

year. Oats yield about 55 bushels to the arpent (8 quarters 1 bushel to the imperial acre).

The dung is not under shelter; there is a urine tank built in ashlar-work; the liquid manure is spread on the meadows. After haying, the meadows are grazed. Composts are made of rubbish and rich mould, for spreading on the meadows when they are frozen, so as not out them up.

Every year one half of the meadow land is manured with dung or compost. The cows are Bretons. The grubber is used for clearing the stubbles. The land is sandy, with a schistose subsoil. The cows graze but seldom; they are almost always kept in.

In his orchard, M. Grandjean, last winter, sprinkled his apple trees with a solution of sulphate of copper before the leaves burst. The result was good. The horses at 4 year's old generally sell for 300 to 600 frs. (\$60.00 to \$120.00). When sold for cavalry remounts, they fetch as much as 900 to 1000 frs. (\$180.00 to \$200.00).

VISIT TO THE AGRICULTURAL SCHOOL OF "THE THREE CROSPES," NEAR RENNES, FRANCE.

MONSIEUR E. HÉRISANT, Director. —

There are 24 pupils. The dung is not under cover, but in the middle of the yard, which is paved with stone. The tank is brick set in cement; it is so arranged that no rain water can get in.

There are 40 milch cows, many of which are Cotentins; in winter their food consists of hay, mangels, straw and cake. Mr. Hérissant highly approves of the Cotentins, as their milk yield is both copious and rich.

Liquid manure and composts sustain the fertility of the permanent meadows. The composts are spread in June and July. Lime, in some form, is added to the composts. Milk, dish-washings, potatoes, cabbage-leaves, Jerusalem artichokes are given to the swine. Prickly-comfrey is not approved of, though in some parts of Lower Brittany it is used for pig-food. The red clover has been attacked by a disease; when sown too often in the same place, bacteria are developed which destroy the plant. In the garden, there are strawberries called "four-seasons," which yield fruit in spring, summer, and autumn; (1) when common strawberries are bearing fruit, the others should have their flowers pinched off, so as to get them to yield more abundant crops when their turn comes. On the 28th August, we ate strawberries. M. Hérissant had just gathered.

AUGUST 29th 1894

VISIT TO THE DAIRY-SCHOOL AT COUTLOGON.

This school is only for girls. Besides butter, "Port du Salut" and soft cheeses are made here. The former sells for 1 fr., 89 centimes the kilo, wholesale; Camembert for 5 francs a dozen, weighing 220 to 300 grammes each (100 grammes—3 oz. 8 drachms). The butter sells for 3 frs. the 2.20 lbs., wholesale Cream is churned at 55° F. The managers intend to pasteurise the milk for butter-making, or at least to try the plan. Churning stops when the butter is in tiny grains.

The butter is sometimes worked dry, under the kneader, but sometimes in the churn with a little water. After the first working, it is left two or three hours in a trough with ice; it is then worked over again, and made into pats for market.

(1) Same in England, but the fruit after August is not worth eating.—Ed.

Some of the butter is salted, and the rest, intended for the Paris market, receives no salt, and keeps just as well. The salt given is 2 per cent.

Camembert cheese is made of milk from which $\frac{1}{4}$ of the cream has been skimmed; it takes three weeks to ripen, and is worth 35 centimes a cheese. It is sent to America in soldered tins, like those used for butter sent to hot countries. When intended for the European market, it is wrapped in straw.

Next year, this school will occupy a house—stone and brick—which the government is now building at a cost of \$12,000; it is nearly finished. The creamery and cheesery are separated to prevent, says Madame Bodin, the bacteria of the one from invading the other. The skimming will be done here in future in different ways, by separators and in vats; in order that all may receive the teaching appropriate to their various needs and installations.

Many utensils have already arrived for the new buildings: a pasteuriser, a steriliser, and an aerator. Several Americans have attended this school; the girls feed and milk the cows. Nothing can surpass the fitting up of the cheese-ripening room. At a moment's notice, instantaneously, so to speak, warm air can be introduced when the temperature is falling (or the reverse), or when it is desired to expel damp.

The ripening of the cheese is a very delicate operation, adds Madame Bodin, and everything is so arranged as never to hinder its progress, which does not go on satisfactorily unless under the circumstances peculiarly required by each kind of cheese.

August 31st, 1894.

VISIT TO THE AGRICULTURAL SCHOOL AT GRIGNON.

This school is under the control of the government. M. Lezé, one of the professors, showed us over the magnificent class rooms, the laboratory, the collection (*musée*) and all parts of this vast establishment. The farm buildings, and the farm itself, were visited in company with the practical instructor, who was good enough to explain to us the system of farming pursued, and to tell us all about the farm management.

In summer, each cow gets all the green maize she will eat, 500 grammes (about $1\frac{1}{2}$ lb.) of cake and the same of bran, and of rye flour, a day; the flour, bran and cake are mixed and given to the cows before they are watered. In winter, mangels with straw-chaff, 35 to 45 kilos a cow; the best milkers getting even 50 kilos a day, 5 kilos of hay, and the same ration of flour, bran and cake as in summer. Sometimes they have from 12 to 15 kilos of boiled potatoes, in which case, the ration of mangels is diminished.

Raw potatoes should never be given. There is no fixed rule for the quantity of food each cow receives, but the more of it she can easily transmute into milk, the more food she is allowed. The mangels are cut by the machine. The cows calve at various seasons, and for a short time after calving, they are milked thrice a day.

THE FEEEDING OF SWINE.

Two kilos of barley-meal, 5 kilos of boiled potatoes, 10 kilos of wash a day each; to this is sometimes added nubbins of maize, roots, etc.

The sheep get carrots with chaffed straw, allowed to ferment for 24 hours.

The horses are fed on hay, oats and carrots, of which last they get 5 kilos a day. The dung is not under cover, but in the middle of the stable-yard, far away from the eaves drip.

In the middle of the mizon is the tank, which receives the running from the mizon and the urine from the stables, etc., through tronches.

The liquid manure serves to moisten the dung whenever it requires it to keep it moist. The remainder is used on the meadows and the compost. Its use has a marked effect on the yield of the meadows, as the foreman showed us. He took us to a meadow, part of which had been treated with the liquid, where, although it had been cut once already, the grass of the liquid manure part was very luxuriant, 12 to 15 inches high, and a great contrast to the part that had received no liquid. Every year, many compost heaps are made from the waste matter of the farm, the scrapings of ditches, mud from the brook, etc. These composts are not spread till two years after they are made; the first year they are drenched with liquid manure, and the second they are turned over twice and then spread on the meadows. If the meadows require lime it is mixed with the compost. As soon as the compost or the liquid manure is spread, the foreman said, the white clover springs up abundantly, red clover is cut twice a year; lucerne is also grown and cut as often as thrice a year; but this plant demands a previous subsoil. The wood on the farm is kept in good order and pruned every sixth year. (1) The common plough is used when the land is to be laid into ridges (*planches*) with open furrows, and the "double Brabant" for other ploughings. This plough is, so to speak, automatic, so that, when well set as to depth and breadth of the furrow, it keeps to its work almost without the interference of the ploughman. It is carried on a carriage frame and cannot get out of gear.

27th and 28th August, 1894.

VISIT TO THE REV. BROTHER ABEL, OF THE FRATERNITY OF CHRISTIAN DOCTRINE, FLOERMEL, BRITANNY.

This fraternity has published a short treatise on agriculture that is now studied by its farm pupils, 2,000 in number.

Such teaching causes the children to become fonder of agriculture and prepares them for the more advanced studies in the art of farming. Every fortnight they visit the farm of one of the *habitans* of the neighborhood, and even, do the work there. The farmers almost always consent to try experiments, and to grow special crops for the instruction of these pupils, and willingly explain to them their methods of cultivation. These farmers are selected from the most skilful of the district, and act, to a certain extent, as teachers of farming to the lads. Brother Abel prefers this system to having experiment fields annexed to schools, since it often happens that the schoolmaster wants both practice and experience and does not understand farming. Thus, he loses all his reputation, and his failures injure him in the opinion of the public. Brother Abel is convinced that a vast number of the experiment fields organized by the French Government are far from being of any use to the farmers of France.

(1) Does this mean that one-sixth is cut down every sixth year—made a cove of—as in England?—A. R. J. F.

Asked his opinion of rural banks, Brother Abel informed us that none had been as yet founded in Brittany, and that the chief of agronomes of that country had not yet decided whether or not to favor their establishment till their usefulness had been elsewhere proved by a longer experience.

31st August, 1894.

VISIT TO M. JOHANNET, SECRETARY OF THE SOCIETY OF THE FARMERS OF FRANCE.

Mr. Johannet holds that the syndicates organized are rendering service to the agricultural class. The annual subscriptions of the members of these associations vary from two to six francs. They retain a commission on the amount of the sales effected through their means, and this, Mr. Johannet believes, is 1 per cent; that is, at least, the sum exacted by the central syndicate of Paris. The rural syndicates are only organized in a few places; the idea is still in embryo. The central syndicate now includes nearly 7,000 members and several rural syndicates are affiliated to it. The law does not allow an agricultural *comitum* to affiliate itself directly to a syndicate. The central syndicate was founded in 1884; it publishes one a fortnight a journal that is distributed among its members.

September 1st, 1894.

VISIT TO A MANUFACTORY OF RENNET, COLOURING MATTERS, AND LACTIC FERMENTS AT AUDERVILLIERS, NEAR PARIS, FRANCE.

Two chemists are attached to this establishment and are entrusted with the duty of preparing the above products.

Every time a lot of rennet is prepared, a chemist takes a sample of it, mixes it with milk, and by this means ascertains if it has the necessary force to cause a proper coagulation in determined time. M. Beaury, one of the chemists, told us that liquid lactic ferments can hardly be kept for more than a month.

He has not so much confidence in the dry as in the liquid ferment, because the dry must be in contact with the air, and necessarily absorbs those bacteria that are inimical to the good effects it is intended to produce.

VISIT TO THE BUTTER FACTORY OF MR. A. BAQUET, VESLY, EURE, FRANCE.

This establishment contains an installation furnished by the firm of Th. Piltor, Paris; there is a Laval-Alpha separator on a new model, a rotary butter maker and a churn on the Baquet system, made by the Piltors. This churn is an inclined barrel churn, driven by an under-gear, this rotation in a sloping position allows the agglomeration of the grains of butter to be seen and the churn to be stopped at the proper moment.

It is not the custom in this factory to warm the milk when it is above 65° F. When it has to be warmed it is done by means of a coil; when the milk rises beyond a certain heat a ball closes the distributing pipe more or less. The cream is ripened in a vat with a double envelope and a confined aperture (*ouverture fermée*), and by means of this double envelope the cream is warmed as much as is wanted. If too warm in the morning it is passed over a Lawrence refrigerator before churning.