

climate. No claim for excellence as milk givers has been made for the black polls, yet there is proof that they yield a fair quantity of milk of a quality unsurpassed by that of any other beef breed.

As long ago as 1840 one of the best authorities upon live stock in Great Britain wrote of the Galloways that their milk, although small in quantity, was rich in cream. The Michigan State Board of Agriculture has said in its official annual report: "The cows are not remarkable for the quantity of milk, but it is very rich, and affords a comparatively large proportion of butter of the finest quality." Youatt says of them that a cow may average six or eight quarts per day during the five summer months, besides feeding her calf, and that during the next four months she may give half that quantity, running dry the other three months of the year. This would amount to from 1,260 to 1,680 quarts per year, besides supporting the calf.

The testimony of breeders and others of the present time, who know the Scotch polled cattle, is that the cows are exceptionally good mothers, giving very rich milk, quite enough to answer all the requirements of a strongly-growing calf. More than this will scarcely be required by the western stockman, and less is obtained from the average milk cow of this country. The Earl of Airlie, an eminent breeder of Angus cattle, has written of the breed as follows: "I have at present seventeen pure polled Angus cows in my dairy. The greater number of those give from 12 to 14, and sometimes 16 Scotch pints, for a considerable time after calving. The milk is admitted to be much richer than that of either the Short-horn or the Ayrshire. As regards the length of time for which they will continue to give milk, my cow Belle of Airlie (1959), dam of Belus (749), as pure a polled animal as any in the herd book, used to be milked all the year round. Last year, when I was from home, they left off milking her about a month before she calved, and she died of milk fever, induced, as I believe, by the circumstance that she had not been relieved of her superabundant milk."

In reply to inquiries by Frank B. Redfield, of Batavia, N. Y., Lord Airlie wrote: The Scotch pint to which I referred, is a measure of twelve gills, equal to three Imperial pints, or one and one-half Imperial quarts. When I wrote on this subject I had some cows that (newly calved) gave fourteen Scotch pints, or twenty-one English quarts, and one cow I think, fifteen pints, or twenty-two and one-half English quarts. I have now some cows that are giving as much as twelve Scotch pints, or eighteen English quarts daily, though quite three months calved. The cows are milked three times a day, which I believe to be the usual

practice in Scotland. I do not know the weight, as the pint and quart are measures of capacity, so that the weight depends on the specific gravity of the milk. But it is admitted, I believe, that the milk of the polled Angus is richer in cream than that of either the Short-horn or Ayrshire."

The quart in use in this country is equal to 0.83311 English Imperial quarts. Therefore 21 Imperial quarts (14 Scotch pints) equal 25.2 of our quarts; 15 Scotch pints, 22½ Imperial quarts, equal 27 of our quarts.

Thus it appears that these Angus cows were giving 21 3-5 to 28 4-5 quarts of rich milk per day. Recently published records of the Jersey cow Valuo 2d 6844 state that from 16 quarts of her milk 3½ lbs of butter were obtained; and a day or two later, from 18 quarts 4 lbs. were made, or about one pound from four and a half quarts. Of the Jersey cow Oonan 1485 it is said that, in 1881, from about 84 quarts of her milk 14½ lbs. of butter were made, or one pound for 5 4-5 quarts of milk. If we suppose that the milk from Lord Airlie's cows was only one half as rich as that of those two Jerseys, the yield of butter would have been from 1 4-5 to 2½ lbs. per day.

Of the quality of the milk of these two breeds of polled cattle we have, unfortunately, as yet no definite proof as, if careful tests have been made to determine accurately the quantity of butter which a specified volume of milk will produce, the results have not yet come under our observation. We must, therefore, for the present, content ourselves with quoting the opinion of those who have had an opportunity of learning the truth. Messrs. Palmer & Son, Boscobel, Wis., write of the Galloways: "They are not large milkers, but give good milk; in fact, we consider them good butter cows, and their butter is high colored." Again, after further observation, they write: "We tell cheesemen and milk peddlers to let these cattle alone, as they do not give a large flow of milk; but for butter they are unequalled by any of the beef breeds, nor are they excelled by the Channel Island cattle in the quality of their butter, although the latter exceed the Galloways largely in the quantity of butter."

Mr John Snell, of Edmonton, Ont., has said that the quantity of milk given by his Galloways and his Short-horns was at out equal, but that the milk of the Galloways was much richer than that of the others. Thomas McCrae, Guelph, Ont., says; "We do not breed them for milking purposes: but the best milking cows we have had of any breeds have been the Galloways." He adds that by careful selection good milking families of Galloways can be secured; this opinion seems to be fully warranted by the evidence we have given. That much

more testimony of like tenor can be brought out by careful observation is more than likely. Probably hundreds of cows which now have a local reputation as good milkers, would, under an accurate and painstaking method of testing, show that they have capabilities which entitle them to rank with the great butter-makers. It is just such proof as this, of capability for producing valuable food, that the future buyer of cattle will demand; and that breed which cannot furnish such proof will certainly be left far behind its more successful rivals, and eventually be forgotten. Empty sound and pretty form and color will fail to find favor if they be not supported by truthful records of productive power, which has been represented by a creditable showing of quarts, pounds or dollars.—From the Breeder's Gazette.

EVOLUTION OF THE AMERICAN TROTTING-HORSE

The American trotting-horse is an example of a new breed of animals in process of formation. As yet it can hardly be called a definite breed in which the special and distinctive character is either fully developed in quality or satisfactorily fixed by heredity. Great progress has, however, been made, many individual animals have attained great speed, and all the better ones have derived their trotting excellence, in part, at least, through heredity.

The origin of most breeds is involved in considerable obscurity, as to how much they are due to conscious and how much to unconscious selection, what motives led to this selection, how far the enhancement of the special qualities have been due to physical environment, and how far to education, training, nourishment, or cultivation. The formation of this new breed is so recent, the development of a special quality has been so marked, there is such an abundant literature pertaining to its history, the system of sporting "records" is so carefully planned and comprehensively conducted, and withal has become so extensive, that we have the data for a reasonably accurate determination of the influences at work which led to this new breed being made, the materials of which it is made, and the rate of progress of the special evolution.

It is as an implement of gambling and sport that the trotter has his chief value to the biological student. Sporting events are published or recorded as the mere everyday use of animals is not, and the records of races give numerical data by which to measure the rate of progress. Similar data do not exist for the study of the evolution of any other breed.