

Breed.	Average composition of milk.		Milk required to make 1 pound of cheese.	Average yield of cheese per month.	Cost of food per pound of cheese produced.
	Fat.	Casein and albumen.			
	Per cent.	Per cent.	Pounds.	Pounds.	Cents.
Jersey	3.68	3.36	8.09	36.14	7.95
Guernsey	3.62	3.69	8.10	39.60	6.61
Devon	4.46	3.81	8.63	31.32	8.20
Holstein	3.73	3.34	9.48	28.46	6.95
Holsteins	3.60	3.19	9.72	16.28	7.48
Ayrshire	3.50	3.34	9.68	29.77	7.24

With one exception, the yield of cheese by the different breeds corresponds to the amounts of fat in the milk more closely than to the amount of casein and albumen, that is, the fat in the milk has a greater influence on the yield of cheese than the other constituents of the milk have.

The Guernseys were the most profitable both in cheese and butter-production of all the breeds tested, except that in the cheese there is a very trifling difference in favour of the Holsteins: as 20.20 : 20.96.

Profits from butter and cheese for each breed

	Profits from butter for one period of lactation	Profits from cheese for one period of lactation
Ayrshires	\$3.70 (6)	\$16.47 (3)
Devons	4.30 (9)	7.62 (6)
Guernseys	27.60 (1)	20.20 (2)
Holsteins	1.65 (4)	11.68 (1)
Holsteins	5.76 (3)	20.96 (1)
Jerseys	22.15 (2)	11.51 (5)

"From the foregoing table it appears that the Guernseys and Jerseys are by far the most profitable for butter production as compared with the other breeds, while for cheese production the Holsteins stand first, with the Guernseys closely following."

SWEET VS SOUR CREAM BUTTER:—At the Iowa station, sour cream gave on an average 3 oyo more butter than sweet cream, but it did not keep so well as butter from sweet cream.

Effect of change from barn to pasture, at the Vermont station.

This was very marked in the case of all of the herds. After making allowances for the milk of fresh cows added to the herds, there is still left an increase of about 16 per cent in quantity of milk due to the pasturage, notwithstanding the fact that most of the herds had grain while in the barn and none while on pasture. There was also a gain in quality of milk on pasture amounting to about a third of a pound of butter to each 100 pounds of milk. These two results combined make the entire effect of change from barn to pasture a gain of about one fourth more butter per day per cow.

AGRICULTURAL STATIONS AND THEIR WORK—We have not the pleasure of being acquainted with Professor Whitney, but we heartily concur with his opinion as expressed in a recent publication: "There has been no satisfactory interpretation, as yet, of much of the work that has been done on the chemical composition of soils and plants, and the results of plot experiments have, in most cases, been very conflicting and uncertain." Surely, this is at least partly owing to the chemist alone being at work on the investigations. As a writer, unknown to us, puts it: We have, it is true, advanced a step or two beyond the notions of the days of Liebig, when it was supposed that the chemical analyses of a soil was all that was needed to determine the crops to be grown and the fertilizers to be applied, but the evil traditions of that earlier time have still a potent influence.

Poultry.

HOW TO CARE FOR, FEED, MANAGE AND MATE THEM—SOME OF THE BEST FOWLS FOR THE FARMER—BREEDS WHICH LAY THE BEST IN WINTER—LARGE, MEDIUM AND SMALL SIZED COMBS—HOW THE CHICKENS MATURE—TABLE OF PROGRESS, &c.

(By A. G. Gilbert, manager of Poultry Dept., Exp. Farm, Ottawa)

Having given some space to a description of the house and what it should contain, it is of next importance to consider the breeds best to put into it. It is presumed the intention is to have eggs in winter when they are high in price. The experience of many years has proved that popular opinion as to the breeds best adapted for winter laying is in many cases wrong. You frequently hear farmers say that "the breeds with the large combs are no good for us, because they freeze so easily." It may be added that any bird, or portions of it, will freeze if not afforded partial protection of some kind. But the farmer has to learn that, to make eggs in paying quantity, he must keep his laying stock in comfortable quarters. In the first article of this series it was stated that where the laying stock were kept in cold quarters the food that should go into eggs goes into keeping up animal heat. And it is just as true that where the temperature of the house is so cold that the large comb of the Minorca or Leghorn, will freeze, the fowls with the smaller combs will lay very few, if any eggs, at all. A temperature where the water will not freeze, if only a few degrees above the freezing point, would not be difficult to maintain in a well constructed poultry house, and it would make the work of the attendant easier. The following classification of the best known breeds with large medium, and small sized combs may be found useful:

BREEDS WITH LARGE COMBS.—Black and White Minorcas; Andalusians; White, Black and Brown Leghorns.

BREEDS WITH COMBS OF MEDIUM SIZE.—Plymouth Rocks, Langshans, Coloured Dorkings, Cochins, Red Caps.

BREEDS WITH SMALL COMBS.—Wyandottes, Brahmans, Black Hamburgs, Houdans.

GOOD WINTER LAYERS.

Of the above the Minorcas, Andalusians and Leghorns (1) will be found,

(1) How much prettier is the Italian "Livorno" than our harsh translation "Leghorn"!—Ed.

with proper care and treatment, good layers in winter. So will the Plymouth Rocks, when under two years of age, as also the Wyandottes and the Red Caps. As before remarked, farmers, as a rule, keep their fowls until too old, and, as a result, instead of their being a source of profit they are a loss; because they moult late in the season, take most of the winter to get their new feathers, and meanwhile eat all future profit that they may make. The young birds moult early, and the earlier a fowl is over her moulting, the earlier will she lay. The advantage of having early hatched pullets is that they will begin to lay when the older birds are in their moult, provided, of course, that they (the pullets) have been pushed by proper care and feeding while they were chickens. By having the early hatched pullets begin to lay when the older stock are in their moult, a supply of eggs can be obtained just as the price is beginning to go up.

HOW THE BIRDS MATURE.

It may be said that it is not always easy to get early hatched pullets, for early setters are difficult to obtain. No doubt this is true in many cases, but it is the result of so few hens laying during the winter. Or, it may be, that the farmer has a non-setting variety. If the ordinary barnyard fowls of the farmer are made to lay as they ought to do, and will do, if properly treated, there will be less difficulty in obtaining early setters. Having laid steadily during winter, on the approach of warmer weather, the "clucker" will make her presence known. A chicken hatched out by the time of the early grass, will make rapid progress. Earlier hatched chickens may have to be kept in doors for awhile, and they should be placed with the mother-hen on dry sand or earth. Board flooring weakens the legs of the little ones, and will eventually destroy them. Of course, where an incubator is used for artificial hatching, the chicks will go into the inside or outside brooder, as the season permits. But, with the old fashioned hen, the farmer will find that his chickens placed in a clean, well protected coop, on the new grass and properly fed will astonish him by their vigorous growth and appetites. The chickens of the Leghorn, Minorca or Andalusian varieties mature rapidly, the little cockerels often giving a shrill crow at seven and eight weeks age. The pullets should be layers in 5 to 5½ months. No chicks will give more satisfactory results than those of the Plymouth-Rock breed. With proper feeding the cockerels should put on 1 lb. to 1½ lb. per month. They should be marketable in 3 to 3½ months and should weigh by that time at least 3½ lbs. The writer has had Plymouth-Rock cockerels weigh 4½ lbs. in 3 months and 8½ lbs. in 5 months. But this was accomplished by constant care and special feeding. The best food and treatment for young and growing chickens will be given under its proper head. The Wyandottes will be found to give satisfaction as a rapidly maturing chicken for market. But the chickens must come from parent stock of constitutional vigour and large size. The pullets of the Plymouth-Rocks should be layers in 5½ months and the Wyandotte pullets soon after. The male chicks of the Asiatic family such as Brahmans, Cochins, Langshans, &c., take longer to mature, for they have large, bony frames which, while growing it is difficult to get much flesh on, but after seven months they make large fowls. The pullets should lay at six months of

age. The following table taken from a report of the Central Experimental Farm will show the progress made by chicks of the different breeds named:

COMPARATIVE PROGRESS PER MONTH.

	Lbs.	Ozs.
Plymouth-Rocks per month.	1	8
Brahmas pullet	1	2
" Cockerel	1	1
Wyandottes faced and white.	1	2
Buff Cochins	1	2
Houdans	1	—
Game-Minorea cross.	1	3
Incubator hatched chickens	1	2
	1	4

It may not be possible to get the full weight, as mentioned above, in the first month, but the gain should be made up during subsequent months. The Plymouth Rock cockerels will be found to develop quicker than any others, and are hardy chickens. Several points characteristic of the most popular breeds are given as follows:—

CHARACTERISTICS OF DIFFERENT BREEDS.

Plymouth-Rocks.—A hardy, vigorous breed, growing rapidly to large size. Small bones, great and rapid flesh-formers. Male birds go up to 10 and 12 lbs.; cockerels reach 8 lbs. in early fall. Females, good layers, good sitters, good mothers. A breed well suited to this climate. Chickens hardy. The best all round fowl for farmers. Pullets lay from 4½ to 6 months of age.

Wyandottes.—A comparatively new breed, of great merit. Cross of Dark Brahma and Silver Spangled Hamburg. Matures rapidly, having small bones and putting on flesh easily. Males go up to 7, 8 and 9 lbs. Females are good layers, good sitters, good mothers; apt to become broody, but easily broken up, and lay soon after. Chickens hardy. A good fowl for farmers. Pullets lay when 5 months old.

Brahmas.—A well-known and old-established breed, with many friends and admirers. Grow to large size and heavy weight, but take time to do so. Have large frames, and a good deal of food is required to put flesh on them. Are very hardy, both as chickens and fowls. Are quiet, and bear confinement well. Females are fair layers of eggs of good size, but rather heavy for early sitters (when egg-shells are likely to be thin), and apt to be clumsy as mothers. After 7 or 8 months of age males make good table fowls. Pullets lay at 7 months old.

Buff Cochins.—Another of the Asiatic family that has many friends. Like the Brahmans, they grow to large size, but take time to do so. Are very quiet, and stand limited quarters well. The females are good sitters and careful mothers, fair layers of a large egg (when hens) of rich colour. Pullets lay when 7 months old; males grow to heavy weight; chickens and fowls hardy. (1)

Houdans.—A breed of French fowls of some merit as layers, but do not grow to the same weight in this as they do in the country of their origin. Are non-sitters, and lay a white egg of rather more than average size. Chickens are hardy, mature rapidly and are great foragers. Are not so suitable to farmers as either Plymouth-Rocks or White Leghorns. Owing to heavy crest on top of head are apt to fall easy prey to hawks and other enemies of the poultry yard. Crest will freeze and become solid with ice where

(1) We had almost the first imported into England. Their eggs were small, of good flavour, but their flesh, when fattened, very coarse.—Ed.