exposed to the rain, etc., but protected from leakage. At the beginning both lots were analyzed. These lots were kept examined and compared at the end of three, six, nine and twelve months, respectively. The actual losses in the value of the manure at the end of three months were: Protected, 20 cents, exposed, 64 cents. At the end of six months. Protected, 27 cents; exposed, 80 cents At the end of nine months: Protected, 36 cents; exposed, 90 cents. And at the end of twelve months. Protected, 36 cents; exposed, 95 cents per ton. The value of the fresh manure was estimated at $2.65. Some of the conclusions reached were: No fermentation without loss in organic matter and nitrogen; much less loss of these when protected than when exposed; no phosphatic acid or potash lost when protected, but considerable by exposure through leaching. There is no advantage in rottening manure longer than three months. On the ordinary farm there is a loss of fully one-half the plant food when rotted over this time. Rotting manure makes it better for plant food and for mixing in the soil to form humus. Nitrogen in fresh manure is not available for plant food till it is changed into nitrates or ammonia. More than half the phosphoric acid, and fully 90 per cent. of the potash, is available in fresh manure.

WELCOMES.

These were extended to the association by Alderman Drew, on behalf of the city of Guelph, and Dr. Mills, on behalf of the Ontario Agricultural College. Dr. Mills, in his address, pointed out that the college controlled the dairy schools in other parts of the province. The quality of our dairy products should be kept up, and both the quality and quantity of the creamery butter can be improved. Every maker in the province should take a course at the Dairy School, and those who attend should stay longer. No maker but the best should be employed and better wages should be paid.

STATUS AND WORK OF THE EXPERIMENT STATIONS

This formed the subject of an interesting address by Prof. W. H. Jordan, director of the New York State Experiment Station. The foundation of the United States stations was laid in 1862, and in 1887 Congress made grants to the State stations. There are now 54 stations in the United States, with over 600 experimenters, which issue 430 bulletins every year. The great change that had taken place in agriculture was due to the work of the experiment stations, where certain fundamental principles were established after the severest possible examination. Science is complete experience, but experience got from practice is not complete. Experiment stations are now thinking up instead of thinking from a superstructure down. The work of the stations should be the study of fundamental or scientific principles. Investigators should not have too much to do, and as much as possible should be free from teaching institute work, etc. At present too elaborate reports of the work were made. At the New York Station a station editor is employed to prepare the work in a popular and concise form for the farmer.

ONTARIO DAIRYING.

This was the subject of a short address by C. C. James, Deputy Minister of Agriculture. The value of the cheese production in 1897 in Ontario was $3,000,000 more than in 1896. 50,000,000 pounds of dairy butter is being made in Ontario. There are now 200 creameries, and it would take 2,000 to convert all the milk now made into dairy butter into creamery butter for export. American competition must be met.

CANADIAN DAIRY PRODUCTS IN ENGLAND.

The Hon. Sydney Fisher, Dominion Minister of Agriculture, in addressing the convention, referred to his visit to Great Britain, where for the first time he had found criticism of Canadian cheese. A great deal of the English cheese is better than the Canadian, which Canadian makers must reach up to if they expected to hold the market they now have. Cheese should be properly cured before it left the factory, and it may become a necessity to have cold storage in transit for cheese as well as butter. He had interviewed several vessel owners in reference to securing better ventilation in the holds of vessels carrying our products. Our butter was not always as good as it is to-day. Five years ago Canadian creamery butter sold for 20 s. below Danish and 10 s. below Australian. Now it is only 5 s. to 6 s. below Danish and sometimes equal to it, and 10 s. to 12 s. above Australian. This improvement is due largely to the cold storage facilities provided for the transportation. No room for expansion in the cheese trade. The English laboring man is better off, and is changing from cheese to bacon for his staple article of food.

BACTERIAL INFECTION OF CHEESE.

Dr. Connell, Kingston, Ont., and Mr. F. C. Harrison, bacteriologist, Guelph, gave a couple of practical addresses on this subject. The former took up the question along the same lines as at the Kingston meeting, a full report of which was given in last week's issue. He referred to a factory in Peterboro' county that had trouble in this way, due to a badly prepared starter. When the maker ceased using the starter the trouble ceased. Makers should make a fresh starter frequently, and be very careful that the sample of milk from which it was made was the best that could be had. Another factory had a double floor in the making room. The second floor decayed, and between them became a putrid mass of germ life. Myriads of flies were in the factory, which served to carry the germs from this putrid mass to the milk and curd. The same organisms were found in the cheese that were in the slime between the floors. Bacterial life will not live in coloring. If there are other taints in the coloring pour a little in water and smell it. The cheese referred to in Peterboro' county were close, smooth, and to all appearance right. After awhile they began to harden, get rough, cut in color and develop acid, but different from sour cheese. After three weeks they began to run a briny fluid. Mr. Harrison took up the subject as it related to bacterial infection from the water used in cheesemaking, and gave some interesting lantern illustrations on canvas showing the form of various species of bacteria. Bacteria from manure and excreta are very injurious to cheese, causing gassy curds. There are also germs which produce flavors without gas. In seventy samples of Canadian cheese examined had found bacterial life present in greater or less quantities. As many as 200,000 were found in a gram of cheese. The quantity will increase and grow less at intervals, and after a time gradually die out. To prevent undesirable forms from getting into the cheese cleanliness should be practised in every particular, and the water used in diluting the rennet and washing the vats should be pure. Some makers had difficulty in getting milk to thicken. This is usually due to alkali germs. In one instance too much lime in the well-water had caused the trouble. Will examine all samples of water sent to the college providing express charges are prepaid and directions for sending it followed.

CURING-ROOMS AND CURING CHEESE.

In discussing this subject Professor Dean gave a description of the sub-earth duct at the dairy school curing-room. The duct is about 90 feet long, 6 feet deep at one end 6½ feet deep at the other to allow for drainage. In the trench were placed six rows of six-inch drain tile. Three rows were placed in the bottom and three rows directly on top of these, breaking the joints four inches. On the top of the tile was placed eight or ten inches of shavings, and then the dirt was filled in. At each end of the duct was placed a curb about 3 feet square. These curbs fit over the top of the tile in such a manner as to prevent the dirt from entering the end of the tiles. At the inlet end of the duct is a galvanized iron pipe 30 feet high and 14 inches in diameter. On the top of the pipe is a hood or bowl, which turns towards the wind at all times. A constant stream of air enters the pipe, passes through the tile, and on its way to the curing-room becomes cooled about 20 degrees. The inlet of air to the curing-room is regulated by means of slides. The warm air is taken from the room through a ventilating shaft, which passes from the ceiling to the roof, and there connects with a galvanized iron pipe which is 12 inches in diameter and 15 feet in height from the roof. The top of the pipe is covered with a cap to prevent rain entering the room. The inlet for the air should be at one side of the room and the outlet at the opposite side, so as to change all the air in the room. The total cost of the duct was about $65 for a small room. For an ordinary curing-room the duct should be 150 to 200 feet long and from 8 to 12 feet deep, if at all possible, as this furnishes a supply of cooler air than the shorter and shallower duct The curing-room should be insulated by lining the room with two-ply of building paper, then nail on the two-inch strips, and then a lining of matched lumber. The floor, walls and ceilings should all be lined. The results of experiments conducted at the dairy school show that there is a marked improvement in the quality of the cheese cured at an even temperature of 60 to 65 degrees. Assuming that an increased value of the cheese is obtained of ¼ of a cent by proper curing methods, which is not out of the way, the value of the make of a 100-ton factory would be increased by $500. The loss by shrinkage in curing cheese at a high temperature was over 1 per cent. as compared with a low temperature. This, on a 100-ton factory, would be 2,000 lbs., which at 8 cents would be $160. It would, therefore, pay every factory in dollars and cents to have the curing-rooms fitted up so that the temperature could be controlled.

FEEDING STANDARDS.

Prof. Jordan, in taking up this subject, pointed out that humanity is after a fixed rule. If we take cattle-feeding as an instance, there are two questions constantly being asked: The best ration for a dairy cow, and the relative value of cornmeal and cotton seed meal. It was not possible to positively determine the relative value of different foods, as there was no way in which the value of the separate constituents of the foods could be determined, as in the case of manures. The proteids, carbohydrates and fats in foods cannot be valued in a commercial way. The German values, fixed some years ago, produce absurd results. The function of food is to produce heat, fat, muscle, etc.; but the value of the heat function, the fat function, or the musole function, cannot be figured out in dollars and cents. The digestibility of the food is the only way of attaching a value. If we compare milk and beef we find that five cents' worth of the former will give as much nutrition as fifteen cents of the latter. Milk is the only food fed to animals that is wholly digested. Some foods are more valuable than others, and the comparative amount of digestibility is the only way of valuing a food. Every stockfeeder should have a table showing the digestibility of foods. The feeder must know what his needs are and buy his feed accordingly. In making milk certain kinds of food are needed, and may be got by balancing up the foods of the farm with clover, alfalfa, and buying the nitrogenous foods, such as bran. In fattening steers a highly nitrogenous food will do good. The ordinary mixtures of the farm will answer the purpose well if the animal is induced to eat liberally of them.

BUTTER-MAKING.

A paper on this subject was read by Arch. Smith, butter instructor. To make good butter a good factory and surroundings, good water,