

the 400 animals, about 150 belong to M. Durand, and the remainder to other parties, who pay for their sustenance and care. He usually charges 25 to 30 francs per head for pasturing young cattle from May 25 to October 13. In the case of milch cows, M. Durand generally uses the milk for cheese making and allows the owners a money equivalent. Thus it is difficult if not impossible to average, for cows vary in the proportion of caseine in their milk. His own animals consist of 30 calves, 6 beef cattle, 24 bulls of one, two or three years of age, 25 heifers, and 65 milch cows. Only 100 of these animals are wintered on this estate, the residue being sent to another property of his in the department of Aveyron. Defective and inferior are sold in October. The small product of milk and of butter during the winter season are mostly consumed on the farm.

Six or seven hands are employed perpetually at \$50 to \$60 per annum, with board and lodging. About as many more are employed during the summer, at \$30 to \$35 for the season, with board and lodging. M. Durand resides on this place about three months during the year, usually from June 20 to September 20, and makes occasional visits during the remainder of the year. The farm is in charge of a foreman. All the draught labor is performed by oxen; half a dozen horses, half Arab and half English blood, are used for the pleasure of the owner and his family.

The specific industry of Salles-Basses is cheese production. M. Durand, after ten years' experiment, gave up the raising of fat calves. In winter the dry food is too rich and unhealthy. It induces chronic irritability in the mother and a destructive diarrhoea in the calves dropped during that part of the year, very few surviving. In summer the restriction of cows to green grass produces other equally fatal intestinal diseases, involving a burden of care and expense which has induced the proprietor to abandon calf-raising altogether and to concentrate his efforts upon cheese making. One of his neighbors, an intelligent agriculturist, criticises this policy, and intimates that the above named difficulties could be disposed of by proper management.

The main productive element of M. Durand's enterprise, then, is the cheese product of 200 cows, which leave the stable about May 25, and return October 13, making the average pasturing and milking season one hundred and forty days. During the first eighty-one days, from May 25 to Aug. 15, the daily average yield of milk per cow is 5 liters, or 1.32 gallons. M. Durand estimates the average cheese product at 113½ grams per liter, about equal to 15.2 ounces per gallon. The daily cheese product of the

period is then 113,500 kilograms, or nearly 250 pounds. The total product for the eighty-one days is 81,000 liters, or 21,398 gallons of milk, yielding 9,193.5 kilograms, or 20,270 pounds of cheese. During the next twenty-five days, from August 15 to September 9, the average daily yield per cow is reduced 20 per cent, amounting to four liters, 1,0567 gallons. The daily cheese product falls in the same proportion, amounting to 90 kilograms, or about 198½ pounds. The total product of the period is 20,000 liters, or 5,285 gallons, yielding 2,250 kilograms, or 5,950 pounds of cheese. During the closing period of thirty-four days, from September 9 to October 13, the daily average yield of milk per cow is stated at 2.6 liters, or 2.8 quarts. The daily cheese product of the herd is 59.02 kilograms, or 130.12 pounds. The total product of the closing period is 17,680 liters, or nearly 4,660 gallons, yielding 2,007 kilograms, or 4,424 pounds of cheese.

The total yield of milk for the season of one hundred and forty days amounts to 118,680 liters, or 21,353 gallons, averaging 847 liters, or nearly 224 gallons per day. The total cheese product was 13,450 kilograms, or 29,754 pounds, averaging daily 96.07 kilograms, or 212.52 pounds.

The established price of cheese is 1.20 francs per kilogram, or nearly 11 cents per pound. The total receipts of a season are stated at 16.166 francs, from which deducting 4,640 for the use of cows belonging to other proprietors, and about 7,000 for the total expense of the estate, there remains a profit of 4,525 francs from the cheese industry alone. The sale of animals, especially hogs, fattened upon the refuse milk and whey, raises the average annual profit of this enterprise to about 12,000 francs or \$2,400. The amount of whey left from cheese manufacture is sufficient to fatten not only the hogs raised upon the estate, but also about 24 hogs belonging to neighboring proprietors, who pay about 15 francs per head from June 1 to October 13. Each day's residuum of whey is placed in vats, and kept for four to eight days, in order to allow the butter which it holds in solution to come to the surface. This butter is gathered and used for cooking; it is also placed upon the tables of the workmen. It is, of course, not remarkably palatable, as it contracts a certain sourness of taste in the acid whey, which has also dissolved a portion of its substance. The whey is, on the whole, a good diet for hogs, though as the weather becomes warm it acquires a strong odor from partial decomposition. The hogs devour it greedily. At first its effect is cathartic, but this is only temporary. The growth of the animal in size, flesh,

and fat is normal, producing excellent meat.

The two buildings, denominated by courtesy cheese factories (*fromages* or *chabats*), are very simple structures, with earthen floors and surmounted by lofts which serve as dormitories for the workmen. The main story is divided into a large room furnished with implements for making cheese and a cellar for storing it. The utmost cleanliness and thorough ventilation are strictly enforced in every portion of the building. All the utensils are daily scalded, washed and dried, and the last trace of acidity is removed before they are again used. Even a fine lady would find no need of her vinaigrette to ward off any disagreeable odors. The workmen are jolly, robust peasants, from twenty to thirty years of age, who in all respects meet the writer's ideal, except in *kneading* the curds with their *knees*, a practice which he justly reprobates on the score of decency.

The cows are milked daily, at 4 o'clock a. m. and at 3 o'clock p. m. Three or four men milk 100 cows with a remarkable promptness and address. The animals are brought near the inclosure and treated to a handful of salt, when the calves are allowed to draw the udders for a few seconds; these are drawn back a little and the milking is rapidly completed. Without these precautions the cows would refuse to yield their milk; greater care is necessary in hot weather than in cold weather. The milk-buckets are immediately emptied into large wooden vessels which are carried to the factory on the shoulders of porters by means of flexible poles. The milk, which is seldom heated, is immediately strained into large vats holding about 30 gallons each, and treated with rennet. The writer thinks that the excess of coagulable matter produced by the copious infusion of rennet accounts for the sharp taste of the cheese product.

In about an hour the curd, having acquired proper consistence, is cut with a wooden blade, called *mesalou*, and then worked upon a small round board, pierced with holes, with a sort of staff or club, called *menole*, in order to expel the whey. By slow manipulation a larger quantity of cheese is obtained, but, according to common opinion, at some sacrifice of quality. The curd is then placed in a large, shallow wooden vessel, (*faiselle*), with holes in the bottom and sides, and the operator, with pantaloons drawn half way up the thigh, presses it with naked hand and knee, in order to eliminate the last remnant of whey, the animal heat of the body imparting a special quality to the cheese. M. Durand has been persuaded to substitute a more rational process for this rude and primitive one, which in some cheese farms of that region is car-