

# AGRICULTURAL EXPERIMENT STATION

KANSAS STATE COLLEGE OF AGRICULTURE  
AND APPLIED SCIENCE  
MANHATTAN, KANSAS

---

DEPARTMENT OF DAIRY HUSBANDRY

---



DAUGHTERS OF CAMPUS SIR KORNDYKE QUAD 240455

The 41 records on his daughters average 11,671 pounds of milk at an average age of 3 years, 10 months. (See Table III and figure 3.)

## TWENTY YEARS OF EXPERIENCE WITH DAIRY SIRES<sup>1</sup>

J. B. FITCH AND H. J. BROOKS

The Department of Dairy Husbandry of the Kansas State College of Agriculture and Applied Science has maintained accurate production records on its dairy herd for more than twenty years, thereby making it possible to measure the ability of a number of sires used in the herd. This information is presented in a brief way in the hope that the experience gained in the management of this herd may be of benefit to others in the breeding of dairy cattle.

Four breeds of dairy cattle have been maintained since 1909. Since 1920 most of the cattle have been pure bred, the only exception being the grade Holsteins kept for experimental purposes. Private herd records have been kept for years, and since 1910 a

---

1. Contribution No. 77 from the Department of Dairy Husbandry.

large proportion of the animals have also been entered in the Advanced Register of the respective breeds. At times cows on test have been milked more than twice daily. The number of milkings were not standardized. It was assumed that the influence of extra milkings would be balanced in the daughter-dam comparisons as equally as if the records had been corrected to a uniform number of milkings. The general plan has been to test each pure bred as she freshened the first time and then as a mature animal. This herd has been maintained for use in judging classes, for experimental purposes, and as a demonstration of methods of management. The use of the cows for judging classes and for experimental purposes may at times have influenced production, but the use of the cows for the purposes mentioned is of greater importance than high records.

For convenience in presenting the data, each breed is considered separately. The basis of comparison is the records of a bull's daughters with the records of their dams, considering the average age of each group. The records are also computed to the mature equivalent, using the mature-equivalent factors developed by Turner.<sup>2</sup> All the daughters available for the different bulls are included in the summaries. The true average percentage of butter fat was worked in each case by dividing the total pounds of butter fat by the total pounds of milk.

**HOLSTEIN-FRIESIAN BULLS USED IN THE COLLEGE HERD**

One of the first bulls used in the College herd was Sir Carlotta Pontiac Cronus 45502. His picture and pedigree are given in figure 1. This bull was purchased from the University of Missouri and his dam was one of the best cows in the university herd at that time. Sir Carlotta was of excellent type and sired some very good animals. The 24 records on his seven daughters average 11,435 pounds of milk and 400 pounds of butter fat at 3 years and 9 months of age. His influence on the Holstein herd can be measured by comparing

TABLE I.—DAUGHTER-DAM COMPARISON FOR SIR CARLOTTA PONTIAC CRONUS.

Number of records.	Average for the group.				Mature equivalent	
	Age	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 21	3y-9m	11,435	3.5	400	12,567	440
<b>Dams</b> 16.....	5y-7m	11,575	3.4	398	11,841	407
Average increase in production of daughters (Mature-equivalent basis)					726 6.1%	33 8.1%

2. Turner, C. W., Ragsdale, A. C., and Brody, Samuel. The relation between age, weight, and fat production in dairy cows. Mo. Agr. Expt. Sta. Bul. 221:1-12. Figs. 5. 1924.

the records of these seven daughters with the records of their dams. This comparison is presented in Table I.

The comparison brings out the fact that Sir Carlotta Pontiac Cronus crossed on cows with an average of 11,841 pounds of milk and 407 pounds of butter fat caused an increase in milk production of 6.1 per cent and an increase in butter-fat production of 8.1 per cent in his daughters. Although this bull did not materially increase the production of his daughters he made some improvement in the individuality of the herd. Several of his sons proved to be good sires, the best being Sir Carlotta Hays Hengerveld 183365, which made an outstanding reputation in the herd at the Topeka State Hospital.

Sir Carlotta Pontiac Cronus was used in the herd from 1908 to December, 1917. To follow him, two bulls born on the College farm were retained for service. The first, Maid Henry Pontiac 200383, was sired by Sir Carlotta Pontiac Cronus and was out of the cow Maid Henry 54876, which at that time had a state record of 715 pounds of butter fat. This bull was used for a time before being sold as an uncertain breeder. The second of the two, Canary Paul Fobes Homestead 6th 117086, was out of a heifer purchased in Wisconsin and sired by a Wisconsin bull. The pedigree and picture of this bull (fig. 2) indicate his breeding and individuality. His dam, after making her two-year-old record, died of pneumonia.

In this connection it might be of interest to mention that out of five bred heifers, including the dam of the above bull purchased in Wisconsin in 1912, one proved to be barren and an adjustment was made; the second calved one heifer before becoming a non-breeder; the third calved a bull (Canary Paul Fobes Homestead 6th) and died before calving again; the fourth had three heifers—two of which died before six months of age though the third lived to have several calves; the fifth has had seven calves, four bulls and three heifers, and has contributed much through her sons to the Holstein industry in Kansas. The most notable son was Sir Carlotta Hays Hengerveld mentioned above, which for 10 years was used in the Topeka State Hospital herd and whose 26 daughters averaged 11,501 pounds of milk and 393 pounds of butter fat on a mature-equivalent basis.

The daughters of Canary Paul Fobes Homestead 6th with 37 records average 10,476 pounds of milk and 346 pounds of butter fat at 3 years and 7 months of age. Twenty of his daughters are from dams with records available for comparison. This comparison is shown in Table II.

Canary Paul, when bred to cows averaging 11,596 pounds of milk and 401 pounds of butter fat, on the mature-equivalent basis, increased the milk production but 3 per cent and actually decreased the butter fat 1.7 per cent through a lowering of the percentage of butter fat from 3.5 to 3.3 per cent. While the production of the daughters of this bull was practically the same as their dams, the individuality of the herd was materially improved. Some of the

TABLE II.—DAUGHTER-DAM COMPARISON FOR CANARY PAUL FOBES HOMESTEAD 6TH.

Number of records.	Average for the group.				Mature equivalent.	
	Age.	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 37 . . . . .	3y-7m	10,476	3 3	346	11,943	394
<b>Dams</b> 55 . . . . .	4y-7m	10,551	3 5	365	11,596	401
Average increase in production of daughters. (Mature-equivalent basis.)					347	—7
					3%	—1 7%

best individual Holsteins the College has owned were sired by this bull, which was used from 1914 to 1923. He was sold to a breeder at 10 years of age and ended his period of usefulness at 12 years of age.

To breed to the daughters of Canary Paul Fobes Homestead 6th, a calf was purchased from the University of Missouri, Campus Sir Korndyke Quad 240455. This calf was sired by a proved bull and out of a cow that was not only a high producer but had excellent individuality. She was a half sister to the first sire used, Sir Carlotta Pontiac Cronus.

The pedigree and picture of Campus Sir Korndyke Quad are shown in figure 3. The average production of his 16 daughters that have finished 41 records in the College herd, is 11,671 pounds of milk and 419 pounds of butter fat at an average age of 3 years and 10 months. Sixteen daughter-dam comparisons are available as shown in Table III.

TABLE III.—DAUGHTER-DAM COMPARISON FOR CAMPUS SIR KORNDYKE QUAD.

Number of records.	Average for the group.				Mature equivalent.	
	Age.	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 41 . . . . .	3y-10m	11,671	3 58	418	13,013	466
<b>Dams</b> 50 . . . . .	4y- 8m	11,761	3 38	397	12,737	430
Average increase in production of daughters (Mature-equivalent basis.)					276	36
					2 2%	8 4%

Campus Sir Korndyke Quad increased the butter-fat production of his daughters over their dams from 430 to 466 pounds on the mature-equivalent basis. This is an increase of 8.4 per cent. In milk production the increase was but 2.2 per cent, but the butter-fat

test was increased from 3.38 to 3.58 per cent. Quad actually contributed more to the Holstein herd than indicated by this daughter-dam comparison. While his daughters were not quite so good in individuality as their dams, they showed greater indication of milk production, and combined type and production to a greater degree than the daughters of any other bull used in the herd. Quad was brought into the herd in 1918 and died in 1926.

Other bulls were used in the herd at a time when some difficulty was being experienced with Bang's disease. Two sons of Canary Paul Fobes Homestead 6th, a son of Campus Sir Korndyke Quad, and a proved sire, King Piebe Pontiac Segis 174303, have contributed to the present herd, but only one of these has sired enough daughters in the College herd for a daughter-dam comparison. This is Canary Paul Emperor 341382, whose picture and pedigree are given in figure 4. A comparison of five daughters with their dams is given in Table IV.

TABLE IV.—DAUGHTER-DAM COMPARISON FOR CANARY PAUL EMPEROR.

Number of records.	Average for the group				Mature equivalent.	
	Age	Pounds of milk	Per cent fat	Pounds of fat	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 12.....	4y-3m	12,881	3.49	449	13,731	478
<b>Dams</b> 13 ..	4y-4m	15,016	3.42	514	16,007	547
Average increase in production of daughters (Mature-equivalent basis)					-2,276	-69
					-14.2%	-12.6%

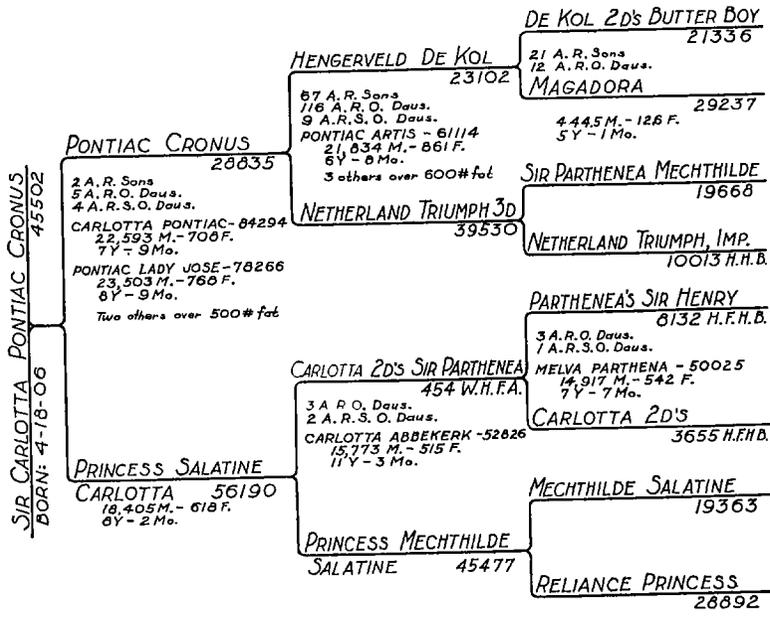


FIG. 1.—Picture and pedigree of Sir Carlotta Pontiac Cronus 45502.

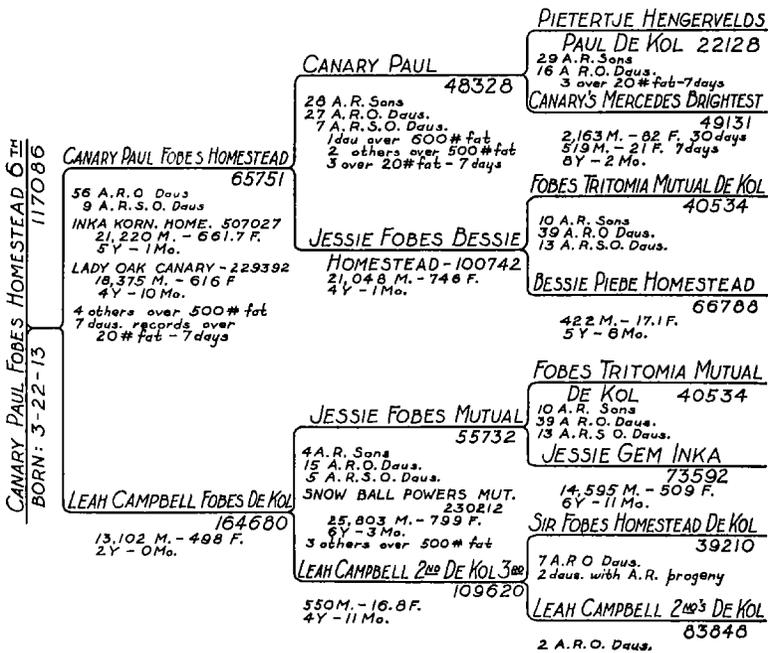


FIG. 2.—Picture and pedigree of Canary Paul Fobes Homestead 6th 117086.

INKA DE KOL - 68053  
318.6 M. - 9.6 F.  
2 Y - 0 Mo.

FIG. 4.—Picture and pedigree of Canary Paul Emperor 341382.

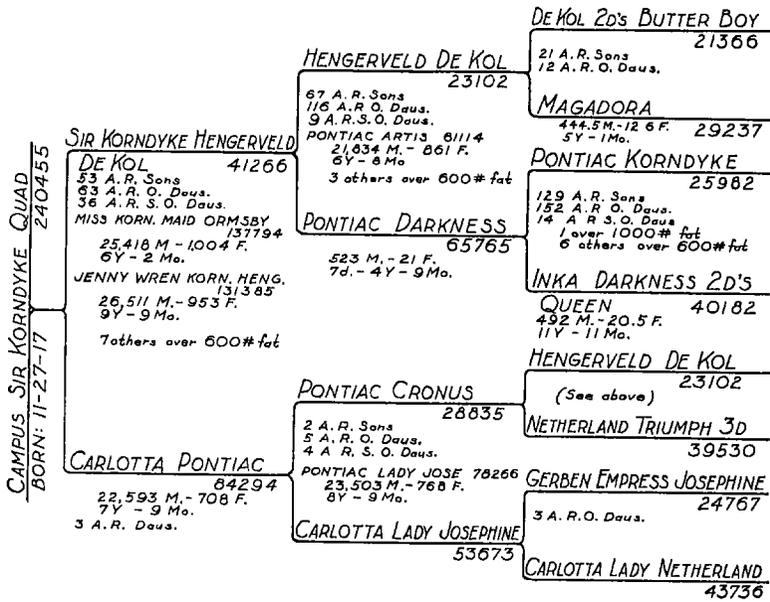


FIG. 3.—Picture and pedigree of Campus Sir Korndyke Quad 240455.

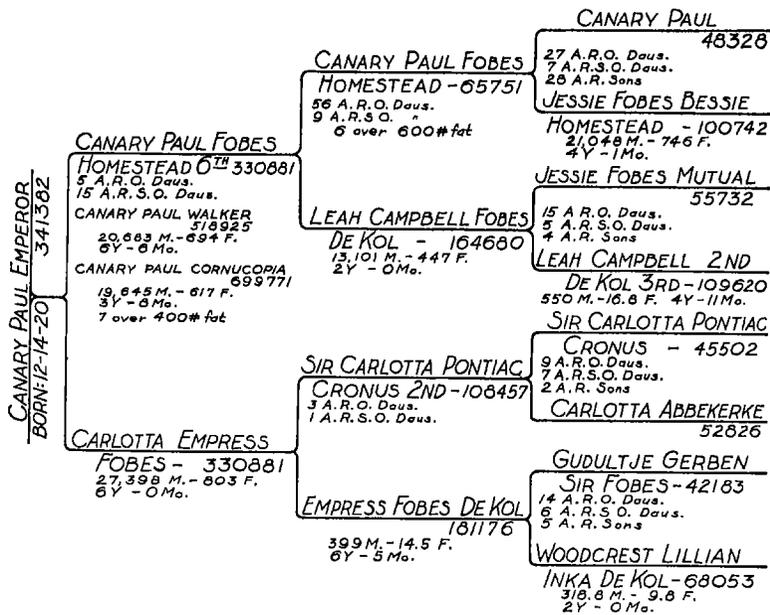


FIG. 4.—Picture and pedigree of Canary Paul Emperor 341382.

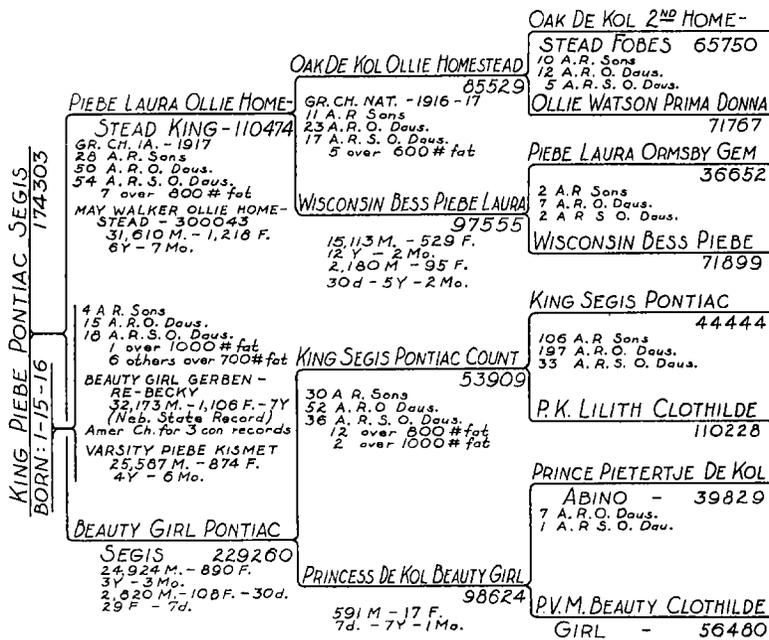
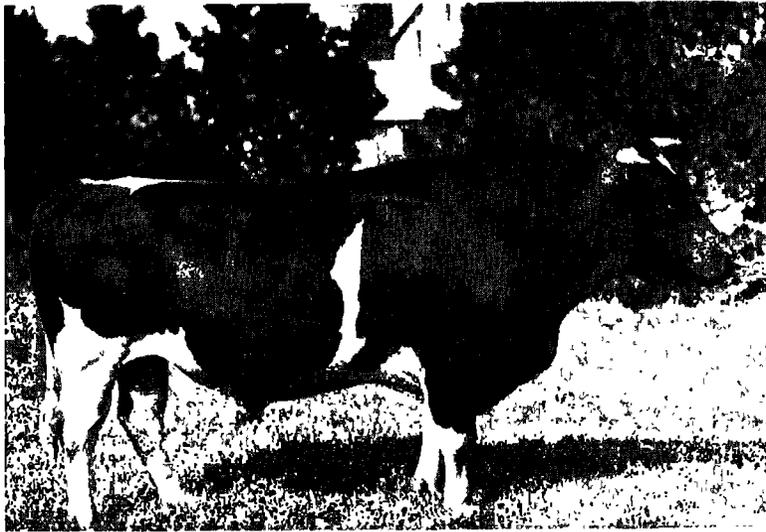


Fig. 5.—Picture and pedigree of King Piebe Pontiac Segis 174303.

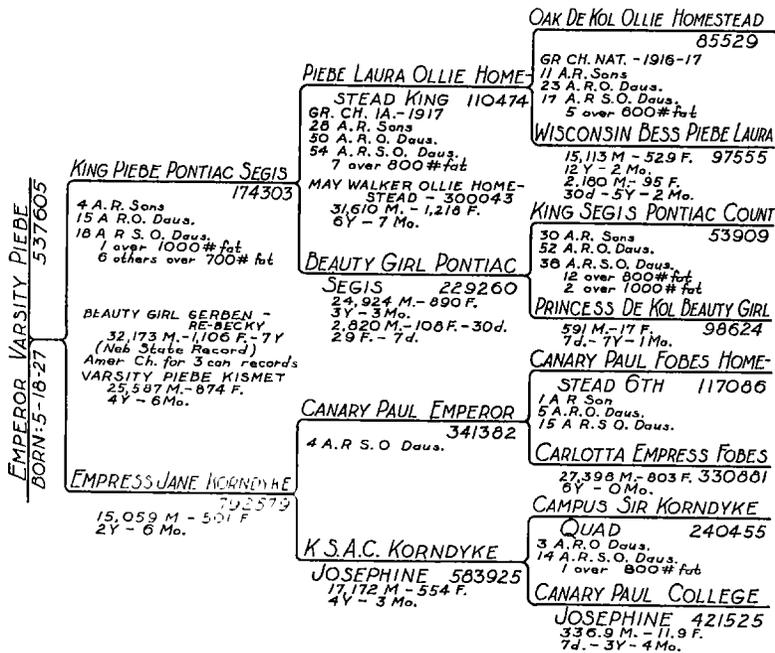


Fig. 6.—Picture and pedigree of Emperor Varsity Piebe.

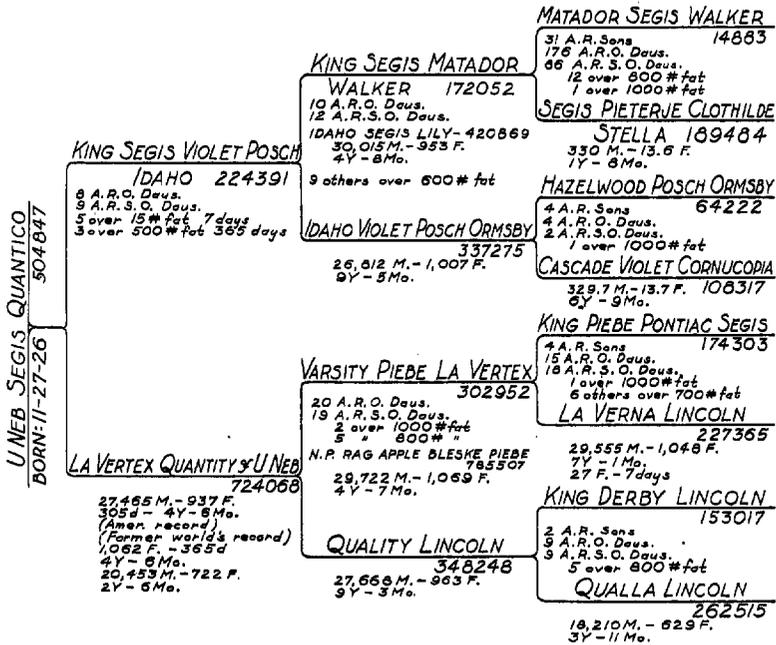
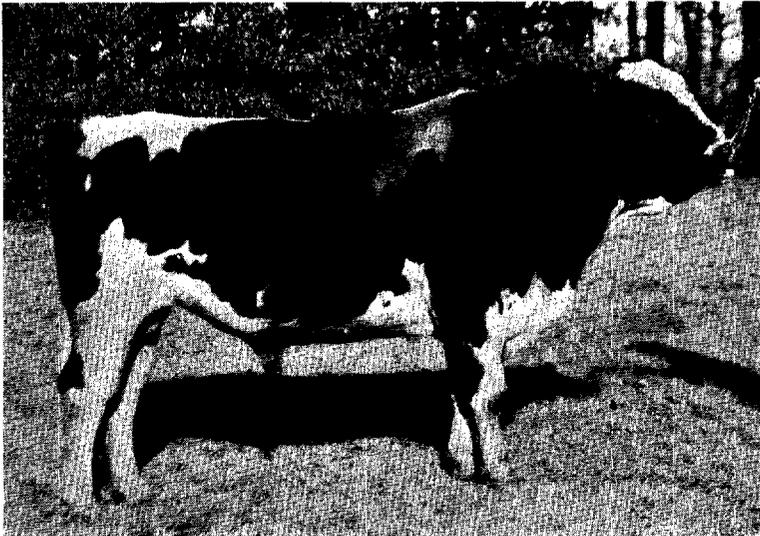


Fig. 7.—Picture and pedigree of U Neb Segis Quantico 504847.

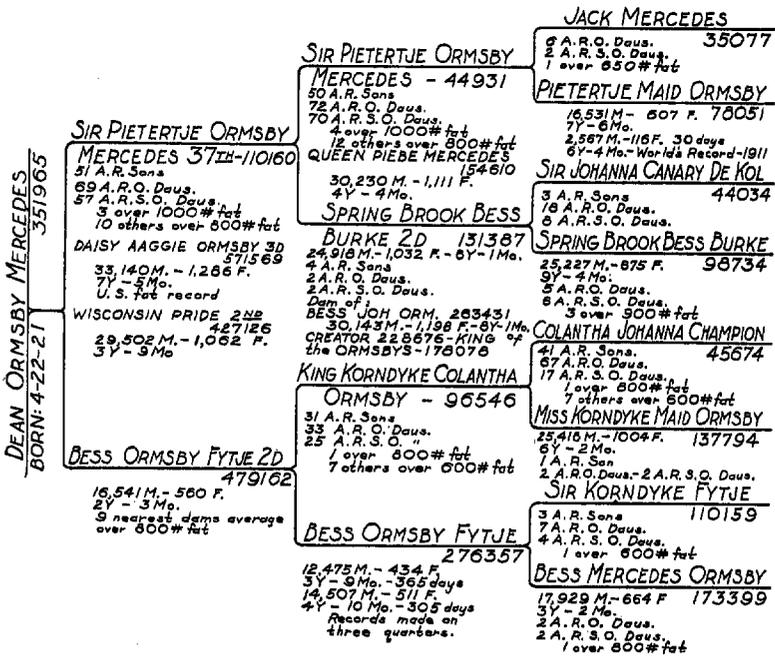


Fig. 8.—Picture and pedigree of Dean Ormsby Mercedes 351965.

Canary Paul Emperor caused a 14.2 per cent decrease in milk and a 12.6 per cent decrease in butter-fat production when crossed on cows averaging 16,007 pounds of milk and 548 pounds of butter fat. While the number of daughters is very limited, the percentage decrease is rather large. It should be borne in mind, however, that Canary Paul Emperor was bred to some high-producing cows with a high production to maintain. The five daughters, though producing less than their dams, average higher than the daughters of any of the other bulls here recorded. Two of his daughters were excellent individuals and good producers. His best daughter, Empress Jane Korndyke, is the dam of the bull, Emperor Varsity Piebe 537605. (Fig. 6.)

Perhaps the most outstanding sire used in the herd was the proved bull, King Piebe Pontiac Segis 174303, mentioned above. This bull was leased from the University of Nebraska. His pedigree and picture are shown in figure 5. At the time he was used in the College herd he had 18 daughters that averaged better than 600 pounds of butter fat in a year. One of his daughters has twice produced in a year more than 1,100 pounds of butter fat. His daughters in the University of Idaho dairy herd have made five records of more than 30,000 pounds of milk in a year. This bull was purchased September 1, 1929, at 13 years of age, by the University of Missouri.

Thirty-four daughters of King Piebe Pontiac Segis in the University of Nebraska and the University of Idaho herds have shown marked increases over their dams as shown in Table V.

TABLE V.—DAUGHTER-DAM COMPARISON FOR KING PIEBE PONTIAC SEGIS.

Number of records.	Average for the group				Mature equivalent.	
	Age	Pounds of milk.	Per cent fat	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 34 . . . . .	3y-9m	18,021	3 35	603	19,805	663
<b>Dams</b> 34	4y-1m	15,148	3 44	521	16,648	572
Average increase in production of daughters (Mature-equivalent basis)					3,157	91
					19%	16%

King Piebe Pontiac Segis was used in the herd at a time when Bang's disease was causing trouble and the few daughters for which records are available were developed under adverse conditions. His use in the herd, however, has been justified by a son of his, Emperor Varsity Piebe 537605, whose picture and pedigree are shown in figure 6. This bull has no daughters in milk, but he has sired some of the best young animals ever calved in the College herd.

Another bull that has been used in the College herd is U Neb Segis Quantico 504847, owned by the University of Nebraska. The picture and pedigree of this animal are given in figure 7. He has

sired some very nice calves and indications are that they will develop into good producers. U Neb Segis Quantico is now in use at the Topeka State Hospital.

A recent acquisition to the herd is the 10-year-old sire, Dean Ormsby Mercedes 351965, obtained in the fall of 1930 from the North Dakota Agricultural College. This bull is an excellent individual, and the North Dakota Agricultural College Holstein herd is made up largely of his daughters. On the mature-equivalent basis he has increased the milk production of his daughters nearly 13 per cent and the fat production 23 per cent over a relatively high production in the dams. His picture and pedigree are shown in figure 8. This bull died after being in service in the College herd for one year. A comparison of the production of his daughters with that of their dams in the North Dakota Agricultural College herd is given in Table VI.

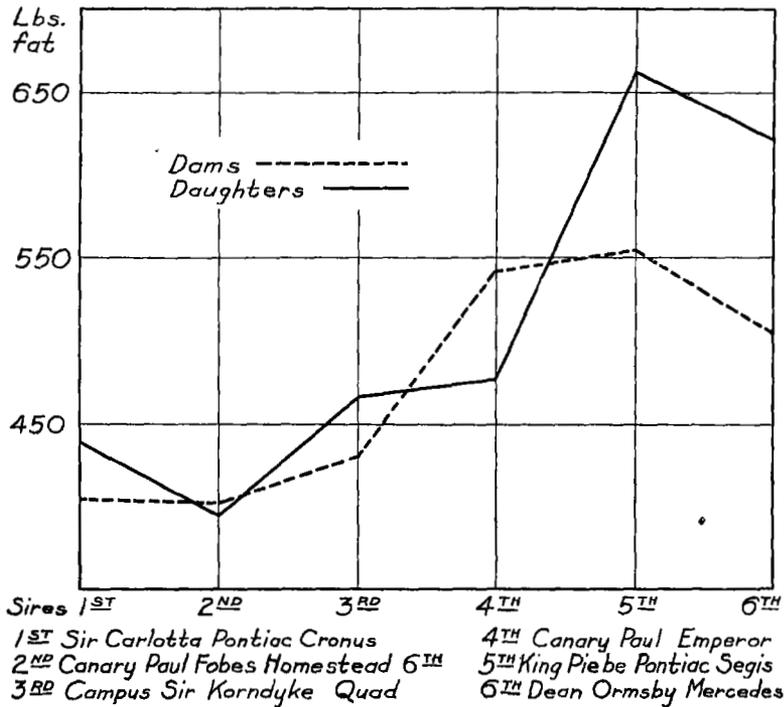


FIG. 9.—Graphic presentation of the average butter-fat production of the daughters of six Holstein-Friesian sires and the dams of these daughters.

Figure 9 is a graphic presentation of the average butter-fat production of the daughters of the Holstein sires and the dams of these daughters. It should be noted that the different bulls vary considerably in their ability to sire daughters that will maintain the production of their dams.

TABLE VI.—DAUGHTER-DAM COMPARISON FOR DEAN ORMSBY MERCEDES.

Number of records.	Average for the group				Mature equivalent.	
	Age.	Pounds of milk	Per cent fat	Pounds of fat	Pounds of milk	Pounds of fat
<b>Daughters</b> 13 . . . . .	2y-6m	11,604	3 64	423	17,093	623
<b>Dams</b> 13 . . . . .	3y-6m	12,661	3 34	423	15,143	506
Average increase in production of daughters (Mature-equivalent basis.)					1,950 12 9%	117 23%

**JERSEY BULLS USED IN THE COLLEGE HERD**

The development of the Jersey herd at Kansas State College has been rather slow. The quality of the foundation animals used has not been entirely responsible for this condition since more money has been spent for Jersey cattle than for any other breed. Of late years the lack of good sires and the prevalence of Bang's disease have materially reduced production.

In 1911 two imported cows and three American-bred animals were purchased as a foundation of the Jersey breed. One of the American-bred animals, Sultana's Topsy 196884, proved to be a good producer and a great reproducer. At one time her offspring made up about 75 per cent of the College Jersey herd. One of the imported cows through a son had a very favorable influence on the herd. This cow, Verbena's Lassie, when purchased was with calf to Viola's Golden Jolly 79314, then in the height of his popularity. Her calf, Verbena's Golden Jolly 103820, was retained for service in the College herd. His pedigree and picture are shown in figure 10. Although the number of animals sired by Verbena's Golden Jolly is small, the results in Table VII of four dam and daughter comparisons are very favorable.

This bull increased the records of his daughters over their dams, on the mature-equivalent basis, 26.2 per cent for milk production

TABLE VII.—DAUGHTER-DAM COMPARISON FOR VERBENA'S GOLDEN JOLLY.

Number of records.	Average for the group				Mature equivalent.	
	Age.	Pounds of milk	Per cent fat	Pounds of fat	Pounds of milk	Pounds of fat.
<b>Daughters</b> 6 . . . . .	2y-11m	7,153	5 47	391	8,927	488
<b>Dams</b> 13 . . . . .	6y-10m	7,017	5 20	365	7,073	368
Average increase in production of daughters . . (Mature-equivalent basis.)					1,854 26 2%	120 32.6%

and 32.6 per cent for butter-fat production. In addition his daughters improved the type of the herd. Verbena's Golden Jolly was followed by a calf purchased in the East, Winnie's Pogis Torono 113022, a bull out of a high-producing cow of good individuality. His picture and pedigree are given in figure 11. A comparison of seven of his daughters with their dams is made in Table VIII.

TABLE VIII.—DAUGHTER-DAM COMPARISON FOR WINNIE'S POGIS TORONO.

Number of records.	Average for the group.				Mature equivalent	
	Age.	Pounds of milk	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat
<b>Daughters</b> 13	3y-6m	6,106	5 16	315	7,107	366
<b>Dams</b> 18	6y-0m	7,507	5 54	416	7,680	425
Average increase in production of daughters (Mature-equivalent basis)					-573 -7 5%	-59 -13 9%

Winnie's Pogis Torono not only decreased the production of butter fat for his daughters 13.9 per cent and of milk 7.5 per cent, but his daughters were poor individuals. A grade daughter, cow No. 29, with a record of 447 pounds of butter fat as a two-year-old on twice a day milkin was, however, one of the best producers in the herd at her age. A peculiarity of the daughters of Winnie's Pogis Torono was the large number to freshen with shy quarters. One of his daughters produced milk from only one quarter of her udder and several others failed to secrete milk in R least one quarter. Whether the bull was actually responsible for this condition is not known. He has been held responsible, however, for the cases recorded.

Winnie's Pogis Torono was followed by Sultana's Jolly King 125717, a son of Sultana's Topsy 196884, the cow mentioned in the opening paragraph. This animal's pedigree is given in figure 12 and a comparison of the records of his eight daughters with the records of their dams is given in Table IX.

TABLE IX.—DAUGHTER-DAM COMPARISON FOR SULTANA'S JOLLY KING.

Number of records	Average for the group				Mature equivalent	
	Age	Pounds of milk	Per cent fat	Pounds of fat	Pounds of milk	Pounds of fat
<b>Daughters</b> 14	3y-7m	6,128	5 86	359	7,134	418
<b>Dams</b> 22	5y-2m	7 352	4 53	333	7,735	350
Average increase in production of daughters (Mature-equivalent basis)					-601 -7 8%	68 19 4%

Sultana's Jolly King changed the production of the Jersey herd but little. While the milk production decreased 7.8 per cent, the butter-fat production was increased 19.4 per cent through an increase of more than 1 per cent in the percentage of fat in the milk.

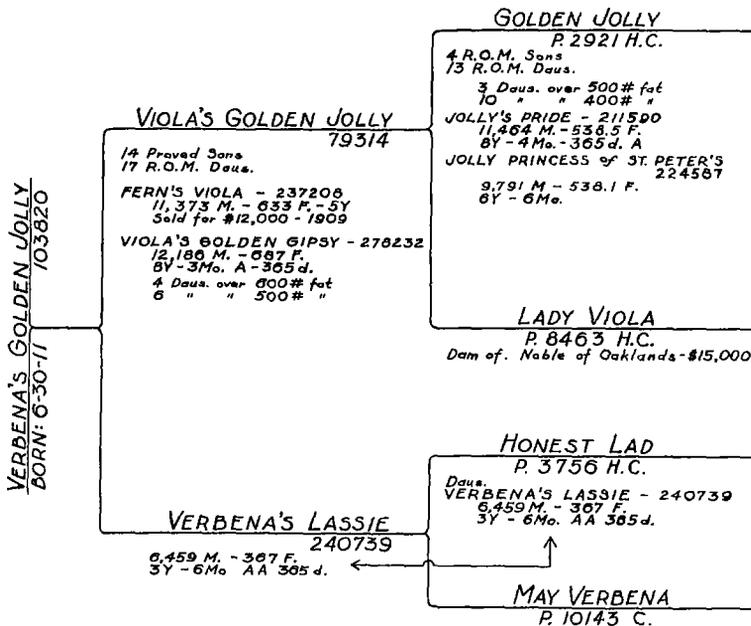
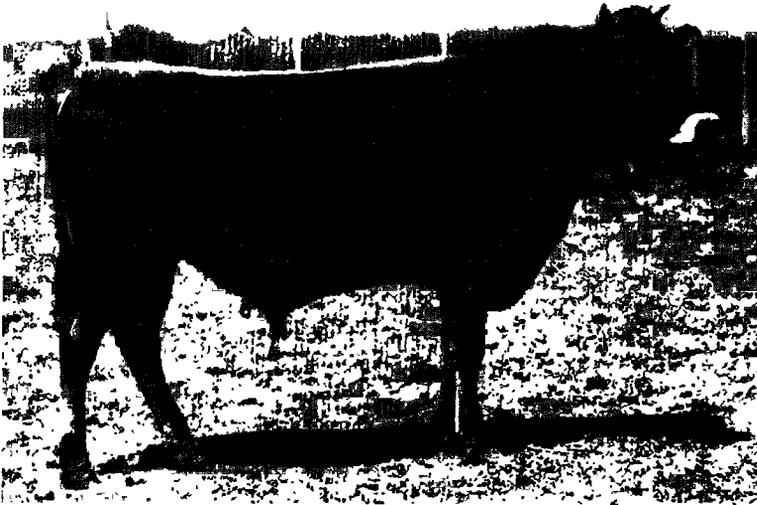


FIG. 10.—Picture and pedigree of Verbena's Golden Jolly 103820.

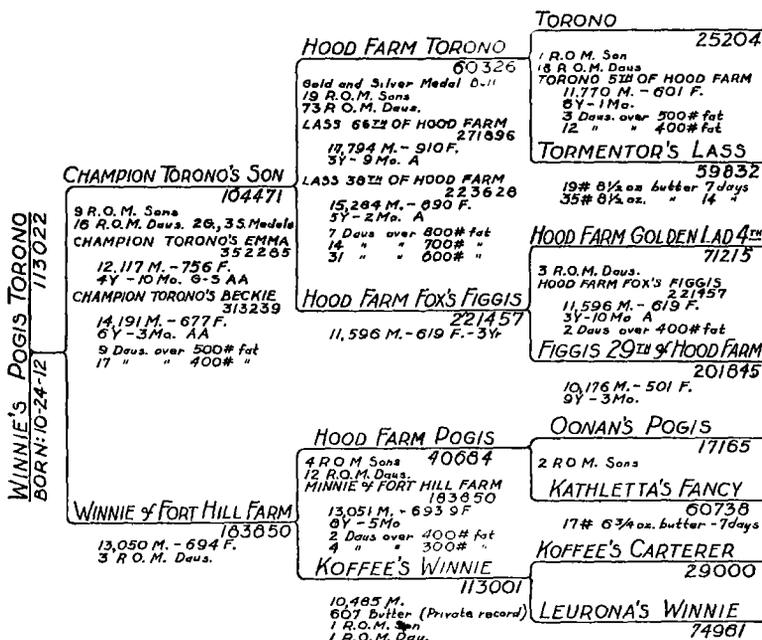
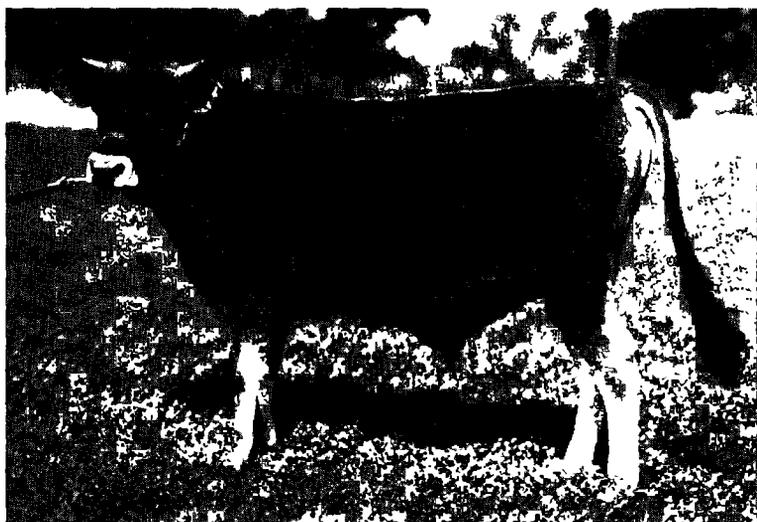


FIG. 11.—Picture and pedigree of Winnie's Pogis Torono 113022.

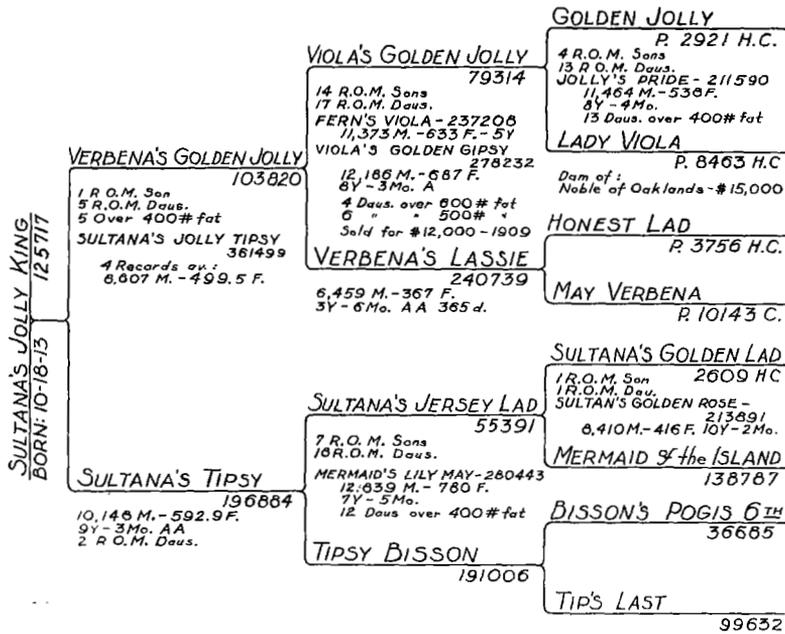


FIG. 12.—Pedigree of Sultana's Jolly King 125717.

The next bull in the Jersey herd was Jolly Topsy's King 187286, the result of crossing a full brother and sister both from the good cow, Sultana's Topsy 196884. This bull's picture and pedigree are given in figure 13. The number of dam and daughter comparisons for this bull is limited to six. (Table X.)

TABLE X.—DAUGHTER-DAM COMPARISON FOR JOLLY TOPY'S KING

Number of records	Average for the group				Mature equivalent	
	Age.	Pounds of milk	Per cent fat.	Pounds of fat.	Pounds of milk	Pounds of fat.
<b>Daughters</b> 9	3y-5m	6,795	5.6	381	8,480	476
<b>Dams</b> 9..	3y-3m	8,678	4.9	423	10,830	528
Average increase in production of daughters (Mature-equivalent basis.)					-2,350	-52
					-21.7%	-9.8%

This sire made a very poor showing, decreasing the milk production by 21.7 per cent and the butter-fat production by 9.8 per cent. While the number of daughters is low the results are very poor.

A graphic summary of four Jersey sires is given in figure 14.

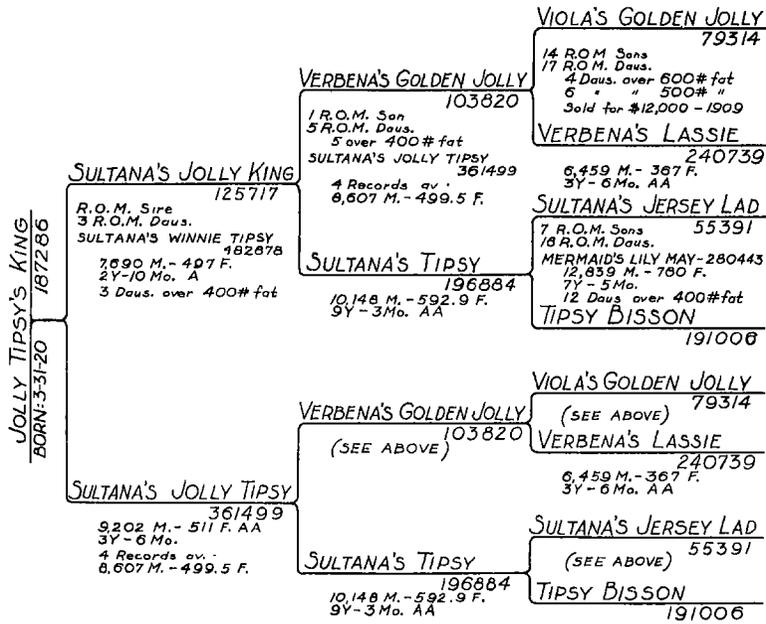


FIG. 13.—Picture and pedigree of Jolly Topsy's King 187286.

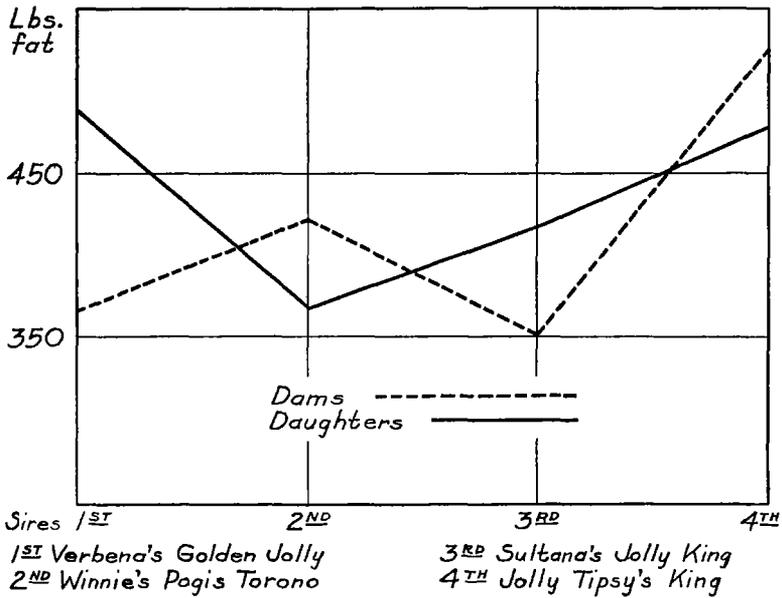


FIG. 14.—Graphic presentation of the average butter-fat production of the daughters of four Jersey sires and the dams of these daughters.

Manora's Fairy Lad 174908 was used in the herd for a two-year period through the purchase of a half interest. His use covered a period of time when breeding trouble was very bad and he left but few daughters. They were good individuals but below average as producers. A picture and the pedigree of Manora's Fairy Lad are shown in figure 15.

Another proved bull leased for a short time was Wexford's Financier 193013. This animal had some very good daughters in a Kansas herd, three of which had been tested and increased production over their dams 15.5 per cent in milk and 6.2 per cent in butter fat on the mature-equivalent basis. Three other daughters of this bull had been previously purchased for the College herd. Only one heifer was added to the herd through the use of the bull.

At the present time the bull in use in the Jersey herd, Fauvic's Blonde Widower 267267, is leased from a breeder. His picture and pedigree are given in figure 16. Three heifer calves and one bull calf from this bull are now in the herd and all show excellent type.

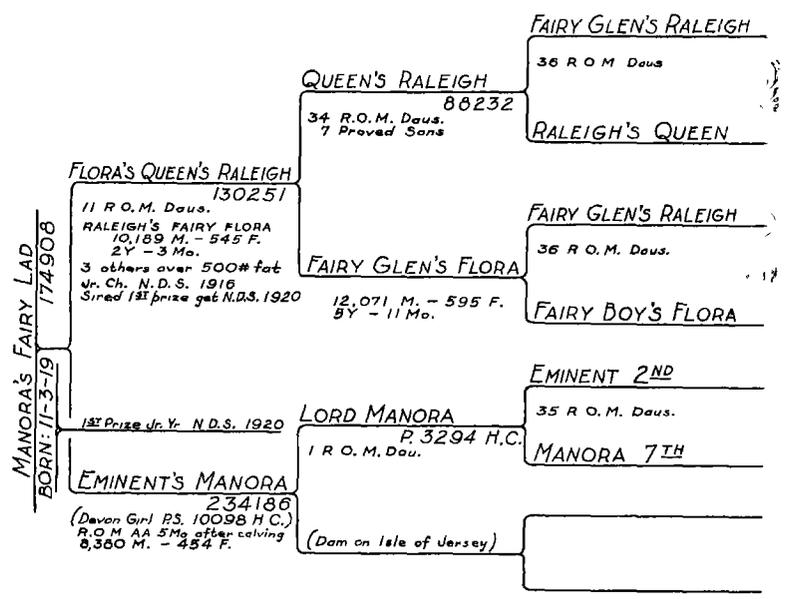


Fig. 15.—Picture and pedigree of Manora's Fairy Lad 174908.



**GUERNSEY BULLS USED IN THE COLLEGE HERD**

Like the two breeds of cattle already discussed, the Guernseys in the herd of the Kansas State College have had a checkered career as the result of the sires used. One of the first bulls used was Alpeha's Duke 14491. His picture and pedigree are given in figure 17. The number of females in the herd during his period of service was small and the number of daughters consequently low. Individually, Alpeha's Duke was perhaps the best Guernsey bull that has ever been used in the herd. A detailed analysis of the four daughter-dam comparisons is given in Table XI.

TABLE XI.—DAUGHTER-DAM COMPARISON FOR ALPEHA'S DUKE.

Number of records	Average for the group.				Mature equivalent.	
	Age	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 13 .	4y-3m	6,409	4 74	303 9	6,819	323
<b>Dams</b> 19 .	6y-4m	6,944	4 42	306 6	6,986	308
Average increase in production of daughters . . . (Mature-equivalent basis)					-167	15
					-2 4%	4 9%

On the mature-equivalent basis this bull decreased the milk production 2.4 per cent but raised the butter-fat test of his daughters by 0.32 of 1 per cent, which was sufficient to make a 4.9 per cent increase in the butter-fat production of his daughters. Though having been bred to cows of relatively low production, Alpeha's Duke was barely able to maintain their production and the type of his daughters was no better than that of their dams. Apparently the only fact that prevented this bull from making a worse showing was the poor quality of the cows on which he was used.

Alpeha's Duke was followed by Langwater Benefactor 41975. The quality of the Guernsey herd was improved at this time by the purchase of four imported heifers, two imported cows, and the bull Langwater Benefactor 41975. The picture of Langwater Benefactor and his pedigree are given in figure 18. Note that the dam of Langwater Benefactor had a record of 721 pounds of butter fat and his seven and thirteen closest dams averaged 723 and 690 pounds of butter fat, respectively, a record unsurpassed by any bull of the breed at that time. The dam of Langwater Benefactor, Langwater Charity, was junior champion at the 1912 National Dairy Show and was an excellent individual when mature. Benefactor was also a good individual as a youngster. The apparent assurance of the ability of this sire seemed to justify his use on all Guernsey females available in the herd for several years. Table XII presents the results of 16 dam and daughter comparisons.

It was not necessary to wait for the results of many daughter-

TABLE XII.—DAUGHTER-DAM COMPARISON FOR LANGWATER BENEFACTOR.

Number of records.	Average for the group.				Mature equivalent.	
	Age.	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 29.....	3y-4m	5,367	4 6	247	6,129	282
<b>Dams</b> 61.....	5y-4m	6,689	4 9	327	6,843	335
Average increase in production of daughters .. (Mature-equivalent basis.)					{ -714	-53
					{ -10 4%	-15 8%

dam comparisons to be disappointed with the production of this bull's daughters. With the low production of the Guernsey cows in the herd there was every reason to expect marked improvement in the daughters of this bull. However, as indicated in Table XII, his daughters produced 10.4 per cent less milk and 15.8 per cent less butter fat than their dams. Note that he not only lowered the milk production but it had a lower butter-fat content. His daughters were not only low producers but they had the appearance of low producers as well. In only one instance did a daughter produce more than her dam. Langwater Benefactor not only reduced the income from his daughters but he also depreciated the value of the Guernsey herd in proportion to the number of daughters he sired. It required four years to find that he could not live up to the promise of his pedigree, and it has taken much longer to overcome the damage wrought to the herd.

Brookmead's Secret Stars and Stripes 56828, a bull loaned by a breeder, was next used in the herd. Although used less than a year he left some of the best Guernseys that have been calved on the College farm to date. A picture and the pedigree of this bull are shown in figure 19. A comparison of the production of his four daughters with the production of their dams is given in Table XIII.

TABLE XIII.—DAUGHTER-DAM COMPARISON FOR BROOKMEAD'S SECRET STARS AND STRIPES.

Number of records.	Average for the group				Mature equivalent.	
	Age.	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 9. . . . .	4y-3m	7,321	4 94	362	7,790	385
<b>Dams</b> 6. . . . .	2y-9m	5,188	4 59	238	6,194	284
Average increase in production of daughters. . . . .					{ 1,596	101
(Mature-equivalent basis)					{ 25 8%	35.6%

Brookmead's Secret Stars and Stripes with nine records on four daughters increased their production over their dams 25.8 per cent in milk and 35.6 per cent in butter fat. It was unfortunate for the College herd that he could not have been used over a longer period of time.

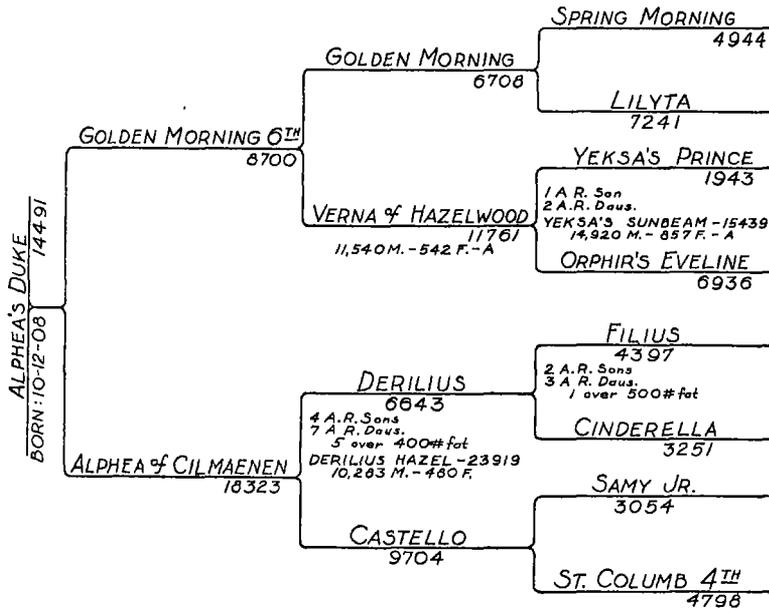


FIG. 17.—Picture and pedigree of Alpha's Duke 14491.

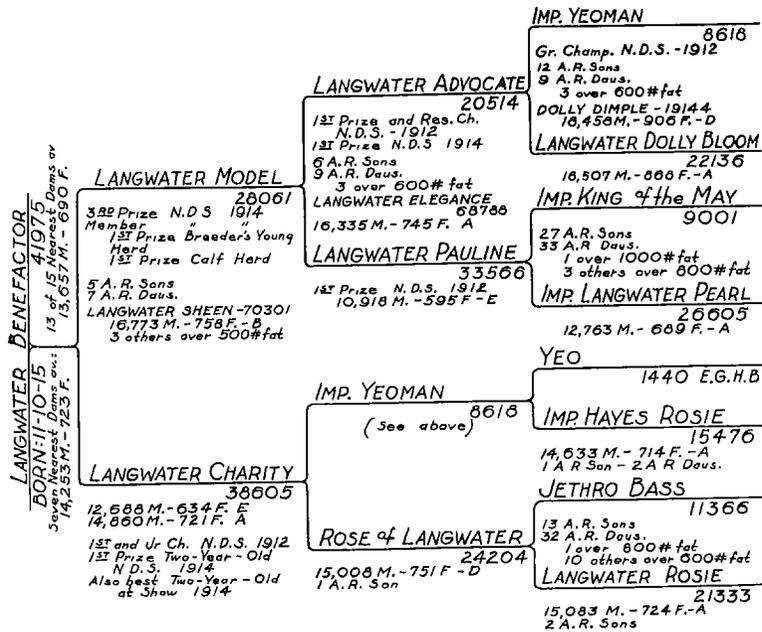


FIG. 18.—Picture and pedigree of Langwater Benefactor 41975.

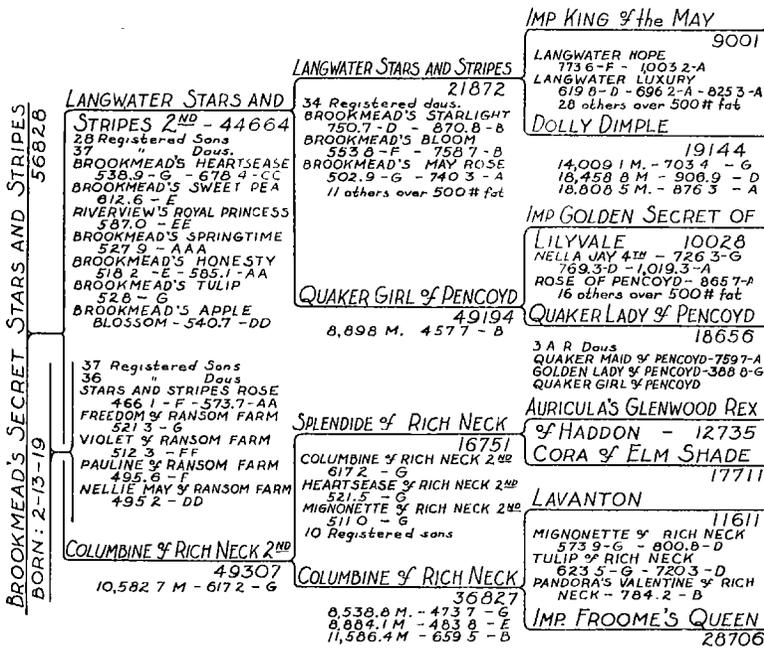


FIG 19.—Picture and pedigree of Brookmead's Secret Stars and Stripes 5682B

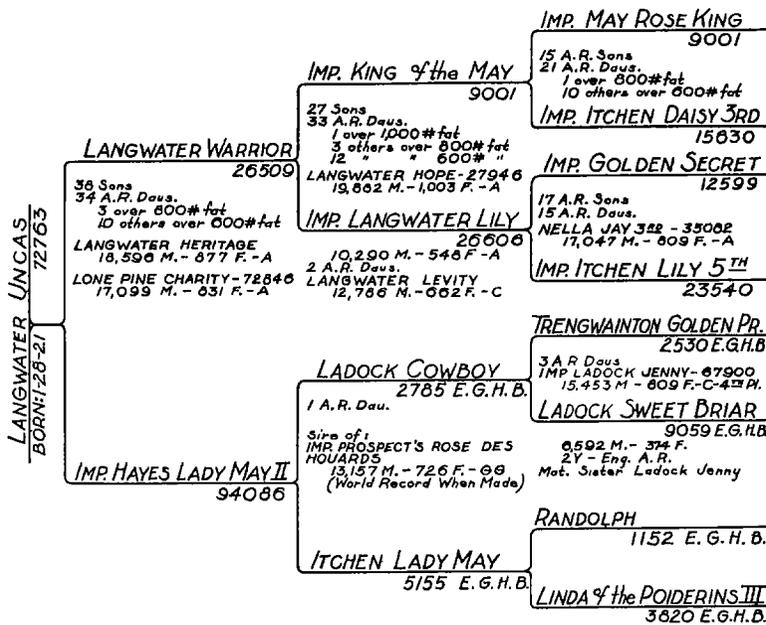
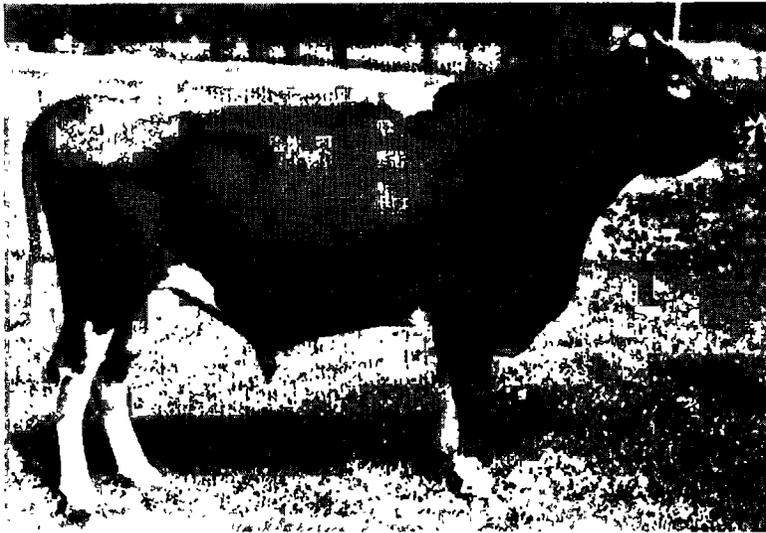


FIG. 20.—Picture and pedigree of Langwater Uncas 72763.



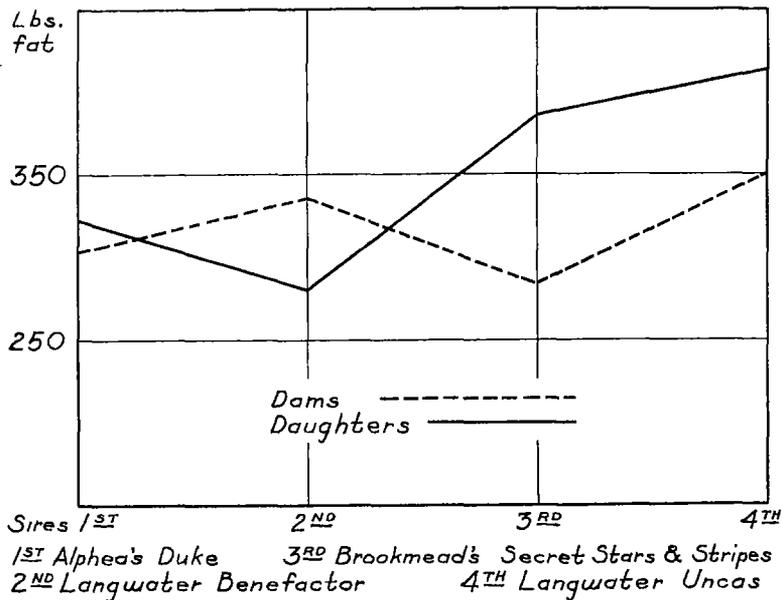


Fig. 22.—Graphic presentation of the average butter-fat production of the daughters of four Guernsey sires and the dams of these daughters.

Langwater Uncas 72763, selected as a bull calf, was the next bull to come into service in the Guernsey herd. His picture and pedigree are given in figure 20. A summary of the eight daughter-dam comparisons is given in Table XIV.

TABLE XIV.—DAUGHTER-DAM COMPARISON FOR LANGWATER UNCAS.

Number of records	Average for the group				Mature equivalent	
	Age.	Pounds of milk	Per cent fat	Pounds of fat.	Pounds of milk	Pounds of fat
<b>Daughters</b> 12	2y-8m	8,018	4 3	344	9,573	411
<b>Dams</b> 20	4y-7m	6,946	4 7	327	7,391	348
Average increase in production of daughters (Mature-equivalent basis.)					2,182	63
					29 5%	18 1%

The daughters of Langwater Uncas produced more as two-year-olds than their dams did at five years of age. While his daughters averaged 0.4 of 1 per cent less in butter-fat test than their dams, the 29.5 per cent increase in milk production caused them to produce 18.1 per cent more butter fat than their dams. The daughters were

large, rather rough in appearance, but had the appearance of being good producers. This bull reacted to the blood test and was sold in 1931 after 10 years in the herd.

At the present time a proved sire, Venture of Edgemoor 65894, is being used. This animal, obtained from a Wisconsin herd in 1929, had seen wide service in Wisconsin and the records made by his daughters in dairy herd improvement associations attracted attention. His picture at 9 years of age, together with his pedigree, are shown in figure 21. Five of his calves are now in the College herd.

The plane of butter-fat production of the Guernsey herd is shown graphically in figure 22.

**AYRSHIRE BULLS USED IN THE COLLEGE HERD**

The first Ayrshire bull to have many daughters in the College herd was Melrose Good Gift 14612. Although not the first bull used, his arrival followed the purchase of five Ayrshire heifers from Wisconsin in 1909. Animals in this purchase established a foundation for the College Ayrshire herd. Melrose Good Gift was obtained in a trade of bulls with Purdue University at La Fayette, Ind., and was used from 1911 to 1923. His picture and pedigree are given in figure 23.

Melrose Good Gift sired 24 daughters, 21 of which have records available for comparison with the records of their dams. The 54 records of the daughters of Melrose on the mature-equivalent basis average 8.6 per cent more in milk and 9.9 per cent more in butter fat than did those of their dams. Table XV gives the details of the dam and daughter comparison.

TABLE XV.—DAUGHTER-DAM COMPARISON FOR MELROSE GOOD GIFT.

Number of records.	Average for the group.				Mature equivalent.	
	Age.	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 54 . . . . .	4y-5m	9,273	3.98	369	10,919	414.8
<b>Dams</b> 106 . . . . .	6y-2m	9,779	3.75	367	10,053	377.4
Average increase in production of daughters . . . . . (Mature-equivalent basis)					866 8.6%	37.4 9.9%

The daughters of Melrose Good Gift were really better than the comparison indicates. At one time they held three class records for the breed, and their records attracted nation-wide attention. His sons also proved to be good sires.

To follow on the daughters of Melrose Good Gift, the bull Cavalier's College Master 17730 was purchased in Wisconsin. A picture of this bull is not available, but his pedigree is given in figure 24.

Six daughters of Cavalier's College Master having comparisons with their dams show on the mature-equivalent basis a reduction of 21 per cent in both milk and butter-fat production. A comparison of the six daughters of this bull with the records of their dams is given in Table XVI.

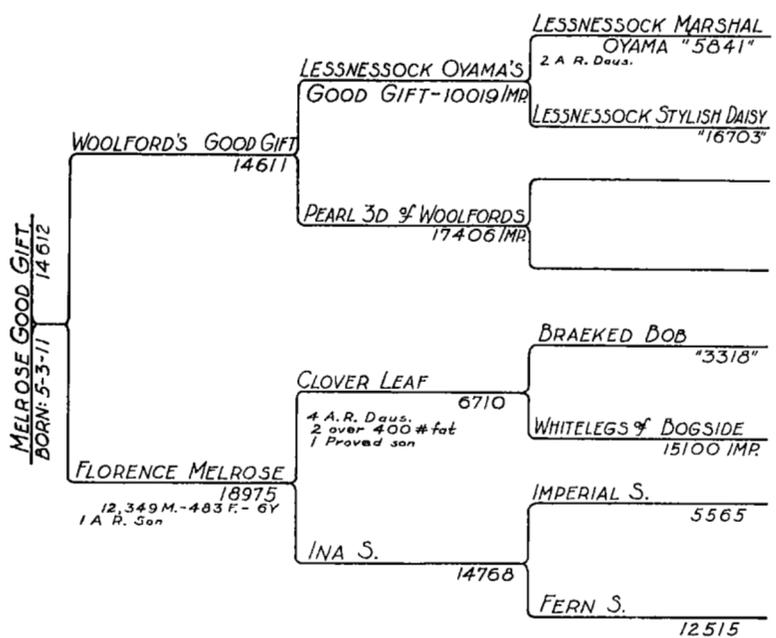


FIG. 23.—Picture and pedigree of Melrose Good Gift 14612.

TABLE XVI.—DAUGHTER-DAM COMPARISON FOR CAVALIER'S COLLEGE MASTER.

Number of records.	Average for the group.				Mature equivalent.	
	Age.	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 16 . . . . .	5y- 2m	9,159	3.7	339	9,928	365
<b>Dams</b> 28 . . . . .	5y-11m	12,283	3.7	454.6	12,627	467
Average increase in production of daughters . . . . . (Mature-equivalent basis)					-2,699	-102
					21.4%	-21.8

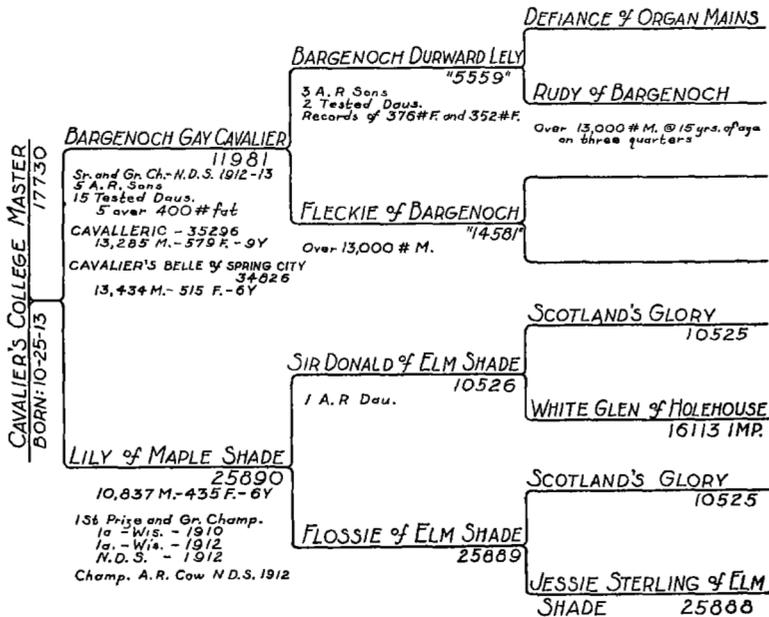


FIG. 24.—Pedigree of Cavalier's College Master 17730.

In only one case did a daughter of Cavalier's College Master produce as much as her dam at the same age. It should be noted, however, that the cows on which this bull was crossed averaged on the mature-equivalent basis 2,574 pounds more milk and 90 pounds more butter fat than did the cows on which Melrose Good Gift was crossed. This bull was a disappointment as a sire of production and he helped but little on type. His use was discontinued as soon as the above results were apparent.

In the meantime a bull calf, Bell's Melrose 21332, had been purchased to assist Melrose Good Gift and to replace Cavalier's College

Master. This calf attracted attention because his dam was related to the best cow in the herd. He was sired by a son of Melrose Good Gift and out of one of the herd's best cows, Elizabeth of Juneau, with a record of 15,122 pounds of milk and 536 pounds of butter fat. A picture and the pedigree of this bull are given in figure 25. Bell's Melrose proved to be an excellent sire. Table XVII gives the detailed analysis of 22 dam and daughter comparisons.

TABLE XVII.—DAUGHTER-DAM COMPARISON FOR BELL'S MELROSE.

Number of records.	Average for the group.				Mature equivalent.	
	Age.	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 40.....	3y-7m	9,167	3.87	355	11,239	435
<b>Dams</b> 92.....	5y-0m	10,997	3.68	405	11,921	439
Average increase in production of daughters. (Mature-equivalent basis.)					-682	-4
					-5.7%	-0.9%

The daughters of Bell's Melrose produced 5.7 per cent less milk than did their dams and the butter-fat production was decreased by 0.9 of 1 per cent. The fact, however, that he maintained high production and also improved the type of the Ayrshire herd, resulted in his use in the herd during his entire life. His use was restricted in later years to only a few females that were not sired by him. He died in 1930 at 13 years of age.

The daughters of Bell's Melrose were bred to Alta Crest High Value 26214, a bull leased to the College by a breeder. A picture of this bull and his pedigree are given in figure 26. As a result of several months' use this bull left eight daughters in the herd. Table XVIII summarizes the production of his daughters as compared with their dams.

TABLE XVIII.—DAUGHTER-DAM COMPARISON FOR ALTA CREST HIGH VALUE.

Number of records.	Average for the group.				Mature equivalent.	
	Age.	Pounds of milk.	Per cent fat.	Pounds of fat.	Pounds of milk.	Pounds of fat.
<b>Daughters</b> 11.....	2y-9m	7,395	3.98	294	9,488	377
<b>Dams</b> 20.....	4y-2m	9,747	3.85	375	11,618	477
Average increase in production of daughters. (Mature-equivalent basis.)					-2,130	-100
					-18.3%	-20.9%

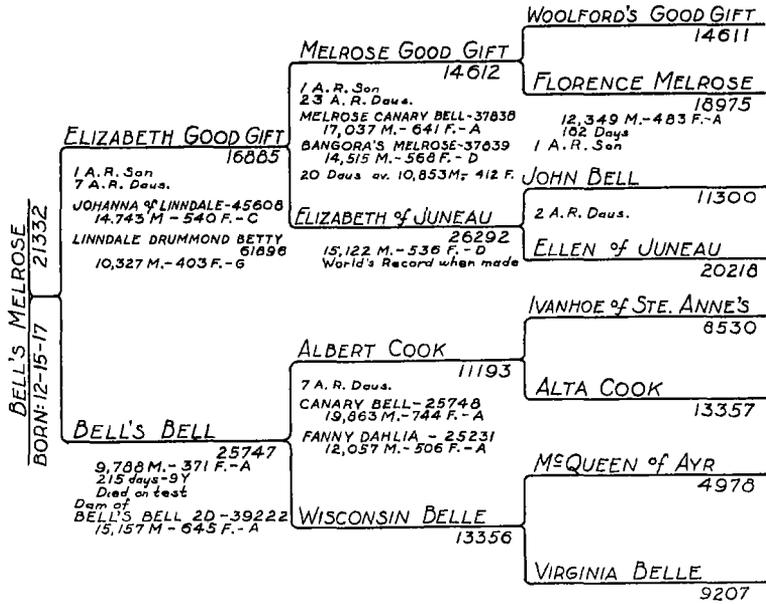


FIG. 25.—Picture and pedigree of Bell's Melrose 21332.

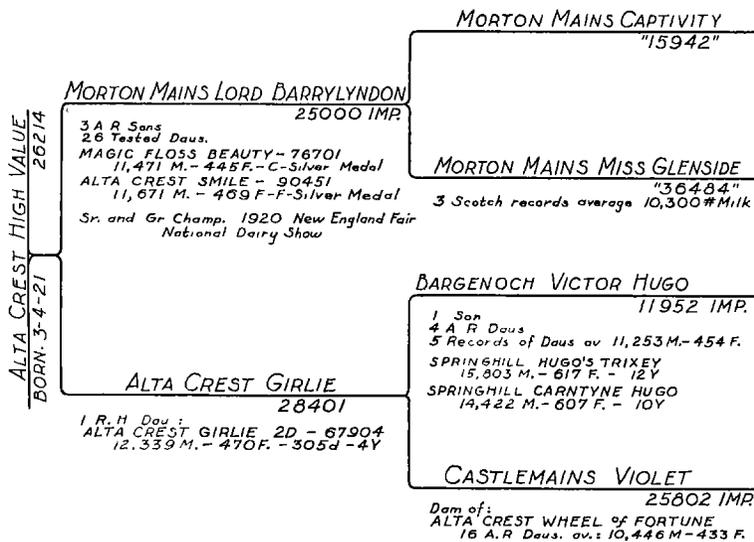


FIG. 26.—Picture and pedigree of Alta Crest High Value 26214.

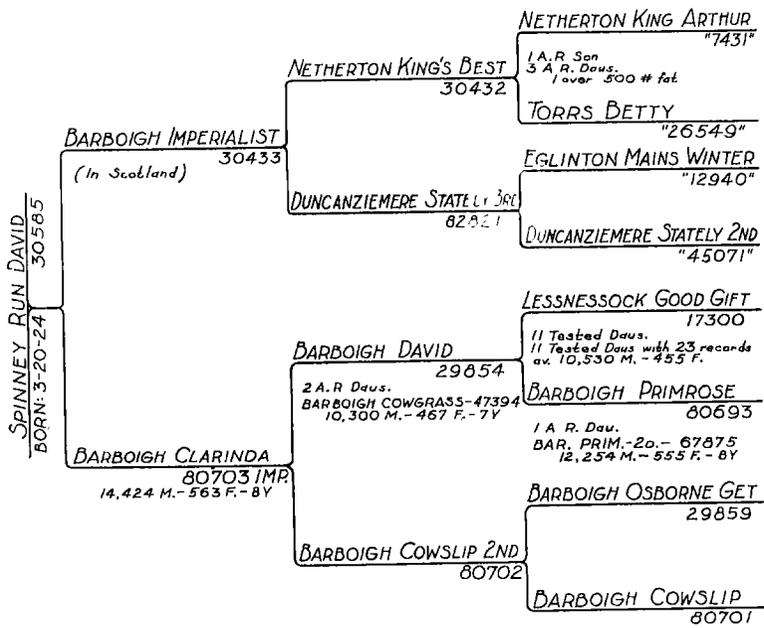


FIG. 27.—Picture and pedigree of Spinney Run David 30585.

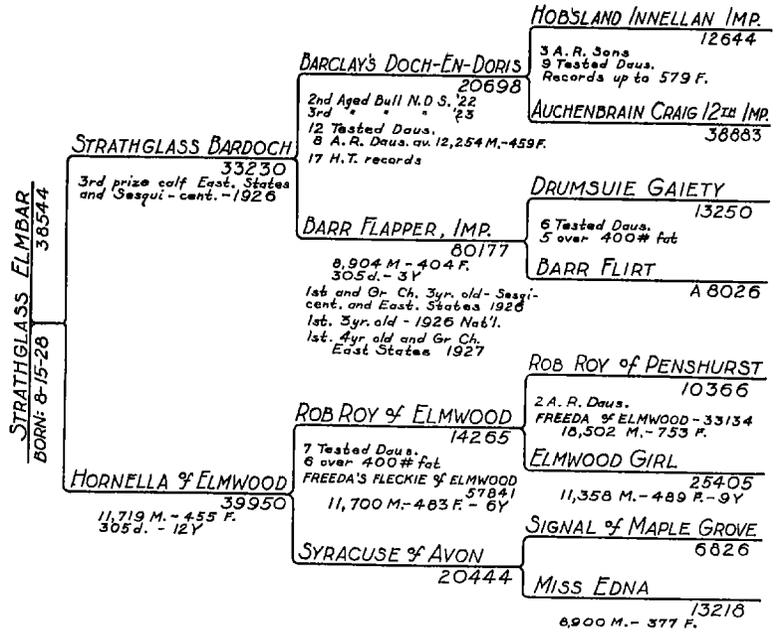
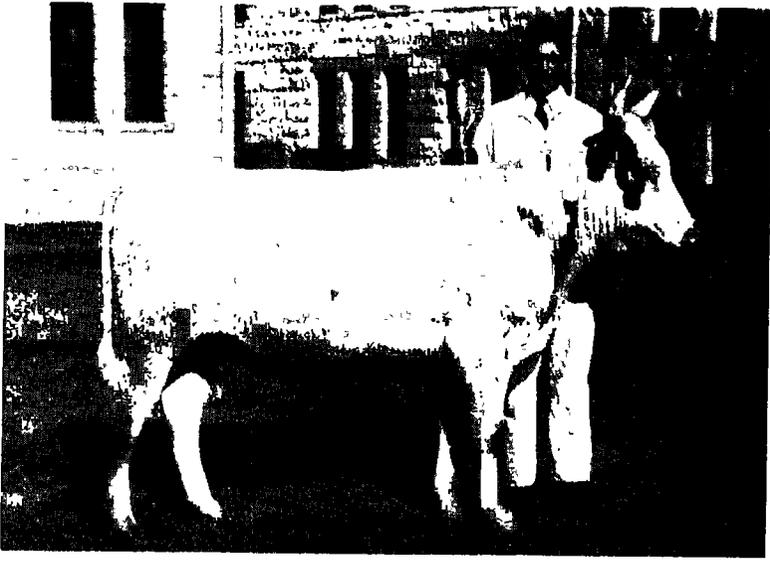


FIG. 28.—Picture and pedigree of Strathglass Elmbar 38544.

On the mature-equivalent basis this bull caused a decrease in production of 18.3 per cent of milk and 20.9 per cent of butter fat, and even though the type of the animals sired was improved, the standard of production established by Bell's Melrose was not maintained.

The next Ayrshire bull used in the herd was Spinney Run David 30585, loaned by a breeder. His picture and pedigree are given in figure 27. From an imported sire and an imported dam both of good individuality, this bull developed into a poor individual. His daughters were not only of poor type, but they produced less than their dams. The only two daughters in milk from this bull are compared with their dams in Table XIX.

TABLE XIX.—DAUGHTER-DAM COMPARISON FOR SPINNEY RUN DAVID.

Number of records	Average for the group				Mature equivalent	
	Age	Pounds of milk	Per cent fat	Pounds of fat	Pounds of milk	Pounds of fat
<b>Daughters</b> 4	3y-5m	6,026	4 20	291 1	8,491	357
<b>Dams</b> 4	3y-8m	9,776	4 40	430 0	11,985	527
Average increase in production of daughters (Mature-equivalent basis.)					{ -3,494	-170
					{ -29%	-32.3%

With Bell's Melrose in limited use in the herd and Spinney Run David of unknown ability, a young calf, Strathglass Elmbur 38544, was purchased in June, 1929. A picture and the pedigree of this animal are shown in figure 28. The pedigree and the individuality of the animals in this pedigree as well as the bull, himself, promise much. The future alone will tell whether this young sire can make good this promise.

The Ayrshire herd at Kansas State College, once the outstanding herd of the College, is now lower in producing ability than it was 15 years ago and in individuality is lower than it has been for years. Isolation for control of Bang's disease has contributed to this condition, but not to so great an extent as has the unfortunate selection of sires.

Figure 29 is a graphic portrayal of the performance of the Ayrshire bulls used in this herd. It would seem from this that the first bull used, Melrose Good Gift, was not only the best to date, but that his daughters contributed much to the herd.

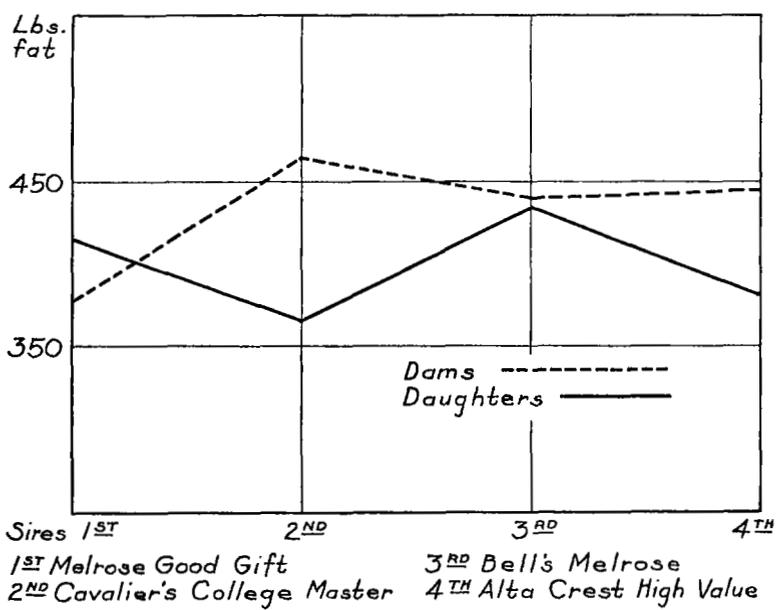


FIG. 29—Graphic presentation of the average butter-fat production of the daughters of four Ayrshire sires and the dams of these daughters.

CONCLUSIONS

It is apparent from this brief summary of the bulls used in the College herd that:

1. The selection of a good sire is a problem in any one of the four breeds studied.
2. Many sires do not live up to the promise made in their pedigrees.
3. A young sire should not be used exclusively in a high-producing herd.
4. A sire proved for high production is the surest means of maintaining high production.
5. To obtain proved sires blood negative to Bang's disease further reduces the availability of such sires.
6. A poor sire may depreciate or a good sire appreciate the value of a herd of cattle equivalent to the decrease or increase in butter-fat production resulting from his use.

The dairy farmer with high-producing cows has a big advantage over the man with low-producing cows. This advantage can be obtained by eliminating the prejudice against old sires to the extent of using bulls proved for high production.