose of economizing both time and labor, as well as utilizing all of the products of the carcass. The Union Stock Yards, where are located some of the largest packing plants, are the most extensive in the world, having accommodations for nearly 125,000 hogs, 20,000 cattle and 15,000 sheep. Yearly 3,000,000 cattle and 5,000,000 hogs are slaughtered and converted into packing-house products in what is known as "Packing Town," which really forms a section of the yards. A further estimate of the extent of the industry can be gained when it is stated that the space devoted to pens alone comprises 200 acres, while the yards are traversed by 150 miles of railroad track and 20 miles of streets, and the troughs from which the live stock are fed and watered aggregate 75 miles in length.

As far as possible, machinery has been employed, with the result that one of the large companies treats 7,000 hogs in a day, where by hand less than 10 per cent of this number can be disposed of. While the killing itself is still done by manual labor, the butcher has every appliance to further his work. The drove of hogs, for example, is passed from the yards into specially-shaped pens, thence forced, single file, into a compartment where a large metal wheel revolves slowly but continuously. An attendant seizes each of the animals by one of the hind feet and fastens it to the wheel by a short chain. As it is lifted into the air, the butcher with a thrust of the knife opens the throat; the work occupies but a second. The blood from the carcass flows into a trough, which passes it on to vats, where it is kept until utilized in the manufacture of fertilizer. The carcass revolves on the wheel until it reaches a point where it is automatically removed and fastened to a trolley system which conveys it into the scraping-room. Here it passes through a machine, provided with revolving blades, which removes most of the bristles, preserving them so that they can be later made into brushes. The carcass is then passed into a vat or tank of boiling water, which softens the balance of the bristles so that they can be easily removed by hand. From this apartment it is conveyed by machinery into the chill-room, where it remains for 24 hours before being cut into sections.

The carcass, freed from blood and bristles, is now ready for the cleaver, who separates it into the hams and sides for bacon, and removes the fat, which is to be converted into lard and other products. The cutting is done so dexterously that a few minutes suffice for one man to separate the hog into the several portions. Then the hams and bacon are placed in reservoirs filled with a pickling composition, of which each company has its own formula. The other portions for provisions are placed in the salt-room, where they remain from forty to sixty days. The same length of time is required also for the hams and bacon. Following the pickling and salting processes comes the smoking, which is done in compartments where thousands of pieces can be cured at the same time.

The lard is extracted, or tried, in immense kettles heated by steam, and while in the liquid state it is forced through pipes into the packing-room, the pails and other receptacles being filled by merely opening valves connected with the pipes. It is then allowed to cool and is ready for shipment. The pork sausage is also largely a machine product, the meat being chopped into fine particles by rapidly revolving blades, and then forced into skins made of the intestines of the hog, these intestinal skins being, of course, first thoroughly cleaned by machinery. A part of this machinery, which is operated by compressed air, will fill several feet of sausage skin in a few seconds. The links are made by merely tying the skin with strings in sections a few inches in length. Before it is sent to market, sausage is usually hung in the storehouse for a few days to "season."

Except for fastening the hog to the wheel, the killing process, the cutting into pieces, and fastening the packages, the animal passes through the packing-house

Wrapping Butterine.

with scarcely a touch of the hand. Sheep are treated in a somewhat similar manner, except that the carcasses are not made into so many products. When slaughtered they are swung from the floor by chains fastened to the hind feet. The throat is opened by the single thrust of the knife, and the body is conveyed mechanically into the chill-room. It is usually kept in this department forty-eight hours, when the hide is removed, and it is cut into halves or quarters as desired. Formerly the skins were sold with the wool on, but the packers have invented a process by which the wool

Filling Lard Pails.

can be easily stripped from the hide. The wool is then cleaned thoroughly in hot water, dried and packed in bales to be shipped direct to the cloth manufacturer, the hide being sold to the tanner. The mutton intended for shipment is usually placed in the refrigerating department, which may contain 10,000 pieces at one time. Here it can be kept for an indefinite period, as the air is maintained at an even temperature by a refrigeration system which extends to all portions of the department. When the time arrives for shipment, the refrigerator cars can be run into the refrigerator compartments, and the meat transferred without exposing it to the warm air. In the modern method of killing cattle the stunning process is still retained. As the beeves are driven into the gangways in single file, men upon elevated platforms knock them senseless by a blow between the horns with a heavy hammer quite similar in shape to the implement used in spiking railroad ties. As the animal falls a door in the side of the gangway is opened, allowing the carcass to slide to the floor below, where it is slaughtered. Here the transferring machine is attached to the body, and as fast as an animal is killed it starts on its journey through the several departments. First comes the chill-room, then the compartment where it is skinned. While one man is removing the hide, another cuts off the head and removes the tongue, and another the feet. Next it is halved or quartered in the cleaving-room, and cleaved ready for shipment to the centers of consumption, either in this country or abroad. The carcasses are usually left in halves, being transferred to the cold storage department, where, like the sheep, they may be kept an indefinite period.

The beef affords a much greater variety of products than either the sheep or the hog, although, as already stated, every portion of the animals is put to some use in the modern process. The fat, boiled in large kettles, is resolved into oleo and stearine, oleo, or oil of the beef, forming the basis of butterine and oleomargarine. This and stearine are utilized in some of the soaps which are now manufactured. The blood is converted into fertilizer, and also into buttons of a cheap grade, which are now manufactured in Packing Town, within a short distance of the slaughter-houses. The hoofs, of course, are converted into glue. In the fertilizer compound, practically all of the offal of the beef can now be utilized.

Within three or four years the manufacture of soaps and liquid foods has been undertaken on a very large scale in connection with the Chicago packing industry. Scores of products which have beef for the basis are distilled, refined and placed in bottles and jars in plants adjacent to the packing houses. The principal concerns of Chicago manufacture their own cans for liquid and solid products, and own the factories for making boxes and barrels, while one company operates a mill for making bagging for hams. As 100,000 packages may be filled in a week with liquid and solid food, the economy of this plan is apparent. Even in the preparing of what is known as canned corned beef the tins are filled with the cooked meat by machinery, the contents of each package being molded so that they fit to a nicety. After filling and soldering, the package is placed in boiling water, then a hole is made in the top to allow the gas to escape, and it is resoldered, keeping the contents in good condition for a period of years in any climate.

The trolley system is being used not only in the abattoirs for transferring the carcasses, but for the general transfer of packages and cars from one point to another. The electric motor hauls everything, from a truck to a railroad car. The method used for transferring the carcasses usually consists of an overhead bar or rail, along which the trolley is moved, taking its current from wiring or a feedbar. To the trolley are attached short chains ending in hooks, so that the animals can be easily fastened to it. The "hog-killing wheel," as it is termed, also revolves by electric power.

Mrs. George E. Hobbs, of Bridgeport, Conn., recently secured a patent on a car truck which enables trains to round curves without lowering the speed, and also permits the substitution of a broken wheel without the necessity of running the car into a repair shop. The invention was recently inspected by two representatives of the Manhattan road of New York.

Cutting up Hogs.

Pulling Wool.

THE PACKING INDUSTRY OF CHICAGO.

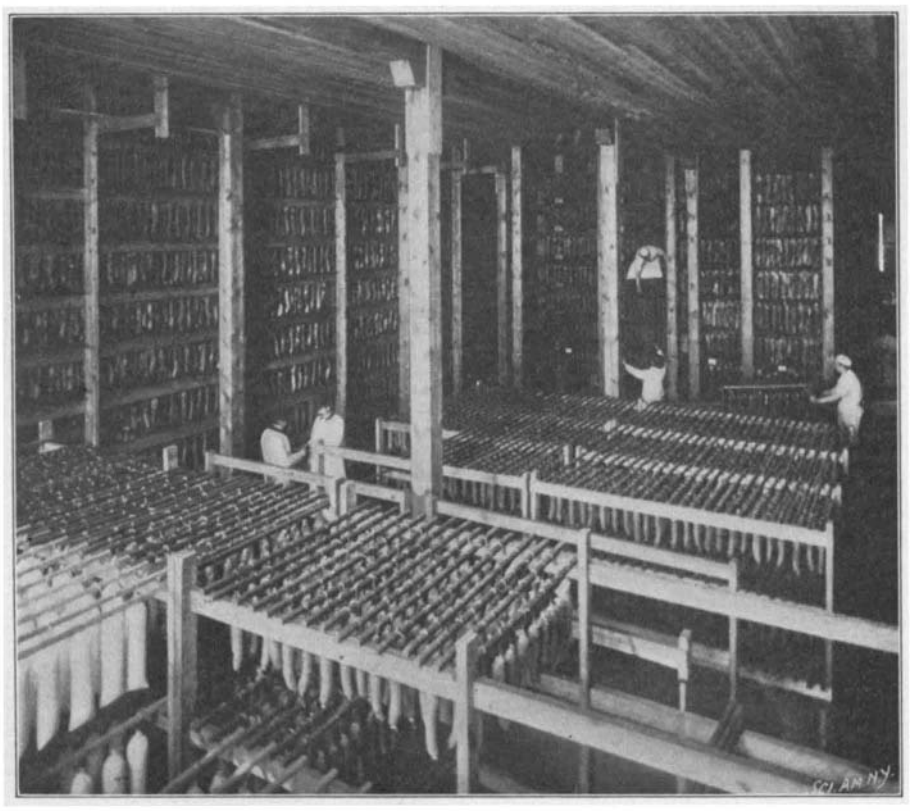
### Export of American Horses.

BY GEORGE E. WALSH.

The revival of the horse does not necessarily mean a decline in the popularity of the bicycle, automobile, and trolley. These latter will go on independently of our four-footed beast of burden, and the latter, it may be said, will have his day again in spite of harnessing all the agencies of nature for performing the work of man. Wars and rumors of wars stimulate the demand for horses and mules, and in times of peace new forms of sport and pleasure introduce ways of utilizing them. The world to-day appears to be suffering a horse famine, and the heavy drafts made upon the resources of this country contribute largely to the steadily advancing prices for good horseflesh. England has been an excellent purchaser of our horses and mules for her South African campaign, where the animals were killed off by insects and the climate so rapidly that it seemed as if a sufficient number could never be shipped there to keep the army in the field well equipped.

In Europe to-day not a single country raises enough horses to meet its own actual demand in times of peace, and the facilities for breeding and raising horses are growing poorer every year. There are few good grazing lands and stock-breeding farms in Europe where horses can be raised on a large scale, and consequently this country becomes more and more the land for keeping the European armies supplied with their proper complement of horses and mules. In recent years the American trotters and fine carriage horses have become important factors in the export trade, and whereas a few decades ago such a thing as an American horse was hardly to be found abroad, to-day we have a steady stream of them going to all the European centers. Not even Russia has hesitated to avail herself of our best blooded stock, although for years the Orloff strain of trotting stock held complete supremacy in the minds of the Czar's patriotic citizens. But loyalty to a ruling house cannot forever last, and the best thing the Russian horse lovers could do was to import American stallions for crossing with their Orloff breed, and then get a few American breeders and trainers to go over and show them how the Americans did it. So we have to-day not only American horses and trotters in abundance in Russia, but American trainers and breeders practically in control of the royal stables and stock farms. Each year a good-sized consignment of the best American trotters go abroad to add new blood and speed to the Czar's stock.

Germany next to England is probably one of our best European customers for horses, and there is a steady, healthy demand from that country that promises to continue and develop indefinitely as the years go by. The American trotting horses at the Vienna race tracks are not only features of the exhibitions, but they capture a large percentage of the prizes. There is no better way to advertise American horses and methods of training than to take a few of them abroad and enter the races in competition with the European horses. France became so jealous of our success in this line on her native soil, that she practically prohibited foreign horses from entering the races. In fact, to-day very few French races are open to horses from other countries, and the French sportsmen have this show practically all to themselves; but unfortunately for them the small glory attached to a restricted competition of this character makes it almost an empty honor. However, a good many French horsemen are purchasing American trotters, and in a roundabout way getting the American horses to the front in the home races. In time it will be necessary for the sake of the sport to open the races to more general competition. A good many American horses are sent to Belgium, and then they are taken across to France, and within a very short time appear on the French turf as home-bred horses.



A Sausage-Drying Room.

Italy, Denmark, and Holland are good buyers of our trotting horses, and the annual shipments to these countries are considerable, while far-off New Zealand and Australia make small drafts upon our resources. To see that these American trotters exported are as represented, the National Trotting Association has export offices in a number of our seaports to issue certificates of pedigrees and identity to the high-grade horses shipped. This is to prevent fraud, and thus injure the American horse trade in foreign countries, and it was first suggested by the European trotting associations. Several thousand certificates have been issued to high-class racing stock; but these do not include the trotting-bred roadsters or fine carriage horses.

In this export trade of American horses not a little attention should be directed to the American breeding methods and training. It is pretty generally recognized that our trainers and methods are superior to those found abroad, and we are to-day busily engaged in exporting trainers as well as racing horses. Most of the best European stables have American trainers connected with them, and American methods of breeding and raising the best stock are adopted. No better testimony to our national efforts in improving the horse is needed, and it partly accounts for a good deal of our success in supplying the world with the finest and fastest horses.

### Mountains and Hail.

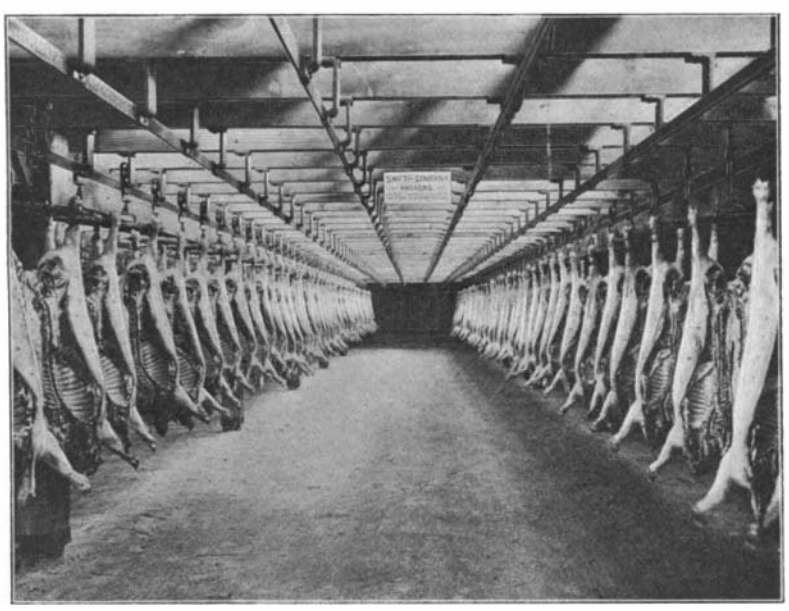
The influence of mountains on the fall of hail has frequently been the subject of controversy, but up to the present time no certain conclusion appears to have been arrived at. The Italian Meteorological Office has recently published an interesting note upon the question by Prof. V. Monti. The positions chosen were perhaps the most suitable for the purpose of any among the Italian network of stations, viz., the Collegio Romano and Montecavo, an isolated station near Rome, situated at an altitude of about 1,000 meters; the complete observations at both stations, for the years 1880-87, are contained in the Annals of the Italian Meteorological Office. During this period, forty-one days of hail were recorded at Rome against eighty at Montecavo; the monthly values show two maxima, in April and October, and two minima, in July and December, as regards the excess of days of hail at the mountain station. A comparison of days of thunderstorms shows, on the other hand, that there were 76 such storms at Rome, against 29 at Montecavo. This seems to show the excess of hail at the mountain station is not attributable to a greater intensity of atmospheric electricity. The author gives a table showing that the monthly mean temperature at Rome is at times about 10 deg. higher than at Montecavo, and suggests that the fusion of hail traversing a warmer stratum of air may account for the smaller amount at Rome.

The Louisiana Purchase Exposition authorities have offered a prize of two thousand dollars for the best design for an emblem. It may be either in relief or color, but if color is used symbolically, red, yellow, blue and white should be selected, as these are the colors involved in the national flags of the countries in which ownership of this territory at various times has been invested. The design must be one which will be available for letterheads, medals, posters or for any purpose in connection with the dignified exploitation of the Exposition.

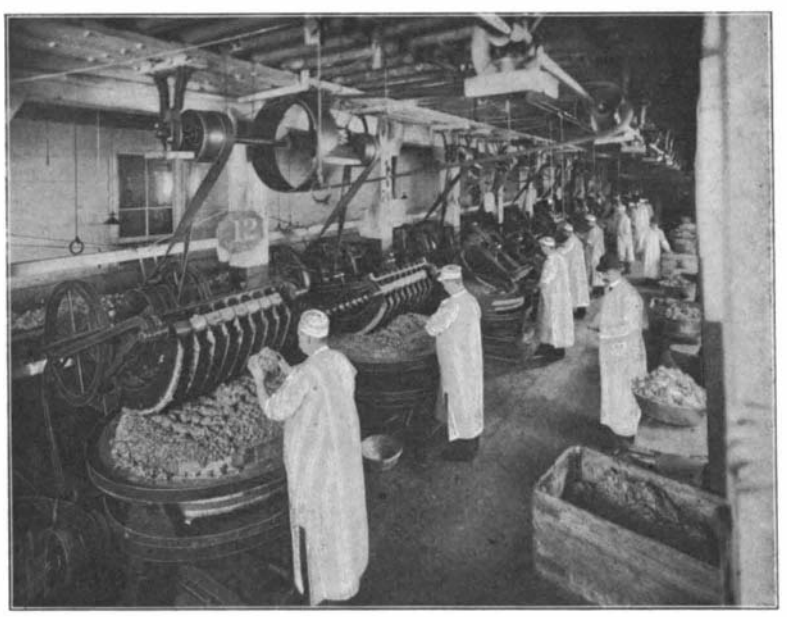
### Marconi's Improvement.

In a lecture at the Royal Institution, June 12, Marconi announced that he had made important improvements in coherers. He said his new invention, which is a magnetic detector, rendered it perhaps possible to receive several hundred words a minute. At the present time he could read thirty words a minute.

In commenting on his February experiments, when readable messages were received aboard ship 1,551 miles from Cornwall, and signals were transmitted to a distance of 2,099 miles, Marconi stated that at a distance of over 700 miles signals transmitted by day failed utterly. Those sent at night, however, remained strong up to a distance of 1,551 miles, and were even decipherable at a distance of 2,099 miles. Marconi explained this peculiar phenomenon by diselectrification of the very highly charged transmitting elevated conductor when operated by daylight.



Dressed Meat Hung in a Storage Room.



Machines for Making Sausage-Meat.

THE PACKING INDUSTRY OF CHICAGO.