

have, however, had no facts at hand to furnish evidence on this special point. It is now a custom among sheep-breeding associations to require persons applying for certificates of registry for the flockbook to specify whether the lamb to be registered was a single lamb, twin, or triplet. The statement of the certificate then becomes incorporated in the flockbook.

In the study of the principles of breeding, the writer, among other methods, has made use of flockbooks as laboratory material, and has required his students to compute, under his supervision, the relative numbers of singles, twins, etc., consecutively recorded in some of the flockbooks. As the American Shropshire Association Flockbooks contain far more sheep registered than does any other breed, the volumes issued by this Association have been the subject of special investigation. The foregoing table, involving over 23,000 sheep, so far as my knowledge goes, is the first of its kind that has been brought together. It is submitted here to furnish evidence bearing on the prolificacy of the Shropshire as a breed. While these figures are not given as absolutely accurate, in the author's opinion they give extremely interesting evidence. There may be slight mathematical errors in the extensive work of the students, and undoubtedly some persons registering may have neglected to specify on the subject of singles, twins or triplets, especially in the earlier volumes; nevertheless it is believed that none of the possible errors seriously affect the percentages involved.

This table indicates that of 23,000 pure-bred Shropshire sheep, fifty-nine per cent. of them were single lambs, and thirty-nine per cent. twins, while one per cent. were triplets. This record, as already stated, is not infallible, but it expresses at least some definite information bearing on the prolificacy of this breed of sheep. It is interesting to note that for a term of nine years there seems to be no material change in the percentage of number of lambs at birth. Whether the Shropshire is becoming more or less prolific as a breed is open to question.

The writer has made a study somewhat similar to the above of some other flockbooks, but not to a sufficient extent to justify using the records here. One volume of the Dorset flockbook was studied, but as the results showed an inferior prolificacy to the Shropshire, it was felt that the records did not specify the degree of prolificacy with much care.

While connected with the Indiana Agricultural Exp. Station, the writer had under his supervision a small flock of Rambouillet sheep. Covering a period of four years, forty-three ewe records showed that 41.8 per cent. of the lambs were singles, 51.1 per cent. twins, and 7 per cent. triplets. This shows a somewhat greater prolificacy than occurred with the Shropshire.

This subject is one that will no doubt receive more attention in future, for so long as ewes reproduce up to a maximum where it is not at the expense of the breed in vitality, it is distinctly in the interest of profitable breeding.

The Four Great Dairy Breeds in America.

(Continued.)

By Valancey E. Fuller.

III.

HOLSTEIN-FRIESIAN.

There is no positive authentic history of the origin of the Holstein-Friesian breed. The cattle we call Holsteins in this country did not come from Holstein, but from North Holland. They are really Dutch cattle. While the first importation came from North Holland, later ones came from Friesland. The cattle of the Low Country came from Central Germany. Tradition gives credit to the Batavians and Friesians for bringing in two breeds of cattle, one white and the other black. These breeds were crossed, resulting in the "black and white" breed known to us as the Holstein, more correctly called Holstein-Friesian.

The breed has been kept pure for at least one hundred and fifty years; some say for a longer period. While there has been no legal enactment prohibiting the importation of other cattle into North Holland and Friesland, the pride in their cattle and the conservative habit of their owners have been as forceful as any law. The size, color and characteristics of the breed have become fixed, and are transmitted with almost unerring certainty. The habits and customs of the people, and the character of their climate and soil, has played an important part in bringing the breed to its present high standard. To secure the necessary returns from his cattle the Dutch farmer has had to practice the most rigid selection, keeping only the best animals.

HOME ENVIRONMENT.

The climate of Holland is mild and moist, and the soil is very fertile, though heavy. The grasses grow most luxuriantly. In North Holland and Friesland a great part of the land is below the level of the sea, which is kept out by great dykes. These dykes are pumped out by windmills to

prevent their overflowing; hence Holland is often called the "Land of windmills and dykes." As might be expected from such conditions, the grass is very watery, and the hay made from it contains a greater amount of moisture than usual.

IMPORTATIONS TO AMERICA.

It is generally believed that when the early Dutch settlement came to New York they brought their cattle with them, but there is no evidence of there being any Dutch cattle here until the early part of the nineteenth century. In 1808 a small importation was made to Vermont, and they were kept pure for a few years, but later they became scattered and the purity of their blood was destroyed. Some seventeen years later another importation was made to New York State, but it met the same fate as that made to Vermont. About 1852 a Mr. W. W. Chenery, a merchant of Mass., who was in the habit of visiting Holland constantly, made an importation into Massachusetts. This was followed by another importation by the same gentleman in 1859, when he brought out four cows. The last importation proved a poor investment for Mr. Chenery, as he lost one cow on the voyage from pleuro-pneumonia, and the other three were sick on reaching here. The disease spread through Mr. Chenery's herd, and also through the herds on the adjacent farms. The Government appointed a commission to exterminate the disease. As a result of the work of the commission, Mr. Chenery had but one bull left when its work was completed. Nothing daunted, he made another importation in 1861 of four cows and a bull. This was the foundation of the Holstein-Friesian breed in America. The next importer was Mr. G. S. Miller, of Peterboro, N. H., whose

that it at once met with the approval of the public, and it has been continued ever since. The records are made by the use of the scale and Babcock for periods of not less than seven days (many of them are for thirty days). They are confirmed by the affidavit of the owner, the milker of the cow, and the official supervisor of the test, vouched by the officer of the experiment station under whose direction the test was made. The Association annually appropriates large sums for this work.

At the annual meeting of the A. J. C. C. in 1894 I sought to have the Club open its test book to Babcock tests, and the motion I submitted looking to that end received the support of only one gentleman, Mr. P. J. Cogswell, out of about 100 members present. In 1898 I attempted to have the same body adopt the principles of the Advance Register, under the title of "Record of Merit," and submitted to the annual meeting a set of rules to that end. This was also defeated by an overwhelming majority. However, I had the satisfaction of seeing rules embracing the principles of both my propositions adopted by the Club some years later; but in the meantime the Canadian Holstein Association had made use of the name "Record of Merit," if I am not mistaken.

[Note.—The first volume of the Holstein-Friesian Herdbook of Canada was published in 1892, and the rules for the "Record of Merit" were adopted at the annual meeting on Feb. 5th, 1901. The first volume of the Record of Merit was published in 1902.—Ed.]

CHARACTERISTICS.

The Holstein-Friesian cow is a very handsome one. Her head is longer, straighter and not so dished as that of a Jersey or Guernsey. Her

thin neck, her sharp withers, her high hip bones and flat thighs, proclaim her a worker all over. Her bread basket—the god of the dairy cow—shows she has the place in which to store her feed. Her very large udder, with great and tortuous milk veins, proclaim her a very deep milker. Her teats, which are larger than those of the other dairy breeds, and which are well placed, are an ornament to her udder. Her skin is the whitest of all the dairy breeds. She is longer and larger than either the Ayrshire, Guernsey or Jersey, weighing from 1,000 to 1,550 lbs., the average weight at maturity being about 1,250 to 1,275 lbs. Taking her all in all, she is a typical dairy cow in structural form. She has a splendid constitution, is a voracious eater, and to produce the prodigious quantity of milk given by many of the breed, she of necessity consumes a very large quantity of feed. In feeding she is not as fastidious as the Jersey or Guernsey, but like the Ayrshire, will content herself with coarser feed. She breeds true to type.

MILKING PROPERTIES.

As I have said, the Holstein cow is an enormous milker, greatly excelling the Jersey and Guernsey, and even the Ayrshire. A good heifer will, with her first calf, give from 5,000 to 6,000 lbs. a year, and at maturity will yield from 7,000 to 10,000 lbs. a year. Some will exceed these figures. Pieterje 2nd produced 30,318½ lbs. of milk in her 11th year, and Princess of Wayne 29,008 lbs. in her 11th year. The latter gave 3,182½ lbs. in 30 days, and 113 1-16 lbs. in one day.

FAT PERCENTAGE.

As a breed, the Holstein-Friesian gives the lowest fat percentage and total solids of any of the four imported dairy breeds. In the Pan-American dairy tests, extending over six months, the average percentage of fat of the Holsteins was 3.25, and the total solids 12.00 per cent. In the St. Louis cow demonstration her fat percentage averaged 3.4, and her total solids 11.3.

AS A BEEF BREED.

There are those who claim the Holstein-Friesian cow fills both the functions of the dairy and beef cow. In this claim I take no stock. I am not a dual purpose fiend. If I want milk, or butter, or cheese, I will use such one of the dairy breeds as is best adapted to its economic production. If I want beef of the highest quality



Favorit 7th 2790.

Grand champion Holstein-Friesian female at the Canadian National Exhibition, Toronto, and at the Western Fair, London, 1905. Property of Jas. Rettie, Norwich, Ont.

herd, I am told, exists to-day. In 1865 he imported the bull "Hollander" and three cows.

Between 1878 and 1885 the importations were very heavy. In one year thousands were imported. Since 1885 importations to the U. S. had practically ceased, until 1903, when several breeders made importations.

THE HOLSTEIN-FRIESIAN ASSOCIATION OF AMERICA.

The Holstein-Friesian Association of America was founded in 1885, under a charter granted by the Legislature of the State of New York. Prior to that date there existed the Holstein Breeders' Association, organized in 1871, and the Dutch Friesian Association, organized in 1878, both of which were merged in the H.-F. A. of A. In 1897 the Western Holstein-Friesian Association was absorbed by the present organization.

This Association is now the largest and most progressive of any of the dairy-stock associations to be found anywhere. It is both progressive and aggressive, and is rapidly becoming one of the richest of all the associations. It is in contrast to its older rival, the American Jersey Cattle Club, founded 17 years earlier, which differs from the H. F. A. of America in that it lacks progressiveness and aggressiveness. In the earlier history of the A. J. C. C. it stood without a rival in progressiveness, but it now lags behind the Holstein-Friesian Association.

ADVANCE REGISTER.

There is probably nothing which has added so much to the popularity of the Holstein breed in this country as has the Advance Register. In 1891-5 the present Association began a system of public tests, supervised by experiment stations. This system was so manifestly superior to private tests, made by the owner without supervision,