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A Comparison of Guernsey Sires

Based on the Average "Mature Equivalent" Fat
Production of the Daughters and their Dams

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A Comparison of Guernsey Sires

Based on the Average "Mature Equivalent" Fat Production of the Daughters and their Dams

C. W. TURNER

ABSTRACT.—A study was made of the progeny performance of 263 Guernsey sires having ten or more daughters in the Advanced Register. Conversion factors based on the relation between age and fat production were used to convert all records to their "mature equivalent." The relation between the fat production of the dams and daughters of groups of sires was then determined. The potential transmitting ability of each sire was obtained from the relationship shown. By means of genealogy charts, it was found that the average production of a sire's daughter was a better index of his transmitting ability to his sons and through them to his granddaughters than is the dam's own record of production an index of her transmitting ability to her sons and through them to her granddaughters. In other words, a proven sire of high producing daughters, or a son of a proven sire is, on the average, greatly superior to a son of a high-record cow in transmitting high production to his daughters.

Two aims of every breeder of dairy cattle are to improve the physical appearance or conformation and to increase the producing ability of the dairy cow. Some breeders give major attention to the improvement of the conformation; others to the production of large quantities of milk and butterfat. Both are important and both must be considered by master breeders. To believe that the present accepted show-yard type is the best type for the fulfillment of the function of the dairy cow would retard further progress. This would be disastrous for any breed. That the present type and high production are not more closely associated with each other indicates the extent to which we are failing in understanding perfectly the intimate relationship between the physical appearance or conformation and the factors governing milk and fat production. However, it will be apparent from data presented in this bulletin that there are certain factors governing milk and fat production which have no physical basis and the extent to which they regulate or influence total production will determine the extent of the possible relationship between conformation and production.

The art of breeding is very old and the methods of improvement have been little changed. Rigid selection of animals meeting or approaching the ideals of the breeders has been the method of improvement for centuries. The science of breeding or genetics has as yet contributed comparatively little to the improvement of farm animals. Physical characters, such as type or conformation, lend themselves to

improvement by selection because they are visible to the eye. The success or failure of the matings is apparent in the conformation of the progeny.

Improvement of the capacity of the dairy cow for large milk and fat production through breeding and selection is beset with greater difficulties. The presence or absence of the desirable characters are fully demonstrated only by actual performance tests of production during a ten months or years lactation. The sire can indicate his ability only through a performance test of his daughters. However, the daughters are influenced by the genetic makeup of the dams. Data indicating the extent of the influence of the dam on the daughters of Guernsey sires will be presented later in this bulletin.

Much confusion and loss of effort has resulted due to the fact that there is a fundamental difference between a performance test of an individual and a progeny performance test. The performance test indicates what a cow can produce, but it does not indicate the production that she can transmit. Her transmitting ability and the sire's transmitting ability are indicated only by the performance of their progeny. Since transmitting ability of both sire and dam is of fundamental importance to the breeder, it is superior to all other tests as a basis of selection. Data are later presented which indicate the desirability of using proven sires. (By proven sire is meant one which has indicated his transmission of production to his daughters when mated with a number of different dams. The greater the number of dams and daughters and the greater the range in productivity of the dams, the better will be the test of the sire's ability.) Emphasis should be placed on the use of proven sires.

It is more difficult to prove out the transmitting ability of females. Only a few daughters by different sires are ordinarily produced. When it is possible, however, advantage should be taken of such information. It is evident because of the wider usefulness of the sire that a knowledge of his transmitting ability is of greater value in breeding.

PROGENY PERFORMANCE OF DAIRY SIRES

As an aid in obtaining the greatest benefit from the published records of the progeny of the purebred sires of the dairy breeds, studies have been published* on the average mature equivalent production of fat of Jersey and Holstein sires having ten or more yearly record daughters.

The purpose of this bulletin is to present similar information concerning Guernsey sires having ten or more Advance Registry

*A Comparison of Jersey Sires. Mo. Exp. Sta. Bul. 206.

A Comparison of Holstein-Friesian Sires. Mo. Exp. Sta. Bul. 217.

daughters up to January 1, 1924. The study has been further extended to determine the relation between the production of the daughters and their dams. The first Guernsey Advanced Registry testing was started in 1900. In the 25 years since that date, over 21,000 tests have been made on over 15,000 cows. This is a large mass of valuable data and offers an opportunity for a study of the mode of the inheritance of the characters which govern the secretion of milk and fat.

DIFFICULTY OF DEMONSTRATING INHERITANCE

The demonstration by a lactation test of the full inheritance for milk and fat secretion is difficult of realization. The production of fat is greatly influenced by the feed and management, not only during the lactation period, but also during the growing period. Pregnancy, seasonal temperature, frequency of milking and other similar factors have an effect on maximum production. Probably few cows fully realize and demonstrate their total inheritance, yet under official test conditions of feeding and management there is a large group of records of production which approach that full demonstration of inheritance.

In comparing yearly records made during a period of 25 years, it is well to point out that cows making records 20 and 25 years ago were probably not fed and managed as well as the cows which have made their records during recent years. For that reason the older sires are at a disadvantage in comparison with younger sires. The influence of this factor cannot be measured but should be considered in studying the genealogy charts.

It is evident from the above discussion that there are many factors which may depress the potential inheritance of the ability to produce milk and fat and, therefore, the data may not represent the actual inheritance or transmitting ability of the sires considered. On the other hand, sires which stand high in the list, indicating that the average production of their daughters is relatively large, probably possess the quality of transmitting producing ability to their daughters.

THE CHANGE OF PRODUCTION WITH AGE

It was observed at an early date that milk and fat production, on the average, gradually increase as the dairy cow becomes mature and then gradually decrease with the onset of old age; thus under similar conditions of feeding and management a heifer is expected to increase her yearly production at each succeeding lactation period until she reaches maturity.

Data have already been presented showing the relationship between age and production.* Table 1 which follows shows the relationship

*The Relation Between Age, Weight, and Fat Production in Dairy Cows. Mo. Exp. Sta. Bul. 221.

between age and production for Advanced Registry Guernsey cows. These data are subject to the objection that the minimum requirements eliminate the poor producers and, therefore, the results may not be representative of the breed as a whole. It is also true that, due to declining producing ability, cows as they grow older enter the Advanced Registry with increasing difficulty. The result is that the cows of advanced ages are more or less selected, since only cows of exceptional ability as producers are usually tested at advanced ages.

TABLE 1.—THE RELATION BETWEEN AGE AND YEARLY FAT PRODUCTION OF GUERNSEY COWS

Age (yrs.)	Guernsey Cows		Weighted average of all cows		Fat expressed as per cent of maximum production
	No. Cows Included	Fat per year	No. Cows Included	Fat per year	
		lbs.		lbs.	
1.7	313	368	1275	355.4	64.6
2.5	5241	412	15001	404.9	73.6
3.5	2566	452	8184	462.0	84.0
4.5	1977	492	6349	497.1	90.4
5.5	1133	511	4823	424.7	95.5
6.5	897	521	3609	544.8	99.1
7.5	527	528	2579	549.4	100.0
8.5	369	527	1776	544.9	99.1
9.5	264	524	1121	533.2	97.0
10.5	123	512	609	526.4	95.8
11.5	76	486	333	507.9	92.4
12.5	32	500	179	485.3	88.3
13.5	24	447	91	469.8	85.5
14.5	5	491	33	440.7	80.2
15.5	4	446	22	434.8	79.1
16.5	1	395	10	463.6	----
17.5	2	410	5	432.4	----
18.5	----	---	2	412.0	----
20.5	----	---	1	375.0	----
Totals	13599		46002		

The values found in Table 1 are plotted in Fig. 1. Due to the irregularity of the values for Guernseys after nine years caused by the comparatively small number of animals, the position of the declining segment of the curve was determined by the use of the average yearly records of all breeds when converted to a percentage basis.

The data presented show that fat production gradually increases up until between seven and eight years and then gradually decreases with the onset of old age. The records of yearly fat production of all the animals included in this study, made at varying ages, were converted to their mature equivalent by multiplying the actual yearly record of the cow by the age conversion factor for the age at which the record was made. Thus all records are converted to a "mature equivalent"

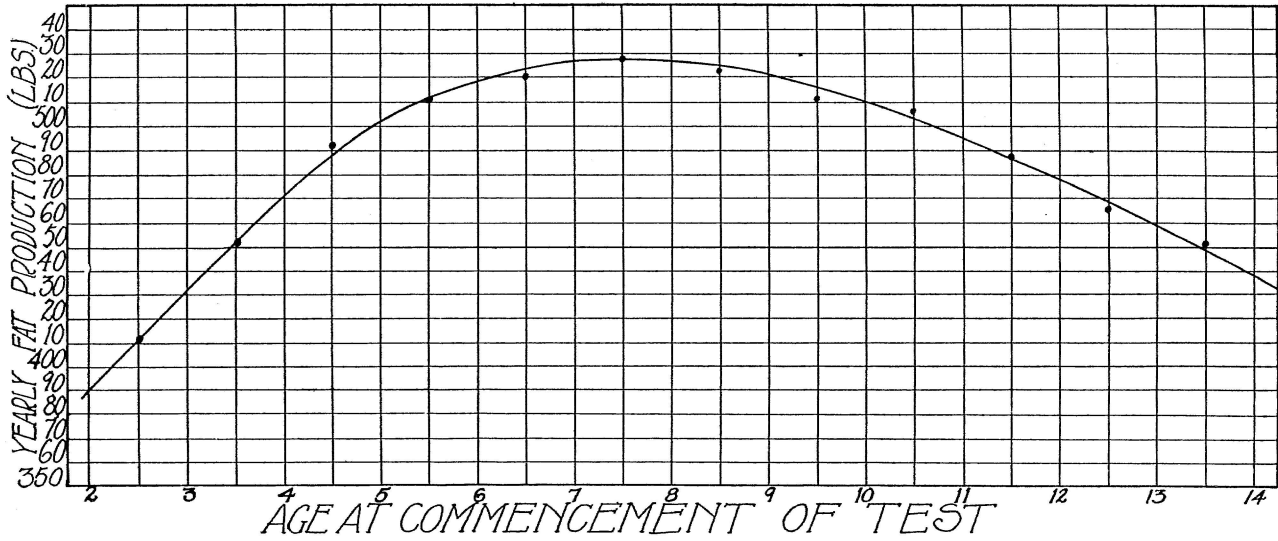


Fig. 1.—The relation between age and fat production of Guernsey cattle.

which is the amount of fat that might be expected, on the average, of the cows tested at maturity and under similar conditions of feeding and management.

TABLE 2.—AGE CONVERSION FACTOR FOR GUERNSEY COWS

Age	Factor	Age	Factor
Under 2 years	----	8 - 8½ years	1.004
2 - 2½ years	1.313	8½- 9 years	1.009
2½-3 years	1.251	9 - 9½ years	1.017
3 - 3½ years	1.194	9½ 10 years	1.029
3½-4 years	1.142	10 -10½ years	1.041
4 - 4½ years	1.100	10½-11 years	1.058
4½-5 years	1.064	11 -11½ years	1.075
5 - 5½ years	1.041	11½-12 years	1.093
5½-6 years	1.023	12 -12½ years	1.113
6 - 6½ years	1.013	12½-13 years	1.137
6½-7 years	1.006	13 -13½ years	1.162
7 - 7½ years	1.000	13½-14 years	1.191
7½-8 years	1.000	14 -14½ years	1.219

COMPARISON OF GUERNSEY SIRES ON BASIS OF DAUGHTERS' PRODUCTION

Because of the nature of the characters being considered, it is impossible to obtain an accurate indication of a sire's ability for the purpose for which he is used except through the demonstration of the productive ability of his daughters. While this is a handicap, yet the progeny test is the best indication of the transmitting ability of an animal. In the case of the sire, it is possible to get progeny from many dams and thus get an indication of the potential inheritance and transmitting ability of the sire.

The influence of the dams on the production of their daughters is the unknown factor in such a comparison. Data will be presented later which quantitatively express the relation between the sire and dam on the production of their daughters.

In Table 3 is presented a list of all Guernsey sires having ten or more Advanced Registry daughters. The sires are ranked in respect to the average mature equivalent production of their daughters. The following information is given for each sire: name and registration number, year of birth, total number of registered daughters, and the number of yearly record daughters. The year of birth of the sires is given to enable the reader to determine the approximate time during which the records of the daughters were made. It is difficult to properly evaluate the significance of the number of daughters on the average production of the sire's daughters. Unquestionably, the averages of the sires with large numbers of daughters are more reliable than those with few daughters. However, the probable error of the average mature equivalent record

decreases as the square root of the number of daughters increases. Therefore, the probable error of the average of a sire with 16 daughters is only twice as great as that of one with 64 daughters.

The effect of the minimum entrance requirements in eliminating certain of the poorer daughters of sires can be seen in the distribution of the records of the daughters of each sire. The normal distribution of daughters when selection or elimination is not practiced, should be symmetrical about the average. As an example, the distribution of the 33 daughters of King of the May might be noted. There is one in the 300-to-499-pound fat class, 17 in the 500-to-699-pound class, 13 in the 700-to-899-pound class, and two in the 900-pound-or-over class. This distribution would indicate that the minimum entrance requirements had little effect on the entrance of the daughters of King of the May into the Advanced Register.

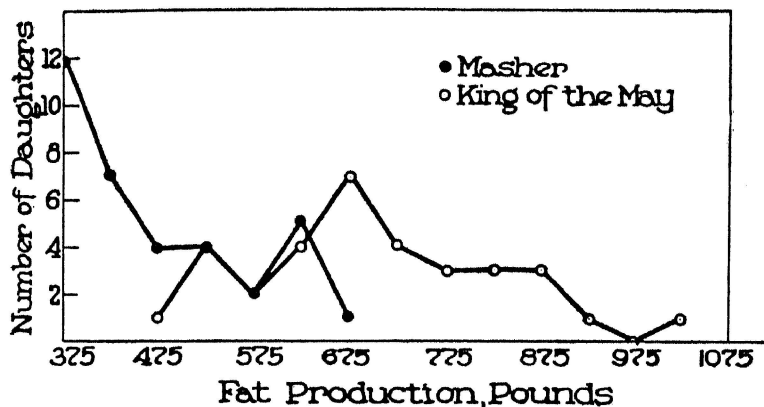


Fig. 2.—The effect of the minimum entrance requirements on the distribution of the daughters of Masher is shown in contrast with the daughters of King of the May.

In contrast, the distribution of the 33 daughters of Masher indicate that the minimum entrance requirements probably prevented many of his daughters from being admitted to the Advanced Register. Instead of the records of the daughters being symmetrically distributed, there were in the class from 300 to 499 pounds a total of 21 daughters, and in the class from 500 to 699 pounds a total of 12 daughters, and none in the other two classes. In Fig. 2 is presented a graphical demonstration of the difference in the distribution of the daughters of the two sires. It shows very clearly that, in the case of the daughters of Masher, there was a considerable number which either failed to meet the requirements or were not tested, perhaps because it was expected that they would be unable to meet the requirements. In all such cases where there is a reasonably large number of daughters which do not show a normal

distribution, it indicates that the average mature equivalent production of the sire is higher than it would be if the minimum requirements were not in effect. The distribution of the daughters of the sires in the latter part of Table 3 especially should be studied in this connection.

TABLE 3.—COMPARISON OF THE MATURE EQUIVALENT FAT PRODUCTION OF THE DAUGHTERS OF GUERNSEY SIRES

Name and registry number of sire	Year of birth	No. of daughters		Av. Mature equivalent fat (lbs.)	Daughters with mature equivalent record of			
		Registered	Yearly prod. records A. R.		300 to 499 lbs.	500 to 699 lbs.	700 to 899 lbs.	over 900 lbs.
Lavanton, 11611.....	1905	12	10	729	0	4	5	1
Langwater Holliston, 28055.....	1913	31	10	726	1	2	7	0
Brookmeads' White Face, 32211.....	1915	46	17	716	0	7	10	0
King of the May, 9001.....	1903	52	33	708	1	17	13	2
Langwater Stars and Stripes, 21872.....	1912	34	14	708	0	9	3	2
Ne Plus Ultra 4th, 29328.....	1913	45	23	707	1	10	10	2
Ultra May King, 27600.....	1913	72	17	707	0	8	9	0
King Bell, 13482.....	1907	23	10	707	0	4	5	1
Langwater Cavalier, 21012.....	1911	73	21	705	0	11	9	1
Langwater Warrior, 26509.....	1913	66	23	701	0	13	10	0
Bell-founder, 11681.....	1906	27	19	694	2	9	6	2
King of Chilmark, 20798.....	1911	70	24	689	1	10	13	0
Lady Smith's Cherub, 30760.....	1914	30	12	688	1	6	4	1
Ne Plus Ultra, 15265.....	1909	78	46	687	3	23	18	2
Langwater Hayes Rosies' King of the May, 16723.....	1910	45	27	681	1	15	10	1
Langwater Traveler, 38325.....	1915	68	15	678	0	9	6	0
Gold Lassie's Julian, 27704.....	1913	39	18	674	1	12	4	1
Golden Secret of Lilyvale, 10028.....	1904	37	23	674	4	11	6	2
Brockton of the Glen, 15739.....	1909	30	10	667	1	6	3	0
King Masher, 11048.....	1906	75	23	665	3	10	10	0
Florham Laddie, 20431.....	1911	84	30	662	5	14	10	1
Jardiniers' Masher, 20957.....	1911	34	14	661	0	11	3	0
Langwater Pencoyd, 21830.....	1912	30	18	658	1	12	4	1
Gay Boy 6 of Myrtle Place, 3518-G.....	1914	--	13	654	2	6	4	1
Ledyard Bay, 11074.....	1905	28	10	645	0	7	2	1
Rex of Rich Neck, 31472.....	1914	55	15	645	1	9	5	0
Valentines Honour of the Passee, 3784-G.....	1915	--	13	640	0	10	3	0
Beda's May King, 11893.....	1907	72	41	640	7	19	15	0
Langwater Rival, 14194.....	1908	29	16	639	1	9	6	0
Governor I of the Chene, 10563.....	1904	52	24	639	7	10	4	3
Rosie's Golden King of Oakhurst, 31630.....	1914	25	10	639	0	7	3	0
Itchen Daisy's May King of Langwater, 17349.....	1910	46	24	637	2	15	7	0
Don Diavolo of Linda Vista, 23565.....	1912	31	11	635	1	8	2	0
May King's Vrangue of Ingleside, 15430.....	1909	67	37	634	5	21	10	1
Reservation Chesterfield, 36609.....	1915	26	13	634	0	10	3	0
Langwater Royal Master, 23663.....	1912	33	14	632	2	9	3	0
May Rose King, 8336.....	1901	29	21	632	2	14	5	0
Reputation of Portage, 10695.....	1905	25	11	632	4	2	4	1
Dolly Dimple's May King of Langwater, 12997.....	1907	25	10	630	4	2	3	1
Hayes Cherub, 2, 25147.....	1910	43	16	630	3	7	6	0
Don Bernardo of Linda Vista, 20617.....	1911	33	11	629	1	8	2	0
King's Vanguard, 22719.....	1912	43	13	627	3	7	3	0
Pencoyd's Golden May Secret, 39636.....	1915	43	14	627	1	9	4	0
Jewel's Independence, 10324.....	1905	38	10	626	1	7	2	0

TABLE 3 (CONTINUED)

Name and registry number of sire	Year of birth	No. of daughters		Av. Mature equivalent fat (lbs.)	Daughters with mature equivalent record of			
		Registered	Yearly prod. records A. R.		300 to 499 lbs.	500 to 699 lbs.	700 to 899 lbs.	over 900 lbs.
Charmante's Rose King, 11746.....	1906	48	11	624	4	3	4	0
Demonstrator of Roughwood, 23133....	1911	40	15	624	2	11	2	0
Holden 4, 12179.....	1906	69	12	621	2	7	2	1
Sir Henry, 2213-G.....	1908	--	10	620	2	4	4	0
Jethro's May King of Linda Vista, 14591	1908	35	15	620	2	11	2	0
Border Raider, 22243.....	1911	80	30	618	3	21	6	0
Langwater Royal, 14253.....	1908	49	27	616	6	14	5	2
Masher's Galore, 8572.....	1901	41	22	615	7	8	7	0
Jethro Bass, 11366.....	1906	50	30	612	5	20	5	0
Langwater Demonstrator, 16451.....	1909	165	66	611	16	32	16	2
Surprise, 2054-G.....	1907	--	13	610	3	6	4	0
Yeoman's King of the May, 17053.....	1910	171	84	610	11	58	15	0
Bob Rilma's Monogram, 29095.....	1913	66	10	608	0	8	2	0
Flora's Sequel 2 of Vimiera, 28603.....	1911	67	19	608	8	8	3	0
Sailor Lad of the Fontaines, 51090.....	1914	56	17	605	3	10	4	0
May King Laddie of Chilmark, 32065...	1914	154	20	603	4	11	5	0
Pretoria's King if Midlothian, 22631...	1912	28	10	601	3	4	3	0
Rinaldo, 8917.....	1903	21	11	601	2	9	0	0
May King of Linda Vista, 17946.....	1910	35	16	599	4	10	1	1
Julian of Koshkonong Place, 14409.....	1909	14	10	598	2	7	1	0
Dairymaid's Criterion of Iowa, 28187...	1914	49	12	598	1	9	2	0
Glenwood's Main Stay 16th, 9384.....	1903	17	10	597	3	5	2	0
Raymond's Pearl King, 24301.....	1910	66	16	596	4	10	2	0
Barrington May King, 19312.....	1910	34	19	595	3	15	1	0
King Masher 8th, 20973.....	1911	24	11	595	1	10	0	0
Joker of Riverside, 21447.....	1911	38	10	595	3	5	2	0
May Rose King 2nd, 13130.....	1908	72	16	594	2	12	2	0
Raymond's Pioneer of Lewiston, 19103	1911	46	20	590	2	17	1	0
Langwater May King, 13001.....	1907	40	20	590	5	12	3	0
Golden Noble 2, 1836-G.....	1905	--	29	590	9	15	5	0
Robert's Criterion of Bellview, 26887...	1911	169	18	589	4	11	2	1
Sequel's Delight, 2442-G.....	1909	--	10	589	4	3	3	0
Jewel's Royal Combination of Wawa, 15655.....	1909	18	11	589	4	4	3	0
Langwater Royal 7th, 20632.....	1911	25	18	588	2	14	2	0
Casterilius of Nelsonville, 18052.....	1910	17	10	587	1	8	1	0
Lavernas Ultra May King, 24660.....	1912	39	12	585	3	8	1	0
Clara's Sequel, 29414.....	1908	171	52	584	15	29	8	0
Alderney 2, 2215.....	1908	--	19	582	6	8	5	0
Gay Boy of the Isle, 16998.....	1908	25	17	581	5	9	3	0
Spotswood's Rival, 8346.....	1902	25	12	581	3	8	1	0
Langwater Golden Secret, 26510.....	1913	32	14	579	2	11	0	1
Rockingham, 18120.....	1910	51	10	578	3	5	2	0
Baubigny's Squire of Keewaydin, 21834	1912	53	11	577	5	4	2	0
Lord Waukesha, 10148.....	1904	51	18	575	7	7	4	0
Bell Buoy of Linda Vista, 19430.....	1911	57	32	575	8	19	5	0
Cherub's Winner, 34182.....	1914	57	14	575	3	10	1	0
Florham Monarch, 26771.....	1911	24	10	575	2	8	0	0
Victor of Pencoyd, 18901.....	1911	53	18	575	3	12	3	0
Itchen May King, 25174.....	1912	63	20	574	4	14	2	0
King Masher 5th, 18361.....	1910	69	20	573	5	13	2	0
Flora's Sequel of Vimiera, 25905.....	1910	34	20	572	10	5	5	0
Florham Golden Lad, 18119.....	1910	35	12	571	5	6	1	0
Governor of Carteret, 3421-G.....	1913	--	13	569	5	5	3	0

TABLE 3 (CONTINUED).

Name and registry number of sire	Year of birth	No. of daughters		Av. Mature equivalent fat (lbs.)	Daughters with mature equivalent record of			
		Registered	Yearly prod. records A. R.		300	500	700	over
					to 499 lbs.	to 699 lbs.	to 899 lbs.	900 lbs.
Cora's King of Bellevue, 9779.....	1904	25	11	569	2	8	1	0
Honorias Sequel 2, 40668.....	1910	109	16	568	5	10	1	0
Brilliant of the Gree, 2377-G.....	1909	--	16	567	4	11	1	0
Langwater Raritan, 17052.....	1910	45	17	566	5	11	1	0
Ivy's Emblem, 3804-G.....	1915	--	10	566	3	6	1	0
Penwyn of Rosendale, 11282.....	1906	24	11	566	4	6	1	0
Stranford's Glenwood of Pinehurst, 13609.....	1906	33	14	565	4	8	2	0
Mars of Woodcrest, 9290.....	1903	15	10	563	5	4	0	1
Sister's King, 33653.....	1914	16	11	562	2	8	1	0
Allenwood King Regent, 23611.....	1912	44	13	562	3	9	1	0
Frank Rose, 26342.....	1913	35	11	562	3	8	0	0
Beau Regal, 13448.....	1908	46	13	561	6	4	3	0
Cora's Governor of Chilmark, 8971.....	1903	96	46	561	14	26	6	0
Langwater Peerless, 19227.....	1911	105	12	559	2	9	1	0
Deanie's Squire, 2734-G.....	1910	--	20	558	8	9	3	0
Lord Mar, 14359.....	1905	93	30	557	9	18	3	0
Dimple Bloom, 14369.....	1908	65	10	557	4	3	3	0
Pencoyd Quaker Boy, 35552.....	1914	17	10	556	4	5	1	0
Duke of Waumesit, 13480.....	1908	30	12	555	5	5	2	0
King's Itchen King, 24661.....	1913	47	15	554	4	9	2	0
France's Jewel's Champion, 17970.....	1907	58	13	554	5	7	1	0
Langwater Fredrick, 22268.....	1912	72	17	553	5	11	1	0
Golden Hero of L'Etienneerie, 12647.....	1903	61	16	553	5	9	2	0
Modena's Yeoman of Langwater, 10764.....	1905	57	15	553	5	8	2	0
Aimable of France, 13739.....	1906	19	10	552	2	8	0	0
Lancaster Hambro, 21011.....	1911	61	27	551	8	17	2	0
Glenwood's Son of Gayhead, 19617.....	1911	32	10	551	3	6	1	0
King of Medfield, 15434.....	1909	23	10	549	3	6	1	0
Langwater Fisherman, 21873.....	1912	122	12	549	3	8	1	0
Major Rilma, 18791.....	1911	50	14	549	5	8	1	0
Itchen Red Raider, 27342.....	1908	36	10	549	4	6	0	0
Marshall of France, 9051.....	1903	20	12	549	3	8	1	0
May Rose of Pencoyd, 27844.....	1913	44	14	549	4	9	1	0
Royal Governor of l'Etienneerie, 1484-G.....	1903	--	10	547	6	2	2	0
Buckthorn, 4781.....	1896	15	11	547	5	5	1	0
Goldseeker of Anna Dean Farm, 26106.....	1907	77	18	547	5	13	0	0
Beda's May Day, 34995.....	1912	30	10	546	4	5	1	0
Marcia's Glenwood of Pinehurst, 11560.....	1906	28	10	545	3	6	1	0
Moonlight King of Anna Dean Farm, 29586.....	1914	63	13	545	3	10	0	0
Triple Champion, 13067.....	1907	37	18	544	8	7	3	0
Sequel's Monogram, 15649.....	1905	83	30	543	12	14	4	0
Gay Lad du Bray, 2026-G.....	1907	--	18	543	5	12	1	0
The Conqueror 2, 15323.....	1905	55	17	542	8	6	2	1
Dairymaid's Standard of Iowa, 28946.....	1914	46	12	541	9	1	2	0
Masher of Sarnia, 19167.....	1909	28	11	541	3	8	0	0
Begalore, 10101.....	1904	23	13	540	5	6	2	0
Uncle Jim, 16740.....	1909	39	17	540	7	9	1	0
Justine's Sequel of the Preel, 2119-G.....	1907	--	39	539	17	17	5	0
Yeoman's King Victor, 22295.....	1912	20	15	539	4	10	1	0
Giltedge of Koshkonong Place, 21989.....	1912	47	21	538	6	14	1	0
Pencoyd's Golden Secret, 16550.....	1910	50	14	538	5	8	1	0
Glenwood's Main Stay 40th, 28108.....	1913	39	12	537	7	4	0	1

TABLE 3 (CONTINUED).

Name and registry number of sire	Year of birth	No. of daughters		Av. Mature equivalent fat (lbs.)	Daughters with mature equivalent record of			
		Registered	Yearly prod. records A. R.		300 to 499 lbs.	500 to 699 lbs.	700 to 899 lbs.	over 900 lbs.
Jacqueminot of Linda Vista, 23564.....	1912	53	20	537	8	12	0	0
Langwater Frenchman, 19226.....	1911	132	28	537	10	16	2	0
Okono of Maple Row, 11522.....	1906	13	10	537	4	5	1	0
Golden Secret of Pencoyd, 23462.....	1912	60	22	536	11	10	1	0
Moss Raider, 22155.....	1906	40	15	536	4	11	0	0
Itchen May King of Stannox, 34377.....	1914	16	13	534	5	7	1	0
Endymion. 8916.....	1903	24	16	533	5	10	1	0
Glenwood's Reputation, 7687.....	1901	53	20	533	9	10	1	0
Spotswood Sequel, 9686.....	1904	93	30	532	11	17	2	0
Silver King of the Isle, 14363.....	1908	29	13	531	5	8	0	0
Langwater Islander, 31329.....	1914	35	10	530	4	6	0	0
Roy of Norwood, 8141.....	1902	32	18	530	7	10	1	0
Golden Secret, 12599.....	1901	34	15	529	7	7	1	0
Pride of Day, 17126.....	1906	45	14	529	4	9	1	0
Glenwood's Champion, 15639.....	1903	84	28	527	12	13	3	0
Dean of the May, 21815.....	1912	60	20	526	8	11	1	0
Governor of the Chene, 1297-G.....	1900	--	112	524	41	67	4	0
Pretor, 9316.....	1903	33	14	524	4	10	0	0
Dandy of Beirnetown, 29963.....	1914	38	17	523	11	3	3	0
Duke of Mouilpied, 2045-G.....	1907	--	11	523	5	6	--	--
Prince of Sarnia, 22000.....	1907	45	21	523	11	9	1	0
Souvenir de l'Etiennerie, 21925.....	1908	44	17	523	7	9	1	0
Galaxy's Sequel, 16904.....	1904	137	53	523	21	29	3	0
Glenwood Boy of Haddon, 4605.....	1895	54	26	521	13	11	1	1
May King of Ingleside, 12558.....	1907	37	22	521	10	12	0	0
Raymond of Blays Farm, 191-A.....	1913	--	13	521	6	7	0	0
Starlight's Excelsior, 7992.....	1902	47	24	521	14	7	3	0
Frank Rilma, 21901.....	1912	53	11	520	5	6	0	0
Robert's Boy, 21662.....	1908	63	13	520	6	7	0	0
Jessy Rose's Pride of Iowa, 23955.....	1912	62	19	519	7	11	1	0
Dairymaid's Pride of Iowa, 14941.....	1909	43	15	518	6	8	1	0
Lucretia's Chief of Waumesit, 123851.....	1906	38	13	518	7	5	1	0
Dan Patch of the Isle, 21293.....	1911	19	11	517	4	7	0	0
Lehigh's Golden Emperor, 15761.....	1909	26	18	517	8	9	1	0
Alderney Raymond, 26357.....	1908	75	29	516	14	14	1	0
George Washington of Fairfield Farm, 10866.....	1906	38	12	516	7	4	1	0
Glenwood's Stranford, 9386.....	1903	60	20	516	12	6	2	0
Hope's May Rose of Maple Hill, 35903.....	1915	65	12	516	6	6	0	0
Lohier's Beta Raider of Waddington, 35442.....	1915	41	20	516	8	12	0	0
Princess' Jewel, 24877.....	1904	77	31	515	14	15	1	1
Rhea's King of the May, 14368.....	1908	69	21	514	10	11	0	0
Langwater Dictator, 15668.....	1909	16	11	513	6	4	1	0
France's Masher 2nd, 7248.....	1897	28	12	512	7	3	2	0
Masher's Sequel, 11462.....	1900	97	70	511	35	31	4	0
Nelson of the Cacheliere, 174-A.....	1911	--	12	511	8	3	0	1
Governor of the Vanquiedor, 29925.....	1911	95	20	508	9	11	0	0
Billy's France of the Isle, 21183.....	1908	71	24	506	14	8	2	0
General Bay, 16177.....	1908	31	11	506	5	4	2	0
Raymond of the Preel 4, 19235.....	1906	77	17	505	9	8	0	0
Rutila's Sheet Anchor, 5701.....	1898	26	11	505	7	4	0	0
Spotswood Masher Sequel, 9687.....	1914	35	11	504	7	3	1	0
Daisy's Valentine, 16603.....	1910	35	10	504	5	5	0	0

TABLE 3 (CONTINUED).

Name and registry number of sire	Year of birth	No. of daughters		Av. Mature equivalent fat (lbs.)	Daughters with mature equivalent record of			
		Registered	Yearly prod. records A. R.		300 to 499 lbs.	500 to 699 lbs.	700 to 899 lbs.	over 900 lbs.
Norfolk Squire, 11565.....	1906	54	14	504	8	6	0	0
Governor of Myrtle Place 2, 40985.....	1910	96	11	501	8	3	0	0
St. Austell Dreadnaught, 34671.....	1915	30	10	501	5	5	0	0
Dan Patch, 6851.....	1900	19	10	500	5	5	0	0
Governor 2 of the Gree, 19123.....	1908	57	15	500	10	5	0	0
Dairymaid's Choice of Pinehurst, 13618	1908	52	13	497	8	5	0	0
Jury of Koshkonong Place, 16793.....	1909	36	24	497	17	5	2	0
Nelson 2, 52-A.....	1906	--	12	497	6	6	0	0
Sir Snowdown, 19252.....	1911	51	20	496	13	6	1	0
Auricula's Main-sheet, 8870.....	1902	49	10	495	5	4	1	0
Lily Ella's Squire, 6597.....	1900	45	15	494	8	7	0	0
Hardtack of Groton, 11697.....	1905	44	12	493	9	3	0	0
Glenwood's Combination 8th, 12550.....	1905	61	11	492	7	4	0	0
Brilliant of the Gree 2, 2944-G.....	1911	--	10	491	7	2	1	0
Strong Anchor, 5849.....	1898	60	15	491	8	7	0	0
Dairymaid's King, 12898.....	1907	56	21	490	12	8	1	0
Rutila's Gold Basis, 5625.....	1898	56	13	487	7	6	0	0
Guiding Star, 12423.....	1907	50	15	486	11	4	0	0
Gay Lad's Hero, 2514-G.....	1910	--	13	485	9	4	0	0
Skeezicks, 9979.....	1905	36	13	484	8	5	0	0
Langwater Princeling, 14906.....	1909	82	19	484	12	7	0	0
Glenwood's Main Stay, 6067.....	1899	109	26	482	18	7	1	0
Ollie's King of Belle Vernon, 8041.....	1900	30	11	482	7	4	0	0
Masher of Rose Farm, 75-A.....	1908	--	11	480	8	3	0	0
Chirsty of Pinehurst 31st, 31984.....	1914	16	10	479	6	4	0	0
Fanny's Sequel, 19563.....	1905	91	28	478	19	8	1	0
Selma's Glenwood, 12596.....	1906	42	19	478	14	4	1	0
Selma's Main Stay's Son, 23585.....	1912	55	14	476	9	4	1	0
Christie's Combination, 14651.....	1906	25	10	475	6	4	0	0
Raymond of the Preel 2, 13381.....	1906	27	12	475	9	3	0	0
Ideal's Senator, 14736.....	1909	29	13	474	9	4	0	0
King Coral, 5238.....	1897	23	22	474	16	6	0	0
Prince of Groton, 9841.....	1902	83	29	474	18	11	0	0
The Conqueror 3, 19815.....	1907	41	11	474	7	5	0	0
Robiana's Standard, 7254.....	1901	40	21	473	15	5	1	0
Rouge 2's Son, 18587.....	1910	58	10	471	8	2	0	0
Wolfram, 5640.....	1898	34	10	470	7	3	0	0
Masher, 63-A.....	1904	--	33	469	21	12	0	0
Diamond of the Tertre, 24878.....	1907	65	12	468	9	3	0	0
Ramie's Sequel, 10463.....	1905	25	11	467	7	4	0	0
Raymond of the Preel 6, 14360.....	1907	52	12	467	9	3	0	0
Freedom, 58-A.....	1903	--	10	465	7	3	0	0
Casterilius, 10980.....	1903	41	18	463	15	3	0	0
Panama Lad, 15383.....	1908	28	11	463	7	4	0	0
Barmouth of Pencoyd, 11059.....	1906	28	12	461	8	4	0	0
Golden Anne's Fernwood of Homestead, 11916.....	1906	50	16	461	11	5	0	0
Lord Mar 5, 18961.....	1909	43	10	456	8	2	0	0
Overture of Prospect, 32821.....	1915	34	10	456	8	2	0	0
Malcolm of Maplehurst, 5626.....	1898	52	12	454	8	4	0	0
Raymond of the Preel, 11353.....	1904	75	17	451	13	4	0	0
Northern Boy, 1779-G.....	1905	--	11	448	6	4	0	0
Radium, 9193.....	1904	24	12	445	9	3	0	0
Capt. Robbie, 7146.....	1900	24	11	442	9	2	0	0

TABLE 3 (CONTINUED).

Name and registry number of sire	Year of birth	No. of daughters		Av. Mature equivalent fat (lbs.)	Daughters with mature equivalent record of			
		Regis-tered	Yearly prod. records A. R.		300	500	700	900
					to 499 lbs.	to 699 lbs.	to 899 lbs.	over 900 lbs.
Galaxy's Lavinus, 12548.....	1907	38	20	435	16	4	0	0
Gypson's Count, 8125.....	1902	67	18	434	16	2	0	0
Preel 7's Champion Butter Boy, 26132 .	1912	20	13	425	11	2	0	0
Sunburst's King Masher, 37423.....	1915	55	16	420	15	1	0	0
Vaillant Coeur, 7749.....	1900	15	13	416	12	1	0	0
Ukiah, 14344.....	1908	31	14	405	13	1	0	0
Penwyn 2nd, 7559.....	1901	16	10	400	10	0	0	0
Coralette's Son, 3987.....	1894	44	12	399	12	0	0	0

COMPARISON OF THE PRODUCTION OF DAMS AND DAUGHTERS

When comparing dairy sires on the basis of the average mature equivalent fat production of their daughters, the influence of the dams on the production of the daughters is disregarded. In order to take into consideration the influence of the dam, the available fat records of the dams of the sire's daughters were converted to the mature equivalent. The average fat production of these dam and daughter pairs is presented in Table 4. The sires are listed in order of the improvement of the daughters as compared to their dams. It is at once apparent that this method of comparison of sires is subject to a number of serious objections. Sires bred to low producing cows may cause a considerable increase in production of their daughters, whereas those bred to high producing cows may produce little if any increase and a possible decrease in production of their daughters. Yet the potential transmitting ability of the two sires might be the same.

TABLE 4.—COMPARISON OF GUERNSEY SIRES ON THE BASIS OF THE INCREASE IN FAT PRODUCTION OF THE DAUGHTERS AS COMPARED TO THEIR DAMS

Name and Number of Sire	No. yearly record daughters	Av. ma-ture equiva-lent fat lbs.	No. pairs	Av. ma-ture equiv. fat dams lbs.	Av. ma-ture equiv. fat daugh- lbs.	Daugh- ters ex-ceed dams fat lbs.
Brookmead's White Face, 32211.....	17	716	13	499	711	212
Masher's Galore, 8572.....	22	615	15	470	650	180
Duke of Mouilpied, 2045-G.....	11	523	1	408	578	170
Langwater Traveler, 38325.....	15	678	11	529	697	168
Langwater Stars and Stripes, 21872.....	14	708	10	559	717	159
Langwater Royal 7th, 20632.....	18	588	6	455	614	159
Langwater Holliston, 28055.....	10	726	6	583	736	153
Ne Plus Ultra 4th, 29328.....	23	707	12	576	725	149
Reputation of Portage, 10695.....	11	632	5	584	725	141
Ne Plus Ultra, 15265.....	46	687	32	569	704	135

TABLE 4 (CONTINUED).

Name and Number of Sire	No. yearly record daughters	Av. mature equivalent fat lbs.	No. pairs	Av. mature equiv. fat dams lbs.	Av. mature equiv. fat daughters lbs.	Daughters exceed dams fat lbs.
Moonlight King of Anna Dean Farm, 29582.....	13	545	5	438	572	134
Ledyard Bay, 11074.....	10	645	9	498	631	133
Jewel's Royal Combination of Wawa, 15655.....	11	589	9	493	625	133
King of Chilmark, 20798.....	24	689	7	612	741	129
Sister's King, 33653.....	11	562	4	423	547	124
Dairymaid's King, 12898.....	21	490	18	438	558	120
Itchen Daisy's May King of Langwater, 17349.....	24	639	18	530	650	120
Florham Laddie, 20431.....	30	662	11	592	712	120
Langwater-Demonstrator, 16451.....	66	611	46	515	634	119
Don Bernardo of Linda Vista, 20617.....	11	629	7	527	644	117
Sequel's Monogram, 15649.....	30	543	11	460	576	116
King's Vanguard, 22719.....	13	627	11	524	639	115
Jewel's Independence, 10324.....	10	626	6	553	667	114
Langwater Dictator, 15668.....	11	513	9	421	530	109
Spotswood's Rival, 8346.....	12	581	2	471	579	108
Demonstrator of Roughwood, 23133.....	15	624	7	561	667	106
Yeoman's King of the May, 17053.....	84	610	64	508	613	105
Cora's King of Bellevue, 9779.....	11	569	3	494	599	105
Glenwood's Combination 8th, 12550.....	11	492	5	438	538	100
Amiable of France, 13739.....	10	552	5	496	591	95
Hope's May Rose of Maple Hill, 35903.....	12	518	7	448	542	94
Golden Secret of Lilyvale, 10028.....	23	674	16	592	685	93
Cherub's Winner, 34180.....	14	575	11	491	583	92
Langwater Hayes Rosie's King of the May, 16723.....	27	681	22	602	692	90
Ultra May King, 27600.....	17	707	15	616	706	90
Glenwood's Stranford, 9386.....	20	516	14	448	534	86
King Bell, 13482.....	10	707	8	589	668	86
Mars of Woodcrest, 9290.....	10	563	4	459	545	86
King of the May, 9001.....	33	708	25	625	710	85
Bob Rilma's Monogram, 29095.....	10	608	10	523	608	85
Cora's Governor of Chilmark, 8971.....	46	561	33	492	576	84
May Rose King, 8336.....	21	632	18	533	616	83
Golden Hero of l'Etiennerie, 12647.....	16	553	5	461	544	83
Langwater Rival, 14194.....	16	639	10	596	678	82
Brockton of the Glen, 15739.....	10	667	7	623	704	81
Golden Secret, 12599.....	15	529	7	507	588	81
Spotswood Masher Sequel, 9687.....	11	504	7	444	525	81
Reservation of Chesterfield, 36609.....	13	634	12	556	636	80
Sailor Lad of the Fontaines, 51090.....	17	605	2	599	679	80
Golden Anne's Fernwood of Homestead, 11916.....	16	461	2	519	598	79
Langwater Royal, 14253.....	27	616	22	554	632	78
Lady Smith's Cherub, 30760.....	12	688	10	614	692	78
Frank Rose, 26342.....	11	562	9	483	560	77
Langwater Cavalier, 21012.....	21	705	10	606	681	76
Glenwood's Main Stay, 6067.....	26	482	16	440	514	74
Robert's Criterion of Bellevue, 26887.....	18	589	2	514	587	73
Marshall of France, 9051.....	12	549	5	506	577	71
Flora's Sequel of Vimiera, 25905.....	20	572	1	526	595	69
Pencoyd's Golden May Secret, 39626.....	14	627	13	569	636	67
King Masher 8th, 20973.....	11	595	9	537	604	67
King of Medfield, 15434.....	10	549	4	431	498	67
Langwater Hambro, 21011.....	27	551	23	482	548	66
Langwater Raritan, 17052.....	17	566	17	500	566	66
Jury of Koshkonong Place, 16793.....	24	496	16	451	516	65
Overture of Prospect, 32021.....	10	456	6	395	459	64

TABLE 4 (CONTINUED).

Name and Number of Sire	No. yearly record daughters	Av. mature equivalent fat lbs.	No. pairs	Av. mature equiv. fat dams lbs.	Av. mature equiv. fat daughters lbs.	Daughters exceed dams fat lbs.
Lehigh's Golden Emperor, 15761.....	18	517	6	458	522	64
Rutila's Gold Basis, 5625.....	13	487	7	455	518	63
Pretor, 9316.....	14	524	4	519	582	63
Duke of Waumesit, 13480.....	12	555	6	494	556	62
Nelson II, 52-A.....	12	497	1	470	632	62
Border Raider, 22243.....	30	618	28	566	627	61
Lord Waukesha, 10148.....	18	575	14	522	583	61
Giltedge of Koshkonong Place, 21989.....	21	538	20	487	545	58
Langwater Islander, 31329.....	10	530	7	502	560	58
Masher's Sequel, 11462.....	70	511	17	501	558	57
Moss Raider, 22155.....	15	536	9	483	540	57
Julian of Koshkonong Place, 14409.....	10	598	8	548	605	57
Governor of the Vanquiedor, 39925.....	20	508	2	483	540	57
Valentine Honour of the Passee, 37840.....	13	640	1	695	752	57
Joker of Riverside, 21447.....	10	595	4	558	614	56
Beda's May King, 11893.....	41	640	31	592	647	55
Sir Snowdown, 19252.....	20	496	17	431	486	55
Bell-founder, 11681.....	19	694	10	643	698	55
Christie's Combination, 14651.....	10	475	9	427	482	55
Bell Buoy of Linda Vista, 19430.....	32	575	24	542	596	54
Allenwood King Regent, 23611.....	13	562	13	508	562	54
Dairymaid's Criterion of Iowa, 28187.....	12	598	6	523	575	53
Starlight's Excelsior, 7992.....	24	521	10	477	528	51
Langwater Fisherman, 21873.....	12	549	6	512	563	51
Gold Lassie's Julian, 27704.....	18	674	18	624	674	50
King Masher, 11048.....	23	665	16	593	641	48
Lily Ella's Squire, 6597.....	15	494	5	456	504	48
Jethro Bass, 11366.....	30	612	26	565	612	47
Frank Rilma, 21901.....	11	520	8	485	531	46
Roy of Norwood, 8141.....	18	530	8	470	515	45
Haye's Cherub 2'd, 25147.....	16	630	9	595	639	44
Don Diavolo of Linda Vista, 23565.....	11	635	8	584	628	44
Glenwood's Reputation, 7687.....	20	533	4	477	521	44
Lord Mar V., 18961.....	10	456	1	408	449	41
Lavanton, 11611.....	10	729	10	689	729	40
Alderney II, 2215-G.....	19	582	1	463	503	40
May King of Ingleside, 12558.....	22	521	20	483	522	39
Golden Noble II., 1836-G.....	29	590	3	447	586	39
Spotswood Sequel, 9686.....	30	532	17	502	539	37
Ramee's Sequel, 10463.....	11	467	5	525	461	36
Victor of Pencoyd, 18901.....	18	575	16	546	579	33
Dimple Bloom, 14369.....	10	557	2	584	617	33
Lohier's Beta Raider of Waddington, 35442.....	20	516	12	496	528	32
Pretoria's King of Midlothian, 22641.....	10	601	10	569	601	32
Silver King of the Isle, 14363.....	13	531	9	517	549	32
Laverna's Ultra May King, 24660.....	12	585	7	596	565	31
Dairymaid's Choice of Pinehurst, 13618.....	13	497	12	468	497	29
Jardiniere's Masher, 20957.....	14	668	11	655	683	28
Prince of Sarnia, 22000.....	21	523	9	492	520	28
Dolly Dimple's May King of Langwater, 12997.....	10	630	9	625	651	26
May King's Vrangue of Ingleside, 15430.....	37	634	30	610	634	24
Christy of Pinehurst 31st, 31984.....	10	479	5	419	441	22
King Masher 5th, 18361.....	20	573	20	552	573	21
Jacqueminot of Linda Vista, 23564.....	20	537	12	522	543	21
Gay Boy of the Isle, 16998.....	17	581	9	571	592	21

TABLE 4 (CONTINUED).

Name and Number of Sire	No. yearly record daughters	Av. mature equivalent fat lbs.	No. pairs	Av. mature equiv. fat dams lbs.	Av. mature equiv. fat daughters lbs.	Daughters exceed dams fat lbs.
Panama Lad, 15383.....	11	463	1	477	498	21
Rhea's King of the May, 14368.....	21	514	15	511	531	20
Ollie's King of Belle Vernon, 8041.....	11	482	10	457	477	20
Casterilius, 10980.....	18	463	10	447	466	19
Rosie's Golden King of Oakhurst, 31630.....	10	639	9	615	632	17
Onoko of Maple Row, 11522.....	10	537	8	533	550	17
France's Masher 2d, 7248.....	12	512	1	649	666	17
King Coral, 5238.....	22	474	5	436	452	16
Holden IV, 12179.....	12	621	7	689	704	15
Norfolk Squire, 11565.....	14	504	6	506	521	15
Rutila's Sheet Anchor, 5701.....	11	505	4	472	487	15
Jessy Rose's Pride of Iowa, 23955.....	19	519	14	504	518	14
Dairymaid's Standard of Iowa, 28946.....	12	541	11	533	547	14
Ideal's Senator, 14736.....	13	474	11	454	468	14
Endymion, 8916.....	16	533	8	568	582	14
Rockingham, 18120.....	10	578	6	540	554	14
Barrington May King, 19312.....	19	595	17	570	583	13
Rouge II's Son, 18587.....	10	471	9	462	474	12
Casterilius of Nelsonville, 18052.....	10	587	10	576	587	11
Baubigny's Squire of Keewaydin, 21834.....	11	577	10	578	588	10
Langwater Frenchman, 19226.....	28	537	24	542	549	7
Triple Champion, 13067.....	18	544	13	516	523	7
Langwater Golden Secret, 26510.....	14	579	8	615	622	7
Dandy of Beinnetown, 29963.....	17	523	16	512	518	6
Dan Patch of the Isle, 21293.....	11	517	11	511	517	6
May Rose King 2d, 13130.....	16	594	9	582	588	6
Marcia's Glenwood of Pinehurst, 11560.....	10	545	6	514	520	6
Jethro's May King of Linda Vista, 14591.....	15	620	15	615	620	5
Raymond of the Preel, 11353.....	17	451	4	476	481	5
Florham Monarch, 20771.....	10	575	9	595	599	4
Raymond of the Preel IV, 19235.....	17	505	2	399	403	4
St. Austell Dreadnought, 31671.....	10	501	9	502	505	3
Royal Governor of L'Etiennerie, 1484-G.....	10	547	1	487	486	-1
Buckthorn, 4781.....	11	547	3	526	525	-1
Stranford's Glenwood of Pinehurst, 13609.....	14	565	14	566	565	-1
Itchen May King, 25174.....	20	574	17	599	598	-1
Sunburst's King Masher, 37423.....	16	420	12	422	420	-2
Langwater Princeling, 14906.....	19	484	13	497	492	-5
Glenwood's Son of Gayhead, 19617.....	10	551	3	554	548	-6
Pride of Day, 17126.....	14	529	8	540	534	-6
Hardtack of Groton, 11697.....	12	493	8	506	498	-8
Langwater Royal Master, 23663.....	14	632	9	626	618	-8
Governor I of the Chene, 10563.....	24	639	12	671	663	-8
Glenwood's Champion, 15639.....	28	527	15	505	494	-11
Billy's France of the Isle, 21183.....	24	506	3	516	493	-13
Strong Anchor, 5849.....	15	491	3	441	428	-13
Penwyn 2d, 7559.....	10	400	5	428	415	-13
Vaillant Coeur, 7749.....	13	416	10	441	428	-13
Honoraria's Sequel II, 40668.....	16	568	2	580	566	-14
Lucretia's Chief of Waumesit, 12385.....	13	518	5	512	495	-17
Prince of Groton, 9841.....	29	474	6	498	481	-17
Landwater May King, 13001.....	20	594	16	592	574	-18
Coralette's Son, 3987.....	12	399	11	421	402	-19
Langwater Pencoyd, 21830.....	18	656	16	679	660	-19
Gypson's Count, 8125.....	18	434	1	416	396	-20

TABLE 4 (CONTINUED).

Name and Number of Sire	No. yearly record daughters	Av. ma- ture equiv- alent fat lbs.	No. pairs	Av. ma- ture equiv. fat dams lbs.	Av. ma- ture equiv. fat daugh- ters lbs.	Daugh- ters ex- ceed dams fat lbs.
Rex of Rich Neck, 31472.....	15	645	13	669	649	-20
Beda's May Day, 34995.....	10	546	7	593	572	-21
Preel VII's Champion Butter Boy, 26132.....	13	425	12	448	427	-21
Dean of the May, 21815.....	20	526	14	547	524	-23
Governor of the Chene, 1297-G.....	112	524	2	574	549	-25
Daisy's Valentine, 16603.....	10	504	4	482	457	-25
Selma's Glenwood, 12596.....	19	478	15	526	501	-25
Charmante's Rose King, 11746.....	11	624	7	632	606	-26
Raymond of the Preel VI, 14360.....	12	467	3	494	467	-27
Robiana's Standard, 7254.....	21	473	11	535	507	-28
May King of Linda Vista, 17946.....	16	599	15	585	556	-29
Langwater Fredrick, 22268.....	17	553	12	592	561	-31
Raymond's Pioneer of Lewiston, 19103.....	20	590	14	617	585	-32
Glenwood Boy of Haddon, 4605.....	26	521	21	559	526	-33
Galaxy's Sequel, 16904.....	53	523	13	542	508	-34
Langwater Peerless, 19227.....	12	559	7	613	578	-35
Capt. Robbie, 7146.....	11	442	10	485	449	-36
Masher of Sarnia, 19167.....	11	541	3	564	527	-37
Yeoman's King Victor, 22295.....	15	539	15	576	539	-37
May Rose Secret of Pencoyd, 27844.....	14	549	9	593	554	-39
Rinaldo, 8917.....	11	601	11	640	601	-39
Galaxy's Lavinius, 12548.....	20	435	17	463	423	-40
Clara's Sequel, 29414.....	52	584	9	597	555	-42
Ukiah, 14344.....	14	405	14	447	405	-42
Glenwood's Main Stay 40th, 28108.....	12	537	3	523	480	-43
Raymond of Blay Farm, 191-A.....	13	521	1	483	439	-44
Itchen May King of Stannox, 34377.....	13	534	12	591	547	-44
Radium, 9193.....	12	445	9	495	450	-45
Auricula's Main Sheet, 8870.....	10	495	5	528	482	-46
Uncle Jim, 16740.....	17	540	15	564	528	-46
Skeezicks, 9979.....	13	484	9	537	490	-47
The Conqueror, II 15323.....	17	542	4	504	456	-48
Golden Secret of Pencoyd, 23462.....	22	536	22	587	536	-51
Selma's Main Stay's Son, 23585.....	14	476	9	520	469	-51
Malcolm of Maplehurst, 5626.....	12	454	7	512	459	-53
Langwater Warrior, 26509.....	23	701	18	764	709	-55
Robert's Boy, 21662.....	13	520	3	568	512	-56
Dairymaid's Pride of Iowa, 14941.....	15	518	5	601	540	-61
General Bay, 16177.....	11	506	10	621	558	-63
Guiding Star, 12423.....	15	486	11	579	509	-70
Princess's Jewel, 24877.....	31	515	3	550	479	-71
Pencoyd's Golden Secret, 16550.....	14	538	10	612	539	-73
France's Jewel's Champion, 17970.....	13	554	1	513	439	-74
Itchen Red Raider, 27342.....	10	549	8	634	559	-75
Governor II. of the Gree, 19123.....	15	500	2	519	443	-76
Begalore, 10101.....	13	540	6	570	494	-76
Raymond of the Preel II., 13381.....	12	475	7	538	461	-77
Souvenir de L'Etienne, 21925.....	17	523	6	584	502	-82
George Washington of Fairfield Farm, 10866.....	12	516	3	548	465	-83
Pencoyd Quaker Boy, 35562.....	10	556	2	559	474	-85
Penwyn of Rosendale, 11282.....	11	566	8	683	587	-96
Barmouth of Pencoyd, 11059.....	12	461	6	564	449	-115
Northern Boy, 1779-G.....	11	448	1	621	497	-123
Fanny's Sequel, 19563.....	28	478	7	575	443	-132

TABLE 4 (CONTINUED).

Name and Number of Sire	No. yearly record daughters	Av. mature equivalent fat lbs.	No. pairs	Av. mature equiv. fat dams lbs.	Av. mature equiv. fat daughters lbs.	Daughters exceed dams fat lbs.
Modena's Yeoman of Langwater, 10764.....	15	553	2	642	497	-145
Lord Mar, 14359.....	30	558	5	669	520	-149
Florham Golden Lad, 18119.....	12	573	7	747	595	-152
Alderney Raymond, 26357.....	29	516	2	640	486	-154
Goldseeker of Anna Dean Farm, 26106.....	18	547	10	726	560	-166
Gay Lad du Bray, 2026-G.....	18	543	1	648	472	-176
Wolfram, 5640.....	10	470	5	667	484	-183
Beau Regal, 13448.....	13	561	4	763	578	-185
Governor of the Carteret, 3421-G.....	13	570	2	597	389	-208
Ivy's Emblem, 3804-G.....	10	566	1	662	370	-292

The fundamental problem in this study was the relative effect of the dam and the sire on the production of the daughter. The first method of attack that suggests itself is that of comparing the production of the daughters of a single sire coming from dams of varying productivity. The number of comparisons, or pairs, was too limited to be reliable. To obtain larger number of pairs of dams and daughters a number of sires were grouped together. For example, the sires with daughters having an average production of 700 pounds of fat were grouped together and the average production of the daughters by various classes of dams was determined. The result is shown in Table 5. This comparison was repeated for other groups of sires with the result shown in Table 6 to 11.

TABLE 5.—GUERNSEY SIRES WHOSE DAUGHTERS AVERAGE OVER 700 POUNDS FAT*

Dam lbs. fat av.	Pairs dams and dtrs.	Dtrs. lbs. fat av.	Distribution of Daughters												
			Pounds Fat												
			Under 400	400 449	450 499	500 549	550 599	600 649	650 699	700 749	750 799	800 849	850 899	900 949	950 999
376	9	669	--	---	---	---	3	1	3	1	---	---	1	---	---
437	8	695	--	---	---	2	---	1	1	---	2	2	---	---	---
465	13	704	--	---	---	---	1	2	4	3	2	1	---	---	---
527	32	700	--	---	1	---	3	8	3	6	4	4	3	---	---
573	13	721	--	---	1	---	---	---	4	2	5	1	---	---	---
621	26	732	--	---	---	---	2	5	5	5	3	1	3	2	---
678	25	695	--	---	1	2	4	3	3	5	2	2	---	2	1
727	12	711	--	---	2	1	---	1	1	2	2	1	---	1	1
771	12	796	--	---	---	---	---	---	2	4	---	1	2	2	1
828	7	700	--	---	---	---	2	1	---	2	1	---	1	---	---
875	4	686	--	---	---	1	---	---	2	---	---	1	---	---	---
Total	171	---	--	---	5	6	15	22	28	30	21	14	10	7	3
Percentage Distribution					2.9	3.5	8.7	12.8	16.3	17.5	12.2	8.2	5.8	4.0	1.7

*See Table 4 for list of the names of sires included.

TABLE 6.—GUERNSEY SIRES WHOSE DAUGHTERS AVERAGE BETWEEN 650 AND 699 POUNDS FAT

Dam lbs. fat av.	Pairs	Dtrs. lbs. fat av.	Distribution of Daughters																
			Pounds Fat																
			Under 400	400 449	450 499	500 549	550 599	600 649	650 699	700 749	750 799	800 849	850 899	900 949	950 999	1000 1049	1050 1099		
396	1	743	----	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--
422	19	718	----	1	1	1	4	3	2	1	2	2	2	--	--	--	--	--	--
471	30	633	----	4	--	3	6	3	6	3	1	4	--	--	--	--	--	--	--
527	30	645	----	2	3	4	2	7	3	4	1	1	1	1	--	--	--	1	--
578	22	674	----	--	1	1	4	5	3	6	--	--	--	1	--	--	--	1	--
625	37	682	----	--	3	4	5	2	7	4	5	5	--	1	--	--	1	--	--
670	31	703	----	--	1	1	2	7	6	5	3	2	3	--	1	--	--	--	--
718	15	691	----	--	--	--	2	3	3	4	1	2	--	--	--	--	--	--	--
770	6	715	----	--	1	--	--	1	1	2	--	--	--	--	--	--	1	--	--
819	4	720	----	--	--	--	--	1	--	1	1	--	--	--	--	--	--	--	--
871	4	649	----	--	--	1	1	1	--	--	--	--	1	--	--	--	--	--	--
1016	1	679	----	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--
Total	198	---	----	7	10	15	26	23	31	31	14	16	7	3	1	3	1		
Percentage Distribution				3.5	5.0	7.6	13.1	16.7	15.7	15.7	7.1	8.1	3.5	1.5	0.5	1.5	0.5		

TABLE 7.—GUERNSEY SIRES WHOSE DAUGHTERS AVERAGE BETWEEN 600 AND 649 POUNDS FAT

Dam lbs. fat av.	Pairs	Dtrs. lbs. fat av.	Distribution of Daughters																	
			Pounds Fat																	
			Under 400	400 449	450 499	500 549	550 599	600 649	650 699	700 749	750 799	800 849	850 899	900 949	950 999					
383	20	560	2	---	3	3	5	4	2	---	1	---	---	---	---	---	---	---	---	
427	50	565	3	8	5	6	7	5	10	5	1	---	---	---	---	---	---	---	---	
473	85	616	3	3	8	10	13	14	18	7	4	1	2	1	1	1	1	1	1	
525	82	624	2	6	8	7	9	17	13	9	3	4	2	2	2	---	---	---	---	
574	66	626	--	1	5	12	11	15	6	8	7	---	1	---	---	---	---	---	---	
624	52	687	--	1	---	2	7	7	12	11	8	2	---	2	---	2	---	---	---	
668	41	622	--	1	4	4	8	6	10	6	2	---	---	---	---	---	---	---	---	
719	32	655	--	1	4	---	6	6	5	4	3	2	---	1	---	1	---	---	---	
772	12	702	--	---	---	---	3	1	1	2	---	1	1	---	---	---	---	---	---	
820	10	643	--	---	---	2	2	2	2	2	---	---	---	---	---	---	---	---	---	
853	1	603	--	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	
915	2	679	--	---	---	---	1	---	---	---	1	---	---	---	---	---	---	---	---	
Total	453	---	10	21	37	46	72	78	81	54	30	10	6	6	1					
Percentage Distribution				2.2	4.6	8.1	10.1	15.8	17.2	17.8	11.9	6.6	2.2	1.3	1.3	.2				

When the dams and daughters of the group of sires with daughters averaging 700 pounds of fat or more are compared, it appears that the sire contributes much more to the daughter's production than do the dams.

TABLE 8.—GUERNSEY SIRES WHOSE DAUGHTERS AVERAGE BETWEEN 550 AND 599 POUNDS FAT

Dam lbs. fat av.	Pairs	Dtrs. lbs. fat av.	Distribution of Daughters												
			Pounds Fat												
			Under 400	400 449	450 499	500 549	550 599	600 649	650 699	700 749	750 799	800 849	850 899	900 949	950 999
381	35	551	2	4	7	6	4	6	5	---	1	---	---	---	
434	66	538	7	6	14	12	12	9	4	---	1	1	---	---	
472	85	558	3	10	11	20	15	11	8	3	2	2	---	---	
518	104	583	3	8	17	16	18	13	11	8	2	3	2	---	
573	80	577	3	7	6	19	15	13	8	5	1	3	---	---	
623	55	568	1	3	6	11	10	11	7	3	3	---	---	---	
672	41	615	---	1	3	10	4	11	3	4	4	1	---	---	
723	23	599	---	---	4	2	7	4	3	2	---	1	---	---	
774	16	630	---	---	2	2	3	3	2	2	1	1	---	---	
826	10	549	1	1	2	2	1	1	1	1	---	---	---	---	
928	1	704	---	---	---	---	---	---	---	1	---	---	---	---	
1031	1	637	---	---	---	---	---	1	---	---	---	---	---	---	
1108	1	571	---	---	---	---	1	---	---	---	---	---	---	---	
Total	518	---	20	40	72	100	90	83	52	29	15	12	2	---	
Percentage Distribution			3.9	7.9	13.9	19.3	17.4	16.0	10.0	5.6	2.9	2.3	0.4	---	

TABLE 9.—GUERNSEY SIRES WHOSE DAUGHTERS AVERAGE BETWEEN 500 AND 549 POUNDS FAT

Dam lbs. fat av.	Pairs	Dtrs. lbs. fat av.	Distribution of Daughters												
			Pounds Fat												
			Under 400	400 449	450 499	500 549	550 599	600 649	650 699	700 749	750 799	800 849	850 899	900 949	950 999
380	64	512	5	10	16	14	8	6	3	1	1	---	---	---	
428	128	511	17	21	23	26	17	13	3	4	4	---	---	---	
479	120	538	6	17	28	25	24	11	2	3	1	2	1	---	
522	95	517	4	18	25	18	17	3	8	---	---	2	---	---	
576	66	534	6	9	11	13	11	8	4	2	---	---	2	---	
621	48	550	2	4	12	11	6	4	6	2	---	1	---	---	
671	29	559	4	2	4	3	8	1	4	2	---	---	---	1	
721	13	542	---	1	3	2	4	3	---	---	---	---	---	---	
778	14	591	---	1	3	1	2	3	1	2	1	---	---	---	
825	6	560	---	2	---	1	---	1	1	1	---	---	---	---	
1025	1	592	---	---	---	---	1	---	---	---	---	---	---	---	
Total	584	---	44	85	125	114	98	53	32	17	7	5	3	---	
Percentage Distribution			7.5	14.6	21.4	19.5	16.8	9.1	5.5	2.9	1.2	.9	.6	---	

The apparent difference between the influence of the sire and dam on their daughters' fat production is believed to be due to the fundamental difference in the index of germinal composition of the male and female as related to fat production and not to a constant inequality in

the germinal composition of the sexes. The index of the germinal composition of the sire is one of the transmitting ability of the desired characters to his daughters. This is a good test of germinal composition. The common index of the germinal composition of the dam, on the other hand, is her own record of production. This is a poor index of the germinal composition of the dam for the characters concerned. The best index of the germinal composition of the dam would be the transmitting ability of the desired characters to her daughters, similar to the test of the sire. This index of the dam's germinal composition is seldom available. This fundamental difference in the measure of the ability of the sire and of the dam should be kept in mind by the reader in examining the data presented.

TABLE 10.—GUERNSEY SIRES WHOSE DAUGHTERS AVERAGE BETWEEN 450 AND 499 POUNDS FAT

Dam lbs. fat av.	Pairs	Dtrs. lbs. fat av.	Distribution of Daughters						
			Pounds Fat						
			Under 400	400 449	450 499	500 549	550 599	600 649	650 699
377	39	457	8	10	14	4	2	----	1
424	46	458	10	13	12	7	2	2	----
475	59	496	7	9	18	13	6	2	4
522	42	484	4	8	12	11	4	2	1
576	31	477	6	3	9	10	2	1	----
632	19	512	----	2	10	3	1	----	3
666	1	463	----	----	1	----	----	----	----
711	5	521	----	1	1	2	----	1	----
771	3	506	----	2	----	----	----	1	----
Total	245	----	35	48	77	50	17	9	9
Percentage Distribution			14.3	19.6	31.4	20.4	6.9	3.7	3.7

TABLE 11.—GUERNSEY SIRES WHOSE DAUGHTERS AVERAGE BELOW 450 POUNDS FAT

Dam lbs. fat av.	Pairs	Dtrs. lbs. fat av.	Distribution of Daughters					
			Pounds Fat					
			Under 400	400 449	450 499	500 549	550 599	600 649
378	20	420	7	8	3	2	----	----
421	43	417	17	18	6	1	1	----
469	29	422	10	12	4	2	1	----
518	19	441	6	6	4	2	1	----
574	4	446	1	1	1	1	----	----
620	4	450	2	----	1	----	----	1
662	3	384	2	1	----	----	----	----
1087	1	511	----	----	----	1	----	----
Total	123	----	45	46	19	9	3	1
Percentage Distribution			36.6	37.4	15.4	7.3	2.4	0.8

Each group of sires shows the same effect—the sires apparently exerting a much greater influence on their daughters' production than do the dams when judged by their own records. The quantitative relation between the production of the dams and daughters is shown in Fig. 3. For each 100 pounds of fat per year increase in the production of the dams there is a corresponding increase in the production of the daughters of approximately 15 pounds of fat. For each 100 pounds of fat produced by the daughters, it appears that the dams contribute 15 per cent and the sires 85 per cent. These results may be quantitatively expressed in the form of an equation as follows:

$$(1) \text{ Daughter's fat production} = 0.15 \times \text{Dam's production} + 0.85 \times \text{Sire's potential transmitting ability}$$

or

$$(2) \text{ Sire's potential transmitting ability} = \frac{\text{Daughter's fat production} - 0.15 \times \text{Dam's fat production.}}{0.85}$$

The latter form of the equation is especially useful in that it permits the determination of the sire's potential transmitting ability for butterfat production when the production of the dams and daughters is known. In Table 12 the potential transmitting ability for fat production of each Guernsey sire having three or more dam and daughter pairs is presented. The limited number of dam and daughter comparisons in some cases renders the data unreliable. Unless the average of all daughters compares favorably with the average of the daughters of the pairs, too much reliance cannot be placed in the figure for the sire's transmitting ability.

The data on the sire's transmitting ability is of value in predicting the production of daughters out of dams of various producing capacity. Equation (1) may be used for this purpose. For example, if the sire's transmitting ability is 750 pounds of fat and he is bred to cows of 400 pound capacity, the daughters on the average would produce as follows:

$$\begin{aligned} \text{Daughter's fat production} &= .15 \times 400 + .85 \times 750 \\ &= 90.0 + 637 \\ &= 697 \text{ pounds fat} \end{aligned}$$

In the same way, if bred to 500-pound cows, the daughters of a 750-pound bull should average 712 pounds of fat; 600-pound cows, 727 pounds of fat; 700-pound cows, 742 pounds of fat; etc.

The extreme importance of a sire with high potential transmitting ability is clearly demonstrated. The data indicate that great care

should be exercised in the purchase of a herd sire because of the great possibility for herd improvement resulting from the use of such animals in the average herd. In a single generation it is possible to produce 600 and 700-pound cows from 300 and 400-pound cows by the use of the right sires. On the other hand, by the use of poor sires, dams capable of producing 600 and 700 pounds of fat may produce daughters capable of producing only 400 and 500 pounds of fat.

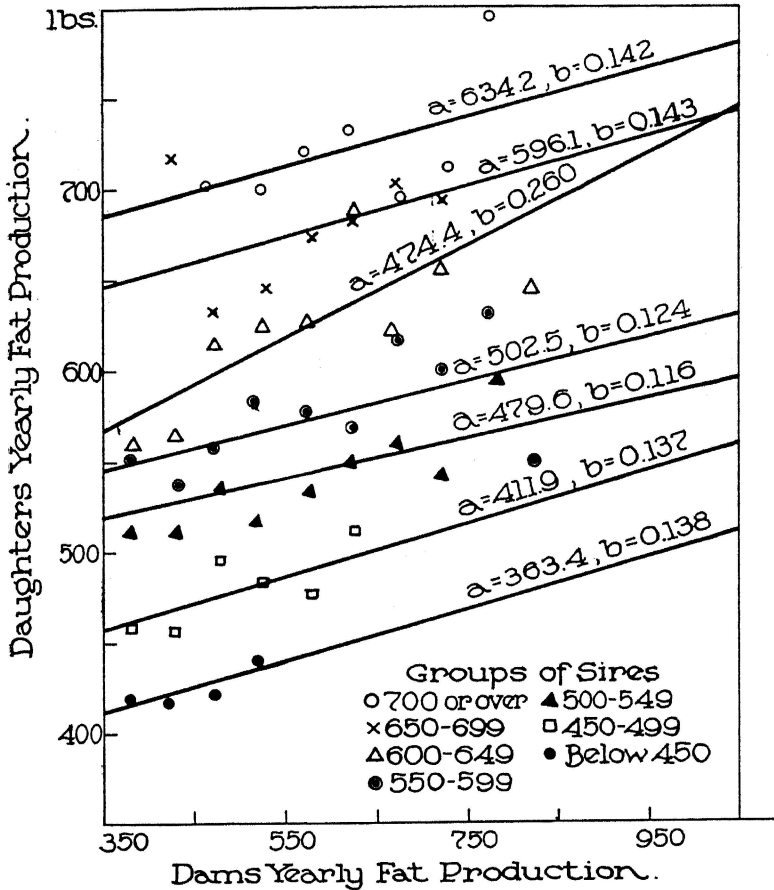


Fig. 3.—The relation between the production of the dams and daughters of various groups of sires is here shown. The smooth lines passing through the observed values were obtained from the straight line equation $D = a + bd$ in which D is the production of the daughters; d the production of the dam, and b the constant increase in production of the daughters for each pound of increase in the production of the dams. From the values of b indicated on the curves, it appears that an increase of 100 pounds of fat by the dam produces an increase of approximately 15 pounds of fat on the part of the daughter.

TABLE 12.—POTENTIAL TRANSMITTING ABILITY OF SIREs DETERMINED FROM PRODUCTION OF DAUGHTERS COMPARED WITH THEIR DAMS

Name and Number of Sire	No. yr. record dtrs.	Av. mat. equi. fat lbs.	No. prs. dams and dtrs.	Av. mat. equi. fat dams	Av. mat. equi. fat dtrs.	Poten. Trans. Ability Sire
Langwater Holliston 28055	10	726	6	583	736	763
King of Chilmark 20798	24	689	7	612	741	763
Ne Plus Ultra 4th 29328	23	707	12	576	725	763
Brookmead's White Face 32211	17	716	13	499	711	748
Reputation of Portage 10695	11	632	5	584	725	748
Langwater Stars and Stripes 21872	14	708	10	559	717	744
Lavanton 11611	10	729	10	689	729	736
Florham Laddie 20431	30	662	11	592	712	733
Ne Plus Ultra 15265	46	687	32	569	704	727
Langwater Traveler 38325	15	678	11	529	697	726
King of the May 9001	33	708	25	625	710	725
Ultra May King 27600	17	707	15	616	706	721
Brockton of the Glen 15739	10	667	7	623	704	718
Langwater Hayes Rosie's King of the May 16723	27	681	22	602	692	707
Bell-founder 11681	19	694	10	643	698	707
Lady Smith's Cherub 30760	12	688	10	614	692	705
Holden IV 12179	12	621	7	689	704	705
Golden Secret of Lilyvale 10028	23	674	16	592	685	701
Langwater Warrior 26509	23	701	18	764	709	699
Langwater Cavalier 21012	21	705	10	606	681	694
Langwater Rival 14194	16	639	10	596	678	692
Jewel's Independence 10324	10	626	6	553	667	687
Jardiniere's Masher 20957	14	668	11	655	683	687
Demonstrator of Roughwood 23133	15	624	7	561	667	685
Gold Lassie's Julian 27704	18	674	18	624	674	682
Masher's Galore 8572	22	615	15	470	650	681
King Bell 13482	10	707	8	589	668	681
Itchen's Daisy's May King of Langwater 17349	24	639	18	530	650	671
Don Bernarde of Linda Vista 20617	11	629	7	527	644	664
Governor I of the Chene 10563	24	639	12	671	663	662
King's Vanguard 22719	13	627	11	524	639	659
Beda's May King 11893	41	640	31	592	647	656
Langwater Pencoyd 21830	18	656	16	679	660	656
Dolly Dimple's May King of Langwater 12997	10	630	9	625	651	655
Langwater Demonstrator 16451	66	611	46	515	634	654
Ledyard Bay 11074	10	654	9	498	631	654
Reservation of Chesterfield 36609	13	634	12	556	636	650
King Masher 11048	23	665	16	593	641	649
Jewel's Royal Combination of Wawa 15655	11	589	9	493	624	647
Pencoyd's Golden May Secret 39626	14	627	13	569	636	647
Hayes Cherub 2d 25147	16	630	9	595	639	647
Langwater Royal 14253	27	616	22	554	632	645
Rex of Rich Neck 31472	15	645	13	669	649	645
Langwater Royal 7th 20632	18	588	6	455	614	642
May King's Vrangue of Ingleside 15430	37	634	30	610	634	638
Border Raider 22243	30	618	28	566	627	637
Don Diavola of Linda Vista 23565	11	635	8	584	638	635
Rosie's Golden Kind of Oakhurst 31630	10	639	9	615	632	634
Yeoman's King of the May 17053	84	610	64	508	613	631
May Rose King 8336	21	632	18	533	616	630
Bob Rilma's Monogram 29095	10	608	10	523	608	622
Joker of Riverside 21447	10	595	4	558	614	622
Langwater Golden Secret 26510	14	579	8	615	622	622

TABLE 12 (CONTINUED).

Name and Number of Sire	No. yr. record dtrs.	Av. mat. equi. fat lbs.	No. prs. dams and dtrs.	Av. mat. equi. fat dams	Av. mat. equi. fat dtrs.	Poten. Trans. Ability Sire
Jethro Bass 11366	30	612	26	565	612	620
Jethro's May King of Linda Vista 14591	15	620	15	615	620	620
Cora's King of Belleview 9779	11	569	3	494	599	617
Langwater Royal Master 23663	14	632	9	626	618	616
King Masher 8th 20973	11	595	9	537	604	615
Julian of Koshkonong Place 14409	10	598	8	545	605	615
Golden Noble II 1836 G	29	590	3	447	586	610
Pretoria's King of Midlothian 22641	10	601	10	569	601	606
Bell Buoy of Linda Vista 19430	32	575	24	542	596	605
Golden Secret 12599	15	529	7	507	588	602
Charmante's Rose King 11746	11	624	7	632	606	601
Cherub's Winner 34180	14	575	11	491	583	599
Florham Monarch 20771	10	575	9	595	599	599
Itchen May King 25174	20	574	17	599	598	597
Sequel's Monogram 15649	30	543	11	460	576	596
Moonlight Kind of Anna Dean Farm 29582	13	545	5	438	572	595
Gay Boy of the Isle 16998	17	581	9	571	592	595
Rinaldo 8917	11	601	11	640	601	594
Pretor 9316	14	524	4	519	582	593
Lord Waukesha 10148	18	575	14	522	583	593
Cora's Governor of Chillmark 8971	46	561	33	492	576	590
Marshall of France 9051	12	549	5	506	577	589
Baubigny's Squire of Keewaydin 21934	11	577	10	578	588	589
May Rose King 2d 13130	16	594	9	582	588	589
Casterilus of Nelsonville 18052	10	587	10	576	587	588
Barrington May King 19312	19	595	17	570	583	585
Dairymaid's Criterion of Iowa 28187	12	598	6	523	575	584
Victor of Pencoyd 18901	18	575	16	546	579	584
Endymion 8916	16	533	8	568	582	584
Dairymaid's King 12898	21	490	18	438	558	579
Raymond's Pioneer of Lewistown 19103	20	590	14	617	585	579
Langwater Raritan 17052	17	566	17	500	566	577
King Masher 5th 18361	20	573	20	552	573	576
Frank Rose 26342	11	562	9	483	560	573
King Coral 5238	22	474	5	436	552	572
Langwater Fisherman 21873	12	549	6	512	563	572
Allenwood King Regent 23611	13	562	13	508	562	571
Langwater Peerless 19227	12	559	7	613	578	571
Penwyn of Rosendale 11282	11	566	8	683	587	570
Langwater Islander 31329	10	530	7	502	560	570
Langwater May King 13001	20	594	16	592	574	570
Sister's King 33653	11	562	4	423	547	568
Masher's Sequel 11462	70	511	17	501	558	568
Beda's May Day 34995	10	546	7	593	572	568
Florham Golden Lad 18119	12	573	7	747	595	568
Duke of Waymesit 13480	12	555	6	494	556	566
Stranford's Glenwood of Pinehurst 13609	14	565	14	566	565	564
Mars of Woodcrest 9290	10	563	4	459	545	560
Laverna's Ultra May King 24660	12	585	7	596	565	559
Hope's May Rose of Maple Hill 35903	12	518	7	448	542	558
Golden Hero of L'Etiennerie 12647	16	553	5	461	544	558
Rockingham 18120	10	578	6	540	554	556
Glenwood's Combination 8th 12550	11	492	5	438	538	555
Giltedge of Koshkonong Place 21989	21	538	20	487	545	555

TABLE 12 (CONTINUED).

Name and Number of Sire	No. yr. record dtrs.	Av. mat. equi. fat lbs.	No. prs. dams and dtrs.	Av. mat. equi. fat dams	Av. mat. equi. fat dtrs.	Poten. Trans. Ability Sire
Langwater Frederick 22268	17	553	12	592	561	555
Silver King of the Isle 14363	13	531	9	517	549	554
Onoko of Maple Row 11522	10	537	8	533	550	552
Moss Raider 22155	15	536	9	483	540	550
Langwater Frenchman 19226	28	537	24	542	549	550
May King of Linda Vista 17946	16	599	15	585	556	550
Langwater Dictator 15668	11	513	9	421	530	549
Glenwood's Stranford 9386	20	516	14	448	534	549
Dairymaid's Standard of Iowa 28946	12	541	11	533	547	549
Clara's Sequel 29414	52	584	9	597	555	547
May Rose Secret of Pencoyd 27844	14	549	9	593	554	547
Jacqueminot of Linda Vista 23564	20	537	12	522	543	546
Glenwood's Son of Gayhead 19617	10	551	3	554	548	546
General Bay 16177	11	506	10	621	558	546
Spotswood Sequel 9686	30	532	17	502	539	545
Itchen Red Raider 27342	10	549	8	634	559	545
Spotswood Masher Sequel 9687	11	504	7	444	525	539
Frank Rilma 21901	11	520	8	485	531	539
Itchen May King of Stannox 34377	13	534	12	591	547	539
Starlight's Excelsior 7992	24	521	10	477	528	536
Rhea's King of the May 14368	21	514	15	511	531	534
Lehigh's Golden Emperor 15761	18	517	6	458	522	533
Pride of the Day 17126	14	529	8	540	534	532
Yeoman's King Victor 22295	15	539	15	576	539	532
Gold Seeker of Anna Dean Farm 26106	18	547	10	726	560	530
Rutila's Gold Basis 5625	13	487	7	455	518	529
Dairymaid's Pride of Iowa 14941	15	518	5	601	540	529
May King of Ingleside 12558	22	521	20	483	522	528
Glenwood's Reputation 7687	20	533	4	477	521	528
Glenwood's Main Stay 6067	26	482	16	440	514	527
Jury of Koshkonong Place 16793	24	496	16	451	516	527
Golden Secret of Pencoyd 23462	22	536	22	587	536	526
Pencoyd's Golden Secret 16550	14	538	10	612	539	526
Prince of Sarnia 22000	21	523	9	492	520	524
Buckthorn 4781	11	547	3	526	525	524
Triple Champion 13067	18	544	13	516	523	524
Norfolk Squire 11565	14	504	6	506	521	523
Roy of Norwood 8141	18	530	8	470	515	522
Marcia's Glenwood of Pinehurst 11530	10	545	6	514	520	521
Uncle Jim 16740	17	540	15	564	528	521
Jesse Rose's Pride of Iowa 23955	19	519	14	504	518	520
Masher of Sarnia 19167	11	541	3	564	527	520
Glenwood Boy of Haddon 4605	26	521	21	559	526	520
Dandy of Beinretown 29963	17	523	16	512	518	519
Dean of the May 21815	20	526	14	547	524	519
Dan Patch of the Isle 21293	11	517	11	511	517	518
Lily Ella's Squire 6597	15	494	5	456	504	512
King of Medfield 15434	10	549	4	431	498	509
St. Austell Dreadnought 31671	10	501	9	502	505	505
Dairymaid's Choice of Pinehurst 13618	13	497	12	468	497	502
Robina's Standard 7254	21	473	11	535	507	502
Galaxy's Sequel 16904	53	523	13	542	508	502
Robert's Boy 21662	13	520	3	568	512	502
Hardtack of Groton 11697	12	493	8	506	498	496

TABLE 12 (CONTINUED).

Name and Number of Sire	No. yr. record dtrs.	Av. mat. equi. fat lbs.	No. prs. dams and dtrs.	Av. mat. equi. fat dams	Av. mat. equi. fat dtrs.	Poten. Trans. Ability Sire
Selma's Glenwood 12596	19	478	15	526	501	496
Guiding Star 12423	15	486	11	579	509	496
Sir Snowdown 19252	20	496	17	431	486	495
Lord Mar 14359	30	558	5	669	520	493
Lucretia's Chief of Waumesit 12385	13	518	5	512	495	492
Glenwood Champion 15639	28	527	15	505	494	492
Christie's Combination 14651	10	475	9	427	482	491
Langwater Princeling 14906	19	484	13	497	492	491
Rutila's Sheet Anchor 5701	11	505	4	472	487	489
Billy's France of the Isle 21183	24	506	3	516	493	488
Souvenir de L'Etiennerie 21925	17	523	6	584	502	487
Raymond of the Preel 11353	17	451	4	476	481	481
Skeezicks 9979	13	484	9	537	490	481
Allie's King of Belle Vernon 8041	11	482	10	457	477	480
Begalore 10101	13	540	6	570	494	480
Prince of Groton 9841	29	474	6	498	481	478
Rouge II's Son 18587	10	471	9	462	474	476
Auricula's Main Sheet 8870	10	495	5	528	482	473
Glenwood's Main Stay 40th 28108	12	537	3	523	480	472
Overture of Prospect 32821	10	456	6	395	459	470
Ideal's Senator 14736	13	474	11	454	468	470
Casterilius 10980	18	463	10	447	466	469
Ramee's Sequel 10563	11	467	5	425	461	467
Princess' Jewel 24877	31	515	3	550	479	466
Raymond of the Preel VI 14360	12	467	3	494	467	462
Selma's Main Stay's Son 23585	14	476	9	520	469	460
Daisy's Valentine 16603	10	504	4	482	457	452
Wolfram 5640	10	470	5	667	484	451
George Washington of Fairfield Farm 10866	12	516	3	548	465	450
Malcolm of Maplehurst 5626	12	454	7	512	459	449
The Conqueror II 15323	17	542	4	504	456	447
Raymond of the Preel II 13381	12	475	7	538	461	447
Christy of Pinehurst 31st 31984	10	479	5	419	441	444
Capt. Robbie 7146	11	442	10	485	449	442
Radium 9193	12	445	9	495	450	442
Barmouth of Pencoyd 11059	12	461	6	564	449	428
Vaillant Coeur 7749	13	416	10	441	428	425
Strong Anchor 5849	15	491	3	441	428	425
Sunburst's King Masher 37423	16	420	12	422	420	419
Fanny's Sequel 19563	28	478	7	575	443	419
Galaxy's Lavinus 12548	20	435	17	463	423	415
Penwyn 2d 7559	10	400	5	428	415	412
Coralette's Son 3987	12	399	11	421	402	398
Ukiah 14344	14	405	14	447	405	397

USE OF GENEALOGY CHART

It is said that the value of history is to enable one to predict future events from past happenings. It is our opinion that breeding problems should be attacked in the same way. The breeder's chief problem is one of selecting a sire which is prepotent for high production or is able to

transmit high production to his offspring. Naturally a sire who has already demonstrated his ability to sire high producing daughters is the safest sire to use. Proven sires, however, are scarce and the owners of such animals hesitate to sell them. If it is possible to secure proven sires they are the safest animals to use.

The use of an unproven sire is always a gamble. It is possible to study the breeding of proven sires and to determine whether there are guides which will enable a breeder to reduce the gamble in selecting a young bull. With that as an objective, genealogy charts have been prepared showing the pedigrees of all sires included in Table 3. Starting at the left, the succeeding generations of animals on the sire's side are given. The name and registry number of each sire is included, followed in parentheses by the number of yearly record daughters with their average "mature equivalent" fat production. Directly below each sire is placed the name and number of his dam with her highest "mature equivalent" yearly fat production if she has tested. Supplementing the information in Table 3, the average production of daughters of sires included in the genealogy table with less than ten daughters is also given. While it is recognized that these figures are of less value, due to the limited number of animals included, they are helpful in studying the transmission of production from generation to generation.

No satisfactory method of presenting the genealogy of the dams in chart form has been found. Instead, in Table 13 there is presented in alphabetical order a list of the dams of sires included in the genealogy chart with their sires and dams. By cross-reference through the dam's sire back to the genealogy chart the pedigree of the dam can be traced.

From the genealogy charts a study can be made of the mode of inheritance of the characters governing fat production and the relative importance of the sire and the dam in relation to the transmitting ability of the son. It will be recalled that the index of the sire is one of transmitting ability. This should be a better index of the genetic composition of the animal than is the fat production of the dam.

Stated in another way, the question which we wish to investigate is this: Are the sons of proven sires more likely to transmit the good quality of their sires' daughters to their own daughters than are the sons of high producing cows to transmit the good quality of their dams as indicated by the records of the dams?

In Table 14 is presented the relation between the average fat production of the daughters of the sires in the genealogy charts and the average fat records of the daughters of the sons. No cognizance was taken of the dam's production records. It will be noted from Fig. 4 that there is a linear relation between the production of the sire's daughters

and the son's daughters. This relation may be expressed by the following equation:

$$\text{Son's daughters' fat production} = 306.6 + 0.447 \text{ Sire's daughters' fat production.}$$

This means that for each pound of fat produced by the sire's daughters above 306 pounds there may be expected a corresponding increase of the son's daughters of .45 pounds of fat.

In other words, the sons of a proven sire may be expected to transmit high production to their daughters in the following ratio:

Proven Sire's Daughters' Average Production	Son's Daughters' Expected Average Production
400 lbs. fat	485 lbs. fat
500 lbs. fat	530 lbs. fat
600 lbs. fat	575 lbs. fat
700 lbs. fat	619 lbs. fat

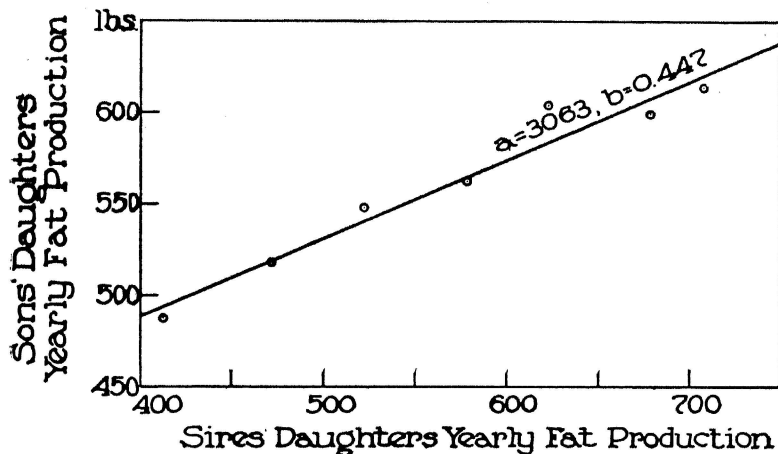


Fig. 4.—The relation between the average fat production of the sire's daughters and the average fat production of the son's daughters. The line passing through the observed values was obtained from the equation $S = a + bs$ in which S is the son's daughter's average yearly fat production, s the sire's daughter's average fat production, b the constant increase in the son's daughter's production for an increase of one pound of fat of the sire's daughters. From the values on the line it appears that above 306 pounds of fat that for an increase of one pound of fat on the part of the sire's daughters, an increase of 0.447 pounds of fat, on the average, may be expected from the son's daughters. This indicates that average fat production of the daughters of a sire is a good index of the transmitting ability of the sire through his sons to his granddaughters.

TABLE 14.—RELATION BETWEEN FAT RECORDS OF DAUGHTERS OF SIRES AND THE AVERAGE FAT RECORDS OF THE DAUGHTERS OF THE SONS

Number of Sires	Total No. of Daughters	Av. Fat Prod. lbs. Sires' Daughters	No. of Sons	Total No. of Daughters of Sons	Av. Fat Prod. lbs. Sons of Daughters
10	77	424.23	11	121	488.19
31	541	472.39	47	481	517.52
43	2974	521.8	88	1486	547.82
24	540	579.17	35	490	563.54
21	747	621.62	42	789	604.14
5	413	679.88	14	211	600.53
5	506	708.75	18	311	614.62

It should be noted that the ratio on page 31 is based on the actual fat production of the sire's and son's daughters, not considering the influence of the dams. Data will later be presented on the relation between the sire's potential transmitting ability and the son's potential transmitting ability.

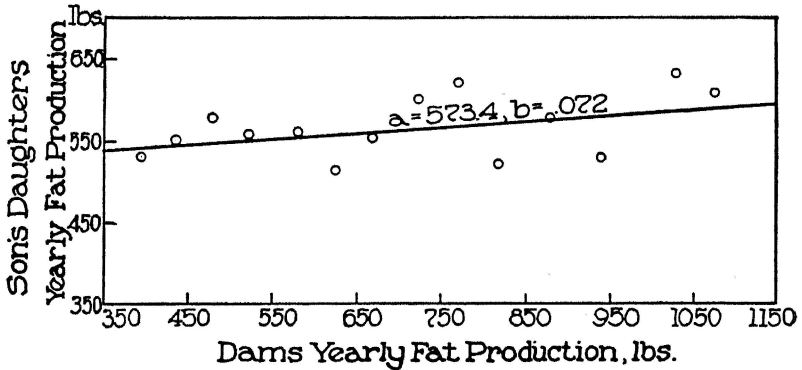


Fig. 5.—The relation between the fat record of the dam and the average fat production of the son's daughters. The line passing through the observed values was obtained from the straight line equation $S = a + bd$ in which S is the son's daughter's average yearly fat production, and b the constant increase in the son's daughter's production for an increase of one pound of fat of the dam. From the values on the straight line fitting the observed values, it appears that above 513 pounds of fat, for an increase of one pound of fat on the part of the dam, an increase of only 0.072 pounds of fat may be expected from the son's daughters. This means that the dam's production record is not a good index of her transmitting ability through her sons to her granddaughters.

The influence of the dam on the transmitting ability of the son is presented in Table 15. In this case no cognizance of the sires was taken. As shown in Fig. 5, there is very little relation between the production record of the dam and the transmitting ability of the son as shown by the average production of the daughters. Even the possible tendency for better sires to be used with the better cows which might favorably influence the sons' transmitting ability is not evident.

TABLE 15.—EFFECT OF FAT RECORD OF DAM ON THE AVERAGE FAT RECORDS OF HER SON'S DAUGHTERS

Dam Av. Fat lbs.	No. of Sons	No. of Daughters of Sons	Av. Fat Prod. of Daughters in lbs.
370	3	24	533
436	10	126	552
478	19	319	580
524	12	178	560
579	17	247	563
623	19	279	516
667	12	185	555
724	15	241	602
770	14	272	621
815	2	16	522
876	11	154	581
938	2	25	532
969	1	15	518
1028	3	36	637
1074	2	21	613

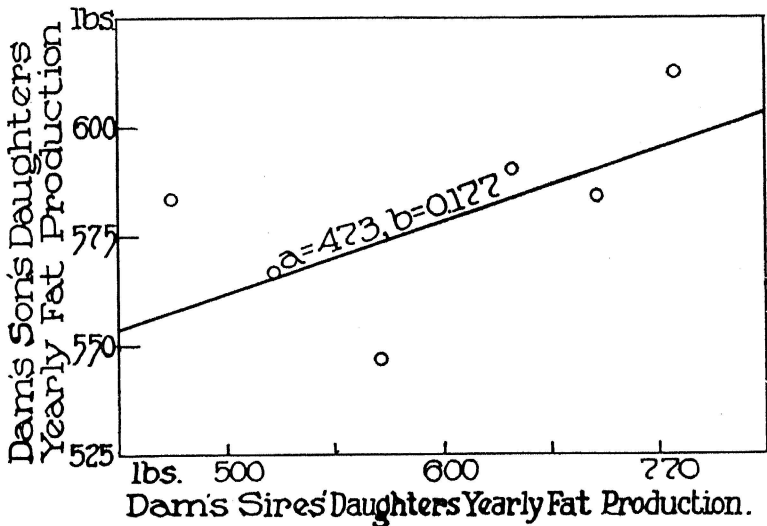


Fig. 6.—The relation between the average fat production of the dam's sire's daughters (half-sisters) and the dam's son's daughters (granddaughters). The line passing through the observed values was obtained from the equation $S = a + bd$, where S is the son's daughters' yearly fat production, d the dam's sire's daughters' average fat production, and b the constant increase in the son's daughters' fat production for an increase of one pound of fat on the part of the dam's sire's daughters. The line is not a very satisfactory fit of the observed points. The values obtained indicate that above 473.0 pounds of fat, an increase of 0.177 pounds of fat may be expected on the part of the son's daughters for an increase of one pound of fat by the dam's sire's daughters. It appears from this that the average fat production of the dam's half-sisters is a better index of her transmitting ability through her son to her granddaughters than is her own record of production.

It is concluded from these data that the daughter progeny performance of a sire is a reliable index of the sire's son's transmitting ability to his daughters. On the other hand, the dam's record of pro-

duction is not a reliable index of the dam's son's transmitting ability to his daughters. It is quite evident, therefore, that the son of a proven sire is more likely to transmit to his daughters the average production of his sire's daughters than a son of a large record cow is likely to transmit to his daughters the high production of his dam.

It was thought possible that a better index of the dam's ability to transmit production to her granddaughters through her sons would be the average production of all her half-sisters by the same sire. In other words, the average of the dam's sire's daughters would be compared with the dam's son's daughters. This relationship is shown in Table 16 and Fig. 6. While the relation is not especially good, it is better than that of the dam's own production record as an indication of her genetic transmitting ability through her sons.

TABLE 16.—RELATION BETWEEN THE AVERAGE FAT PRODUCTION OF THE DAM'S SIRE'S DAUGHTERS AND THE DAM'S SON'S DAUGHTERS

Class Fat lbs.	No. Pairs	Dam's Sire's Daughters' Av. Fat Prod. lbs.	Dam's Son's Daughters' Av. Fat Prod. lbs.
450-499	6	472	579
500-549	26	523	569
550-599	10	570	548
600-649	9	632	585
650-699	7	672	580
700-749	11	708	610

There is a further comparison possible between the sire and the son. By considering the production of the dams and that of the daughters, a method of determining the sire's potential transmitting ability has been described. This value for the sire takes into consideration the quality of the dams that the sires were bred to in producing their daughters. The question arises as to the relative value of the sire's potential transmitting ability and the average fat production of the sire's daughters as an index of his transmitting ability through his sons to his granddaughters.

TABLE 17.—RELATION BETWEEN THE POTENTIAL TRANSMITTING ABILITY OF SIRES AND THEIR SONS

Class	No. Pairs Sires and Sons	Potential Trans. Ability of Sire Av. Fat lbs.	Potential Trans. Ability of Son Av. Fat lbs.
400-449	3	428	506
450-499	11	478	535
500-549	32	528	557
550-599	19	574	554
600-649	28	624	610
650-699	19	666	614
700-749	23	726	655
750-799	3	767	658

The potential transmitting ability of the sires and their sons is shown in Table 17 and Fig. 7. By comparison with Fig. 4 it will be noted that the potential transmitting ability of a sire is the best single index in selecting a bull which may be expected to sire high producing daughters. That sons fully equal to the best sires would be the exception rather than the rule, if Galton's law of regression was applicable, is evident. This may be noted from Fig. 8 which is also plotted from the data in Table 17.

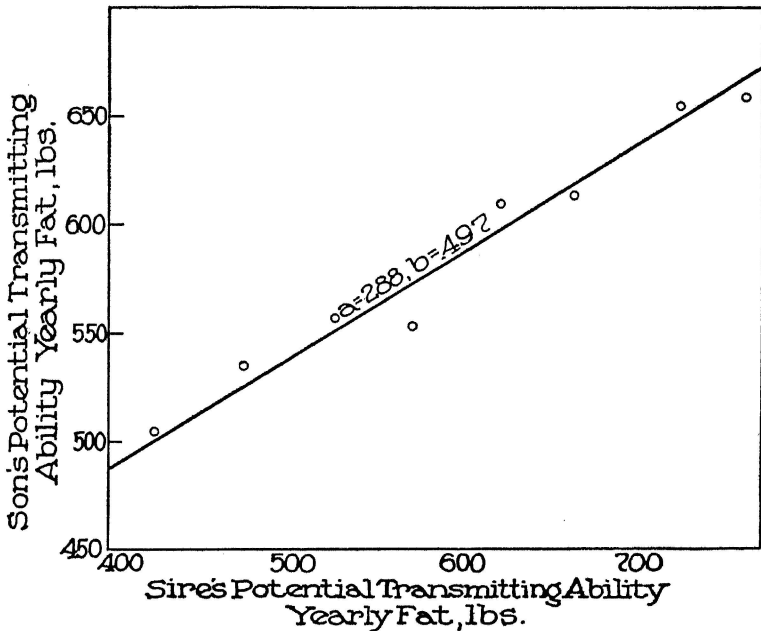


Fig. 7.—The relation between the potential transmitting ability for fat production of the sires and their sons. The line passing through the observed values was obtained from the equation $S = a + bs$ in which S is the son's potential transmitting ability, s the sire's potential transmitting ability, and b the constant increase in the son's transmitting ability for an increase of one pound of fat of the sire's potential transmitting ability. From the values for the line fitting the observed points, it appears that above 288.5 pounds of fat an increase of one pound of fat in potential transmitting ability by the sire causes a corresponding increase of 0.497 pounds of fat in potential transmitting ability by the son. It will be noted that the above relationship is somewhat better than that shown in Fig. 4. It is, therefore, concluded that potential transmitting ability of the sire is the best guide to potential transmitting ability of his sons.

The quantitative relation between sire and son may be expressed by the following linear equation:

$$\text{Son's potential transmitting ability} = 288.5 + 0.497 \text{ Sire's potential transmitting ability}$$

This equation will be useful in predicting the value of a young sire when used in herds of varying productive ability.

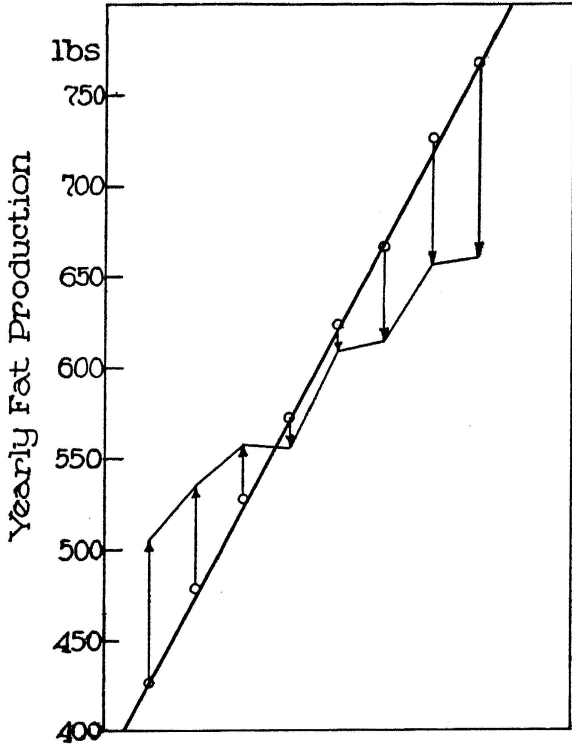


Fig. 8.—The relation between the sire's potential transmitting ability for yearly fat production and that of the sons. The figure illustrates the application of Galton's law of regression to fat production. The law is stated as follows: Average parents tend to produce average offsprings; parents below the average tend to produce offspring below the average; parents above the average tend to produce offspring above the average; but the progeny of extreme parents, whether above or below the average, inherit the parental characters in a less marked degree than the latter were manifested in the parents themselves. The straight lines represent the potential transmitting ability of the sires while the arrow points represent the potential transmitting ability of the sons.

SUMMARY AND CONCLUSIONS

1. From the data showing the relation between the age of the Guernsey cow and her average yearly fat production, conversion factors have been determined by which records made at any age may be converted to the "mature equivalent" form.
2. The average "mature equivalent" yearly fat production of all Guernsey sires having ten or more daughters was then determined.
3. The "mature equivalent" records of the dams of the daughters was determined wherever available.
4. Comparisons were then made of the average yearly fat production of the dams and daughters of each of the above sires.

5. By grouping the sires into classes on the basis of the daughters' average yearly fat production, and then determining the quality of the daughters out of dams of various productivity, it was found that for each 100 pounds of fat per year increase the production of the dams there was corresponding increase in the production of the daughters of approximately 15 pounds of fat.

6. These results were expressed in the form of equations as follows:

$$(1) \text{ Daughter's fat production} = 0.15 \times \text{Dam's fat production} + 0.85 \times \text{Sire's potential transmitting ability.}$$

or

$$(2) \text{ Sire's potential transmitting ability} = \frac{\text{Daughter's fat production} - 0.15 \times \text{Dam's fat production}}{0.85}$$

7. Potential transmitting ability of each sire was then determined from equation (2). This refers to the sire's ability to transmit the factors for fat production to his daughters.

8. By means of genealogy charts, the ability of the sires and dams to transmit the favorable factors concerned in fat production through their sons to their granddaughters was also studied.

9. It was again found that the sires were more able to transmit their potential production (determined from their daughters' production) through their sons to their granddaughters than were the dams able to transmit their own production (as indicated by their best converted fat record) through their sons to their granddaughters.

TABLE 13.—BREEDING OF THE DAMS OF THE SIREs INCLUDED IN THE GENEALOGY TABLE

Dams of Sires	Sire of Dam	Dam of Dam
Alphea of Pinehurst 2d, 35069	Stranford's Glenwood of Pinehurst, 13609	Alphea of Pinehurst, 19625
Amy of St. Andrew's, 35518	Harley of Chitral, 1182 G	Nora du Tertre I., 3248 G.
Angela of Groton, 10674	Lord Archer, 3429	Ceres of Groton, 5027
Annie of Paulsdale, 2706	Farnese, 622	Hannah, 217
Antoinette's Queen's Prize, 3011 G		
Antoinette's Queen's Prize V, 4843 G		
Antoinette's Queen's Prize VII, 16010	Governor of the Chene, 1297 G	Imp. Antoinette's Queen's Prize III, 15998
Antonina, 14733	King 5th, 828 G	Antona, 980 E
Arbutus of Haddon, 10341	Pat of Haddon, 3919	Glenwood Girl 3d, 9109
Armour des Frances IV, 5208 G		
Ashland's Violet of Lyndon Heights, 22045	Ashland of Lyndon Heights, 10079	Violet of Lilyvale II, 15172
Auricula 2d, 12209	Springunde, 4302	Auricula, 6597
Baubigny's Daisy, 25801	Fanny's Sequel, 1814 G	Baubigny Beauty, 2664 G
Beatrice of the Isles, 16005	Harley of Chitral, 1182 G	Beatrice 3d, 1867 G
Beauty 5th of the Adams, 3483 G		
Beauty of Berwyn, 5160	Warden, 1698	Birdie of Bernwyn, 1894
Beauty of Bloomfield 2d, 101	Romeo, 40	Beauty of Bloomfield, 75
Beauty of les Fauxquets 1st, 1799 G		
Beauty of the Isle, 10927	Frolic 5th, 612 E	Malena des Islets 2d, 3097 E
Beauty of the Willowdale, 27348	Pretor of Maple Glen, 10620	Tirsey's Beauty, 15398
Bella III of the Ramee, 18899	Fountain Head, 1309 G	Bella of the Ramee, 2390 G
Belle F. 5558	Prince of Carolina, 1325	Mary Custis Lee, 3008
Belle R. 6933	Yeksa's Prince, 1943	Belle of Rock Lake, 5062
Belle Robine, 1962 G		
Belvidera, 7644		
Bess of Bendbrook, 10003	Royal Fern, 3999	Queen of Fairview, 8261
Bess of Ogier, 835		
Betsey of Maplehurst, 15426	Malcolm of Maplehurst, 5626	Buttercup of Springside, 4524
Bienfaitrice 4th 3657	Lord John, 144 G	Bienfaitrive, 27 G
Bilinda II, 2288 G		
Black Eyed Sis of Maplehurst, 26819	Woodglen of Mossziel, 10379	Little Sis of Riverside, 15931
Bloomfield Pandora 20760	Masher's Jewel, 8868	Pandora of Lilyvale II., 18547
Blossom of Koshkonong Place, 24507	Starlight's Excelsior, 7992	Blanche of Geneva, 15048

Bon Espoir XVI, 9158 G	France's Jewel II, 1065 G	La Belle France, 14454
Bonne et Belle, 14455	Excelsior 5th, 11 G	Bonnie Lassie, 228G
Bonnie Lassie of Fernwood, 1485	King Masher, 11084	Brightness of Mapleton, 20364
Brightness of Glenburnie, 30742		Aureгнаise
Brunette, 2173		
Buttercup of the Gron, 2394 G		
Buttercup of Martel, 1044		
Buttercup du Pont 3448 G		
Calla Luda, 27092	Vivian of Hillstead, 10182	Pearla of Hillstead, 21293
Caraline, 1790	St. Andrew's 3d, 163 G	Cara 552 G
Castello, 9754	Sammy Jr., 3054	St. Columbo 4th, 4798
Champion's Sweet Briar 3d, 3021	Sir Champion 11th, 280	Sweet Briar of Le Pelley, 1091
Charmante of the Gron, 14442	His Majesty, 952 G	Ma Charmante, 4890 E
Cherry, 332 A		
Chilmark Lassie, 23129	Cora's Governor of Chilmark, 8971	Chilmark Golden Lassie, 19478
Christine of Pinehurst, 13940	Guilford's Prince, 3965	Rex Darleen, 12740
Cinderella, 3251	Traveller, 340	Beauty of Bloomfield 2d, 101
Clara XVI of the Rouvets, 5476 G		
Claremont Hyacinth, 4740 E		
Claremont May Rose, 3648 E		
Colnia of Hillhurst, 35496	Young Hero, 12181	Carrie A. of Homestead, 16839
Cometa's Best, 26135	Starlight's Excelsior, 7992	Cometa, 16084
Confidence III, 4890 G		
Conovia, 14648	Royal of La Lande, 6223	Lucy des Forgettes 7th, 12093
Contessa's Delight, 27340	Maximo, 12204	Contessa's Favorite, 16724
Cora White, 13515	Francis Jewel, 3738	Enchantress, 6204
Cora 2d of Level Green, 7432		
Cora's Queen's Prize, 16004	Francis Jewel II, 1065	Cora Queen's Prize III, 4057G.
Coralette, 5722	Benjamin, 1931	Coral of Paulsdale 3497
Coralie of Pinehurst, 13057	Main Stay, 3789	Cora 2d of Level Green, 7432
Count Topsy, 11680	Count Fernwood of Wisconsin, 3058	Topsy Graphic, 7002
Countess of Fernwood 1464	Duke 1st, 74 G.	Fleurie de Tertre, 1136 G
Countess of Level Green, 4198	Count Fernwood, 958	Anne Page of Level Green, 2772
Countess I. of les Nouettes 36184	Bright Ruby of the Lorier, 1037	Countess of Les Nouettes, 2354 G
Couleur de Rose, 14456	France's Masher 2d, 7248	Rose of the Barras, 2117 G.
Crease of Haddon, 28923	Glenwood's Combination, 8927	Crease of Moorestown, 19051
Custer's Belle, 9514	Custer's Perfection, 3656	Gwendoline 2d, 5404

TABLE 13 (CONTINUED).

Dams of Sires	Sire of Dam	Dam of Dam
Dairy Maid I du Briquet, 23219	King Edward, 1291 G	Dairy Maid du Briquet, 2143 G
Dairymaid of Elm Place, 14197	Penwyn, 4590	Dolly's Ada 9289
Dairymaid of Pinehurst, 24656	Glenwood Boy of Haddon, 4605	Dairy Maid of Elm Place, 14197
Dairy Queen 2d of Falmouth, 3595	Cherry Stone, 1020	Dairy Queen 2d, 1349
Daisy II, 794 A		
Daisy III, 857 A		
Daisy Le Galle, 1100		
Daisy V. of the Effards 5647 G		
Daisy Moon III., 28471	The Conqueror II, 15323	Daisy Moon, 2449 G
Daisy of the Tertre, 3112 G		
Daisy II of the Videclius 4039 G		
Daisy of the Videclius IV., 26626	Nelson of the Bordages 1373 G	Daisy II of the Videclius, 4039 G
Daisy des Vinaires 1925 G		
Damsel 4030	David, 1140	Lady Emily Davey 1306
Deanie 3d, 7643		
Deanie 7th, 10926	Loyal of the Hunguets, 978 G	Deanie 1869 G
Deanie XII., 2699G		
Deanie Woodburn of Brookmead 2d, 37095	Donald Bell 12646	Deanie Woodburn of Brookmead, 21979
Diss 1329 G		
Dolly Bloom, 12770	Divan, 5846	Questa 11385
Dolly Bloom of Langwater, 15452	Pocomoke 6075	Dolly Bloom 12770
Dolly Dimple 19144	Yeoman 8618	Dolly Bloom 12770
Doris Pretoria 24620	Pretor 9316	Umarilla 2d 12860
Duchess of Brittany 2d 3526	Duke of Normandy 712	Duchess of Brittany 1613
Duchess of Normandy 317 G		
Duchinette 2d 7237		
Early Rose of Raritan 11782	Peter Paul 4276	Rose of Raritan 8820
Easton Belle 24201	Yeoman 8618	Rose of York 17290
Elberon of Fairview 8907	Squire 6th of Les Vauxbelets Jr., 2874	Primula des Friquets 4978
Elegante 592		
Elite of Maplehurst 8452	Solomon F. 2386	Young Infanta 6952
Elsie 3d of Level Green 7965	Rocmont of Level Green 3759	Elsie of Level Green 6149
Emma's Luella 4449	Oliver 1355	Emma C. 666
Eva of the Spurs 18884	Compact 1076 G	Susanna 5th 3094 G

Fac-simile 4669 G		
Fanny III. of Le Port 10592 G		
Fantine 2d 3730	Pres. Garfield 673	Fantine 2073
Fantinelily's 14898	Lily Ella's Jeweller 5417	Fantasia S. 7921
Fascination II 4665 G		
Fernwood Fancy 37		
Fernwood Lily 146	Jimmy 143 G	Buttercup of la Croix 793 G
Fernwood Roanoke 2d 8297	Lord Ledyard 1830	Fernwood Roanoke 3903
Fesca 7619		
Fes Lips Daisy 19843	Robiana's Standard 7254	Fes Lip 10621
Fillpail XIV 26619	Richmond 1278 G	Fillpail XI 3787 G
Flora of the Effards 2773 G		
Flora of Vimiera 45954	King of the Friquet 1674 G	Lenore II, 4190 G
Florham Daisy 18115	May Rose King 8336	Itchen Daisy 3d 1563
Flower of the Preel 2099 G		
France VI 4620 G		
France XIV 26617	Interest 1259 G	Imp. France IX 16499
France XXVIII 8333 G		
France's Honoria 4670 G		
Francette 4th 12095	Benjamin 383 G	Francette 1st 6106 G
France's Milk Maid 15341	France's Masher 2d 7248	Minnesota Milkmaid 11572
Frederick's Lily 35770	Frederick of the Haut Pavé 1670	Lily III. du Bas Sejour 5949 G
Galaxy 4422 G		
Galaxy's Pride of Koshkonong Place 35637	Galaxy's Sequel 16904	Pride II of the Marais 28425
Gallezette 2d 13131	Pomara's Fernwood 6317	Gallezette 13130
Gay Lass of Lilyvale 4526 G		
Glenwood Girl 2d 9108	Kalmia 740	Glenwood Girl 1693
Glenwood Girl 4th 9110	Darius of Sunnyside 2716	Glenwood Girl 1693
Glenwood Girl 6th 9113	Holton 2d 2828	Glenwood Girl 1693
Gold Lassie of Paxtang 28211	Orange Duke of Edgemont 12289	Golden Lassie of Paxtang 24696
Golden Anne 13135	Fernwood Lily's Son 3931	Golden Horn's Mary 8975
Golden Lassie of Partang 24696	Lord Derby of Partang 7744	Nugget of Paxtang 14635
Golden Reality 4868 G		
Grace Fernwood 16395	Fernwood's Lily's Son 3931	Squire's Grace 9430
Gracieuse III of the Ramee 18676	Island Champion 6263	Gracieuse II of the Ramee 5190-G
Guernsey Buttercup 1361		
Gully 5th 1590	Rival 153 G	Gully 417 G

TABLE 13 (CONTINUED).

Dams of Sires	Sire of Dam	Dam of Dam
Gully 5th's Daughter 4582	Le Marchant 1559	Gully 5th 1590
Gypsy of Racine 9639	Gossip Jr. 2146	Gypsy 2d's Daughter 3283
Gipsy 2d of Level Green 4200	Polaris 817	Gipsy of Level Green 2772
Gipsy 3d of Level Green 4201	Count Fernwood 958	Gipsy of Level Green 2772
Hatton's Nelly III 22562	Cock of the South 1359	Hatton's Nelly I 6264 G
Hayes Felois 2d 15478	Hayes Prince 1205 E	Felois 4436 E
Hayes Golden Cherry 3d 44965	Hayes Royal 1674 E	Golden Cherry 5118 E
Hayes Richesse 2d 15474	Challenger 1189 E	Hayes Richesse 4091 E
Hayes Rosie 15476	Jumbo	Flower
Hayes Rosie 3d 15477	Hayes Prince 1205 E	Hayes Rosie 15476
Hephzibah 9070	Serenade's Forget-Me-Not 3181	Petite's Pride 7031
Hongue Maid 2856 A		
Ideal of Prospect Farm 15345	Pearl of Raritan 5655	Bell of Raritan 11876
Isabel Hayes 9124	Arthur Lyons 3833	Emma Hayes 7565
Island Blossom 18886	France's Masher 2d 7248	Blossom of the Ponchez 2451 G
Island Butter Queen 19661	France's Jewel II. 1065 G	Butter Queen 1983 G
Itchen Daisy 3d 15630	May Day 1132 E	Daisy's Gem 3341 E
Itchen Lady 2d 15194	Itchen Jewel 1112 E	Imp. Itchen Lady 14422
Itchen Lily 4112 E		
Itchen May Rose 4839 E		
Itchen May Rose 5th 8572 E		
Itchen May Rose 6th 40319	Hayes Royal 3d 2036 E	Itchen May Rose 2d 6921 E
Itchen Moss Rose 40308	Itchen May Day 1473 E	Itchen Daisy 4th 5490 E
Itchen Verbena 5501 E		
Jenny of the Fries 9693	Cyprus 2355	Lily of the Fries 3d 5716
Jessie 7th 1988 G		
Jessie of Lester Manor 740		
Jessie of Maple Lane 23457	Henry of Fairview 6962	Jessie Jeweller Jr. 9599
Jessy Rose X 28373	Imp. Lord Mar 14359	Jessy Rose VI 6523 G
Jewel of Haddon 11259	Main Stay 3789	Glenwood Girl 2d 9108
Jeweller's Fantine 14714	Lily Ella's Jeweller 5417	Lady of Lind Wood 7334
Juanita Langlois 11097	Gully's Duke of German 4645	May Langlois 5752
Judy 416 A		
Justinee I 4054 G		

Justinee IV 5091 G	France's Masher 2d 7248	Justinee IV 5091 G
Justinee's Golden Queen 17552	King Francis 13500	Gracieuse VII of the Ramee 18920
King's Grace 34640	Penryn 3164	Grandma 6864
Kitty Clover 8803	Archibald 442 G	Imp. France 2d 6359
La Belle France 14454	May Rose King 8336	Gracieuse V of the Ramee 18895
La Belle Jardiniere 24945	Masher's Sequel 1266 G	La Belle Francisca 16689
La Belle Petite 18114		
Lady Alderney 5682 G	Masher's Sequel 1266	Lady Archer X 4303 G
Lady Archer XII 17559	Klondyke 1066 G	Beatrice of the Cotils 1938 G
Lady Beatrice of Lilyvale 18526	Benjamin 1931	Coral of Paulsdale 3497
Lady Coral 8605	Stranford's Glenwood of Pinehurst 13609	Dairymaid of Elm Place 14197
Lady Dairymaid of Pinehurst 29723		Lady Emily Foley 82 G
Lady Emily Foley 2d 1700		
Lady Flora 2d 639 G		
Lady Jauncey 5090 G		
Lady Lavene 12896	Tristan 4183	Lady Laurine 7016
Lady Roberts 2116 G		
Lady Trowbridge 14085	Lord Whitaker 7279	Lady Naomi 9913
Lady West 2d 6218 G		
Lady's Hope of Maple Hill 44843	May King's Vrangue of Ingleside 15430	Norwood Lady Makefield 31421
Ladysmith of the Hunguets 22715	Hero des Hunguets de Bas 1548 G	Ladysmith II 5460 G
Ladysmith of the Isle 28355	Imp. Raymond of the Preel II 13381	Ladysmith III 6766 G
La Fluor de Jardin X 4706 G		
La Fleur de Jardin XII 5619 G		
La Fleur de Jardin XIII 36189	Royal Prince of L'Etiennerie 12176	La Fleur de Jardin XII 5619 G
La Fontaine II 5510 G		
La Grippe 4801	Santa Claus 460	La Fraise 1446
Langwater Daisy 22139	King of the May 9001	Melanie of Goodnestone 3d 15485
Langwater Dolly Bloom 22136	Royal Rival 9572	Dolly Bloom of Langwater 15452
Langwater Dolly Dollars 21332	King of the May 9001	Dolly Bloom of Langwater 15452
Langwater Early Rose 19145	King of the May 9001	Early Rose of Raritan 11782
Langwater Francaise 35751	King of the May 9001	France XIV 26617
Langwater Hayes Rosie 24200	Royal Rival 9572	Hayes Rosie 15476
Langwater Lily 26606	Golden Secret 12599	Itchen Lily 5th 23540
Langwater Lustre 47044	King of the May 9001	Itchen Pearl 2d 28155
Langwater May Queen 22141	King of the May 9001	Langwater Heirless 19142
Langwater Nancy 27943	Dolly Dimple's May King of Langwater 12997	Early Rose of Raritan 11782
Langwater Pearl 26605	Itchen Wrangler 1757 E	Itchen Pearl 4th 23542

TABLE 13 (CONTINUED).

Dams of Sires	Sire of Dam	Dam of Dam
Langwater Princess 22138	King of the May 9001	Princess Rhea 2d 16090
Langwater Rosie 21333	King of the May 9001	Hayes Rosie 15476
Langwater Royal Rose 21334	Yeoman 8618	Royal Rose of Easton 15483
Lavesa R. 15064	Duke of Hardwick 6436	Fill Pail's Huldah 11455
Lindenora 12754	Lily Ella's Jeweller 5417	Sunbeam's Dawn 9467
Liliputian 694 G		
Lily Ella 7240		
Lily de la Haye de Puits 1594	Conde 134 G	Beauty 146 G
Little Jewel 7517		
Leslie 586 G		
Lily de Preel XIV 50403	Imp. Billy's France 12476	Lily de Preel VI 3742 G
Lizette I of the Spurs 35334	Imp. Villette Prince 9090	Lizette of the Spurs 4864 G
Lena from the Isle 14015	Annatto 3887	Lena II 1844 G
Lively II 346 A		
Linden's Young Polly Vrangue 18630	Esquire of Linden 6673	Young Polly Vrangue 15116
Lohier's Polly II 33688	Golden Noble II 1836 G	Lohier's Polly I 6124 G
Long Queen 8166	Dominus 423	Dairy Queen 2d 1349
Lovely Rose 33051	May Rose King 3d, 13130	Loveliness 13609
Lucretia's Glenwood Girl of Haddon 16240	Glenwood's Mainstay 6067	Lucretia of Haddon 10831
Maid of Orange 4155	Mohawk Gift 1384	Orange Girl 737
Mary McFarland 13226	Boston Mary's Zach Taylor 3013	Polydine 3511
Marcia of Pinehurst 13094	Edder 6365	Suzette of Pinehurst 11025
Masher's Elsie 24986	King Masher 11084	Champion's Elsie 19954
Masher's Fanny 5070 G		
May Rose II of la Masse 3519 G		
Mayflower of Eagle 18119	Dido's Standard 7683	Auricle 9135
May Rilma 22761	Mars of Woodcrest 9290	Rilma of Paxtang 10331
May Rose 2d 3251 G. E.		
May 469 A		
Materna 1334	Amber 145	Duchess of Geneva 847
Maternalette 2d 6854	Jolie Herald 1427	Maternalette 2127
Menalette 2d 14731	Golden Morning 6708	Mernalette 5723
Mignonette of Maple Row 27265	Onoko of Maple Row 11522	Queen Willma 22230
Milford Lassie 2d 15257	Crofton Brian 888 E	Milford Lassie 3473 E
Miriam VI 27821	Nelson of the Houards I 1294 G	Dame Tulip II 3922 G

Miriam of the Isle 21337	Squire of the Houards 1038 G	Dame Tulip 3922 G
Miss Maggie 2216 G		
Miss Amy 504	Hubert 47	Miss Alice 220
Miss Rilma 19834	Rutilant 8399	Rilma of Paxtang 10331
Modena 11779	Peter Paul 4276	Little Rose of Raritan 10162
Morn 5947	Jolie Herald 1427	Materna 1334
Nana 3d 11432	Washita 4327	Nana 8893
Nectar 2d 9371	Nathan 3161	Nectar 5528
Nancy Mac 11523	Country Gentleman of Maryland 4881	Deer Creek Lotta 7323
Nella Jay 4th 38233	Golden Secret of Lilyvale 10028	Nella Jay 16480
Nellie 393 A		
Nellie Rilma 24453	Mars of Woodcrest 9290	Rilma of Paxtang 10331
Nelly of the Clos 22691	Imp. Golden Noble 10508	Jessy of the Clos 2829 G
Neuetzin 10658	Lord Archer 3429	Harmony of Groton 10656
Nora 2d 165 G		
Normandie of Paulsdale 4865	Politician 2176	Norma of Paulsdale 4535
Nubia's Vesta 5986	Cato's Pioneer 1957	Nubia 4232
Oak Lawn Lassie 11374	Lawn Duke 4136	Dolsey 6532
Olive Branch 5258 E		
Ollie of Belle Vernon 10775	Imp. Masie 3739	Ollie 6769
Onondago's Bay 10868	Onondago Boy 3942	Lady Jane Bay 7982
Olive of Chatham 16814	Prince of Rural Glade 7306	Jessica of Chatham 13694
Panama 2590 G		
Pansy K. of Pomeroy 24604	Adventurer of Upper Freehold 9270	Pansy K. 13820
Peter's Rachel 5246	Milo 695	Ariadne 619
Phillipena of the Glen 12778	Diplomat 3926	Glenora 7286
Polly of the Russell 33217	Scottie of the Gacheres 1353 G	Polly of the Nicolles 2930 G
President's Italia 29151	President of the Isle 14857	Italia of the Isle 26640
Pretoria 14443	Moderator 1051 G	May Lady III 2461 G
Pride of Place 22284	May Rose King 8336	Pride of Birth 18443
Primrose of Chacheliere 5542 A		
Primrose of the Gree 28518	Loyal of the Bordages 1133 G	Primrose du Gree 2277 G
Princess Deasie 36703	Duke of Edgewater 12340	Queen Regent IV 22716
Princess Fay of Hardwick 26495	Prince of Groton 9841	Queen Fay 19712
Princess Jane Ford 6320	Lilly's Prince 2205	Princess Louise Ford 1608
Princess May of the Hunguets IV 7574 G		
Princess Pretoria 28403	Pretor 9316	Princess of Florham 19650
Princess Raglan 18887	Oom Paul 1214 G	Noble Lady 4374 G

TABLE 13 (CONTINUED).

Dams of Sires	Sire of Dam	Dam of Dam
Princess Rhea 15479	Alexander the Great 706 G	Rhea 5th 1996 G
Princess Rhea 3d 21331	Yeoman 8618	Princess Rhea 15479
Quaker Maid of Pencoyd 24322	Golden Secret of Lilyvale 10028	Quaker Lady of Pencoyd 18656
Queen of Anna Dean Farm 47585		
Queen of Chenequa 6544	Oconomowac 2495	Fantine 2d 3730
Queen Regent IV 22716	Royal Governor of l' Etienneerie 1484 G	Beauty 5th of the Adams 3484 G
Queen of the Roses 24999	May Rose King 8336	Grace of Lilyvale III 18915
Red Rose of Chesterbrook 22763	Mars of Woodcrest 9290	Viola Rose 17173
Richesse du Chene VIII 4004 G	Rydale V 982 G	Richesse du Chene II 2958 G
Ringdale Bella 2d 4441 G		
Robiana 9182	Springer 2685	Robiline 7618
Robiline 7618		
Rosalie of Mouilpied 37755	Duke of Mouilpied 2045 G	Rouge of Mouilpied 2817 G
Rose of Gold 3668 G		
Rose King's Laverna 27294	May Rose King 8336	Lavessa R. 15064
Rose Martin 162		
Rose of Pencoyd 27300	Golden Secret of Lilyvale 10028	Langwater Early Rose 19145
Rose of Pencoyd 2d 36499	Golden Secret 12599	Rose of Pencoyd 27300
Rose of York, 17290	May Rose King 8336	Couleur de Rose 14456
Roselyne I of Rose Farm 19693	Hector 1325 G	Roselyn of Rose Farm 2488 G
Rosette 5th 3696	Meteor 181 G	Rosette 2d 320 G
Rosie V of the Bourg de Bas 36380	Billy's Fancy 2205 G	Rosie IV of the Bourg de Bas 36304
Rosy of the Palotterie IV 18897	Sly of the Bordages 1330 G	Rosy of the Palotterie 2054 G
Rouge of the Brickfield 40144	Cronje 1199 G	
Rouge II of the Brickfield 28335	Governor of the Chene 1297 G	Rouge of the Brickfield 2531 G
Royal Daisy 4287 G		
Royal Princess Cora I of l' Etienneerie 5301 G		
Royal Rival's Queen 20130	Royal Rival 9572	Hayes Queen 15475
Royal Rose of Easton 15483	Itchen Jewel 1112 E	Royal Rose 4279 E
Rubina T. 6223	Sammy of Paulsdale 1748	Royalette 3299
Rutila's Daughter 6670	Picotte's Squire 1961	Rutila 2912
Rutila's May Rose 24946	May Rose King 8336	Sheet Anchor's Rutila 9170
Sappho 6946 G		
Sarah Bern 34971	Billy of the Picques 1271 G	Buttercup of the Gron 2394 G
Sardinia 1861	Rival de la Croix 172 G	Imp. Suke 7th 1806

Secret's Primrose 18907	Golden Secret 1314 G	Lady Primrose 4878 G
Select 3d 2243	Royal Quand Meme 42 G	Select 1st 1466 G
Select of Wayland 6232	Squire of Larchmount 911	Select 2d 2229
Selma of Pinehurst 14521	Khedive of Pinehurst 6537	Viola Dudley 11533
Selma of Pinehurst 3d 23798	Glenwood Boy of Haddon 4605	Selma of Pinehurst 14521
Sequel's Christine of the Isle 48455	Clara's Sequel 2207 G	Christine XIII 6085 G
Sequel's Honoria 6722 G		
Sheet Anchor's Beda 18228	Rutila's Sheet Anchor 5701	Itchen Beda 15627
Sheet Anchor's Honoria 9163	Sheet Anchor 2934	Imp. Honoria 4th 5989
Sheet Anchor's Rutila 9170	Sheet Anchor 2934	Rutila's Daughter 6670
Silver Gem 2479	Republic 18 G	Silver 1157 G
Sonsie of Waumesit 19724	Norwich Chief 7686	Sonsie of Bendbrook 13712
Spotwood Busy Bee 17606	Island Champion 6263	Busy Bee 3d 2934 G
Starlight of Geneva 9183	Lily's Bonny Boy 2676	Morn 5947
Stranford's Princess 11740	Imp. Masterpiece 4370	Robinson Princess 9839
Sultan's Bonny 25396	Fillmore's Sultan 9117	Bonny Deanie 17086
Susaline 2085	Jeweller 117	Susanne 2d des Haut Chemins 1817
Sweet Maggie 2306 G		
Topsy of the Grandes Capelles 16504	Ranger 1032 G	Jessie 7th 1988 G
Tostevina 3d 3826	Shearman 3d 1225	Tostevina 1668
Tricksey 1760	Champion 2d 130 G	Lady Bird 604 G
Tricksey 3d 3191	Lord Baltimore 456	Tricksey 1760
Trislette's Luetta 26074	Trislette's Derilius 9580	Filius Luetta 16885
Ultra Lady 38913	Ne Plus Ultra 15265	Lady Sterling 27509
Valentine III 7514 G		
Violet IV of the Quartiers 18896	Masher's Sequel 1266 G	Imp. Violet III of the Quartiers 1888
Valentine II 3193 G		
Victress 5626	Marcus Select 1210	Victorine 4th 2547
Violet des Prevosts 4988	Ransom des Belles 192 G	Violet 3169 G
Verona 2722	Medicine Bull 511	Virtue 1621
Vrangue's Favourite 4th 1923 G		
Winona Langlois 9989	Florina 2d's Royal 3106	May Langlois 5752
Worthy Beauty 295	Gen. Meade 13	Pert 294
Yeksa Lind 14275	King of the West 6520	Yeksa Maid 14274
Yeksa's Queen 6631	Puck 1257	Queen Vashtia 6051
Yeksa Sunburst 22576	Endymion 8916	Star of Snowdoun 17271
Yound Prudy 4815	Squire 5th of les Vauxbelets 1269	Les Cheminant 2d 1841
Zara 3471 G		

CHART I.—Sires Descended from Loyal of the Hunguets 978-G (Beauty of Les Fauxquets 1st 1779-G); Sired by Sauteur 283-G.

- | | | | | | |
|---|---|---|---|---|--|
| <p>1. Itchen Jewel 1112-E (May Rose 2d 3251-E).</p> | <p>1. May Rose King 8336 (21-632). (Claremont May Rose 3648-E).</p> | <p>1. King of the May 9901 (33-708). (Itchen Daisy 3d 15630 (760)).</p> | <p>1. Dolly Dimple's May King of Langwater 12997 (10-630). (Dolly Dimple 19144 (1036)).</p> | <p>1. Ne Plus Ultra 15265 (46-687). (Itchen Daisy 3d 15630 (760)).</p> | <p>1. Florham Laddie 20431 (30-662). (Golden Lassie of Paxtang 24696 (715)).</p> <p>2. Florham Monarch 20771 (10-575). (Princess Pretoria 28403 (577)).</p> <p>3. King's Vanguard 22719 (13-627)* (Lovely Rose 33051 (589)).</p> <p>4. Laverna's Ultra May King 24660 (12-585). (Rose Kings Laverna 27294 (554)).</p> <p>5. King's Itchen King 24661 (15-554). (King's Grace 34640 (630)).</p> <p>6. Ne Plus Ultra 4th 29328 (23-707). (Golden Lassie of Paxtang 24696 (715)).</p> |
| | | | | <p>2. Langwater Dictator 15068 (11-513). (Princess Rhea 15479 (789)).</p> | <p>1. Demonstrator of Roughwood 23133 (15-624). (Princess Fay of Hardwick 26495 (509)).</p> |
| | | | | <p>3. Langwater Demonstrator 16451 (66-611). (Hayes Felois 2d 15478 (459)).</p> | |
| | | | | <p>4. Langwater Raritan 17052 (17-566). (Early Rose of Raritan 11782 (631)).</p> | |
| | | | | <p>5. Itchen Daisy's May King of Langwater 17349 (24-637). (Itchen Daisy 3d 15630 (760)).</p> | <p>May King's Laddie of Chilmark 32065 (20-603). (Chilmark Lassie 23129 (477)).</p> |
| | | | | <p>6. Langwater Frenchman 19226 (28-537). (LaBelle Petite 18114 (625)).</p> | <p>*Son of King's Vanguard (above):
Reservation Chesterfield 36609 (13-634). (Mignonette of Maple Row 27265 (643)).</p> |
| | | | | <p>7. Langwater Hambro 21011 (27-551). (Langwater Hayes Rosie 24200 (653)).</p> | |
| | | | | <p>8. Langwater Cavalier 21012 (21-705). (Langwater Daisy 22139 (732)).</p> | |

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|---|--|--|--|
| | | 9. Langwater Pencoyd 21830
(18-658).
(Langwater May Queen
22141 (778). | 1. May Rose Secret of Pencoyd
27844 (14-549).
(Rose of Pencoyd 2d 36499).
2. Pencoyd Quaker Boy 35532
(10-556).
(Quaker Maid of Pencoyd
24233 (782).
3. Pencoyd's Golden May Secret
39626 (14-627).
(Nella Jay 4th 38233 (1061).
(Easton Belle 24201 (563).
4. Langwater Holliston 28055
(10-726). ‡
(Langwater Francaise 35751
(665). |
| 2. Jethro Bass 11366 (30-612)
(Dolly Bloom 12770). | | 1. Jethro's May King of Linda
Vista 14591 (15-620).
(Langwater Rosie 21333
(754).
2. Langwater Rival 14194 (16-
639).
(Royal Rival's Queen
20130).
3. George Washington of Fair-
(Hayes Richesse 2d 15474
field Farm 10866 (12-516).
(657).
4. May King of Ingleside 12558
(22-521).
(Dolly Bloom of Lang-
water 15452 (658).
5. Rhea's King of the May
14368 (21-514).
(Princess Rhea 3d 21331).
6. Langwater Royal 14253 (27-
616).
(Langwater Royal Rose
21334).
7. King of Medfield 15434 (10-
549).
(Hayes Rosie 3d 15477).
8. Langwater Hayes Rosie's
King of the May 16723 (27-
681).
(Langwater Hayes Rosie
24200 (654).
9. Langwater King of France
16724 (6-556).
(La Belle Petite 18114 (626). | 1. Bell Buoy of Linda Vista
19430 (32-575).
(Easton Belle 24201 (563).
2. Don Bernardo of Linda Vista
20617 (11-629). *
(Rutilla's May Rose 24946
(783).
3. Don Diavolo of Linda Vista
23565 (11-635).
(Queen of the Roses 24999
(853). †
4. Langwater Francaise 35751
(665).
(Sons of 2, 3 and 4, above)
*Ultra May King 27600 (17-707).
(Ultra Lady 38913 (753).
†St. Austell Dreadnought 34671
(10-501).
(Coinia of Hillhurst 35496
(657).
‡Langwater Travelor 38325 (15-
678).
(Langwater Lustre 47044
(887). |
| | | Pretoria's King of Midlothian
22641 (10-601).
(Doris Pretoria 24620 (673).
May King's Vrangue of Ingleside
15430 (37-634).
(Linden's Young Polly
Vrangue 18630 (487).
Langwater Royal 7th 20632 (18-
588).
(Pansy K. of Pomeroy
24604 (407).
Hope's May Rose of Maple Hill
35903 (12-516).
(Lady's Hope of Maple
Hill 44843 (937).
Sister's King 33653 (11-562).
(Black Eyed Sis of Maple-
hurst 26819). | |

- 10. Langwater Stars and Stripes 21872 (14-708).
(Dolly Dimple 19144 (1036)).
- 11. Langwater Fisherman 21873 (12-549).
(Langwater Pearl 26605 (693)).
- 12. Langwater Frederick 22268 (17-553).
(Frederick's Lily 35770 (536)).
- 13. Langwater Royal Master 23663 (14-632).
(Royal Rose of Easton 15483 (618)).
- 14. Langwater Warrior 26509 (23-701).
(Langwater Lily 26606 (561)).

Brookmead's White Face 32211 (17-716).
(Deanie Woodburn of Brookmead 2d 37095 (563)).

- 2. Beda's May King 11893 (41-640).
(Sheet Anchor's Beda 18228 (462)).

- 3. Langwater May King 13001 (20-590).
La Belle Petite 18114 (626).
- 1. May King of Linda Vista 17946 (16-599).
(Queen of the Roses 24999 (853)).
- 2. Jacqueminot of Linda Vista 23564 (20-537).
(Langwater Rosie 21333 (754)).
- 3. Moonlight King of Anna Dean Farm (13-546).
(Daisy Moon III 28471 (940)).

- 4. May Rose King 2d 13130 (16-594).
(Secret's Primrose 18907).

- 5. King Bell 13482 (10-707).
(Bella III of the Ramee 18899).
- Barrington May King 19312 (19-595).
(Ashland's Violet of Lyndon Heights 22045 (538)).
- Rosie's Golden King of Oakhurst 31630 (10-639).
(Rosie V of the Bourg de Bas 36380 (896)).

- 6. Beau Regal 13448 (13-561).
(Beauty of the Isle 10927 (455)).

- 7. May Rose King 3d 13449 (4-570).
(Elsie 3d of Level Green 7965 (593)).
- Rockingham 18120 (10-573).
(Rosy of Palotterie IV 18897 (721)).

- 2. May Day 1132-E.
(May Rose 2d 3251-G).

Merry Anton 8337 (3-504).
(Antonia 14733 (495)).

{ Lavanton 11611 (10-729).
(Lavesa R 15064 (469)).

{ Rex of Rich Neck 31472 (15-645).
(Bloomfield Pandora 20760 (780)).

CHART II.—Sires Descended from Compact 1076, Through His Son Governor of the Chene 1297-G (112-524) Out of Richesse du Chene VIII 4004-G.

- | | | |
|--|--|---|
| <p>1. Cora's Governor of Chilmark 8971 (46-561).
(Cora's Queen's Prize 16004 (514)).</p> <p>2. Governor I of the Chene 10563 (24-639).</p> | <p>{ Archer of Chilmark 13376 (S-489).
(Lady Archer XII 17539 (488)).</p> | <p>{ King of Chilmark 2079S (24-6S9).
(Antoinette's Queen's Prize VII 16010 (497)).</p> |
| <p>3. Ringdale Bella II 4441-G).
Golden Hero of l'Etiennerie 12647 (16-553).
(Royal Princess Cora I of l'Etiennerie 5301-G).</p> | <p>{ Holden IV 12179 (12-621).
(Buttercup of the Gron 2394-G).</p> | <p>{ Prince Regent of Meadowbrook 15962 (9-612).
(Queen Regent IV 22716 (S05)).</p> <p>{ Allenwood King Regent 23641 (13-562).
(Princess Deassie 36703 (875)).</p> |
| <p>4. Royal Governor of l'Etiennerie 14S4-G (10-547).
(Antoinette's Queen's Prize 3011-G).</p> | <p>{ Pride of Day 17126 (14-529).
(Beauty 5th of the Adams 34S3-G).</p> | <p>{ 1. Souvenir de l'Etiennerie 21925 (17-523).
(Antoinette's Queen's Prize V 4843-G).
2. Governor of Myrtle Place II 409S5 (11-501).
(La Fleur du Jardin XII 5619-G).</p> <p>{ Governor of Carteret 3421-G (13-569).
(Valentine II 3193-G).</p> |
| <p>5. The Conqueror II 15323 (17-542).
(Primrose of the Gree 28518).</p> | <p>{ 1. Governor II of the Gree 19123 (15-500).
(Sweet Maggie 2306-G).
2. Brilliant of the Gree 2377-G (16-567).
(Buttercup du Pont 344S-G).</p> | |
| <p>6. Gay Boy of the Isle 1699S (17-581).
(La Fleur du Jardin X 4706-G).</p> <p>7. Coronation King IV 1704-G (3-5S8).
(Island Butter Queen 19661 (622)).</p> | <p>{ St. John 2063 (5-470).
(Lady Jauncey 5090-G).</p> | <p>{ Flora's Sequel of Vimiera 25905 (20-572).
(Flora of Vimiera 45954).</p> |
| <p>8. The Conqueror III 19S15 (11-474).
(Primrose of the Gree 28518).</p> <p>9. Gay Boy VI of Myrtle Place 3518-G (13-654).
(La Fleur du Jardin X 4706-G).</p> | <p>{ Brilliant of the Gree II 2944-G (10-491).
(Buttercup du Pont 344S-G).</p> | |
| <p>10. Governor of the Vanquiedor 39925 (20-508).
(Sappho 6946-G).</p> | | |

CHART III.—Sires Descended from Masher 705-G

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|--|---|---|--|--|---|--|
| 1. Island Champion 62-63 (8-507). (Vrangue's Favorite 4th 1923-G). | 1. France's Masher 2d 7248 (12-512). (La Belle France 14454). | 1. Masher's Galore 8572 (22-615). (Zara 3471-G). | 1. Begalore 10101 (13-540) (Beatrice of the Isles 16005 (619)). | 1. King Masher 5th 18361 (20-573). (Masher's Elsie 24986 (890)). | King Masher's King 24686 (4-466). (Brightness of Glenburnie 30742 (811)). | Sunburst's King Masher 37423 (16-420). (Yeksa Sunburst 22576 (605)). |
| | | | 2. King Masher 11084 (23-665). (Antoinette's Queen's Prize VII 16010 (497)). | | | |
| | | 2. Masher's Sequel 11462 (70-511). (Lena from the Isle 140-15). | 1. Spotswood Sequel 9686 (30-532). (Spotswood Busy Bee 17606). | 2. King Masher 8th 20973 (11-595). (Masher's Elsie 24986 (890)). | | |
| | | | 2. Spotswood Masher Sequel 9687 (11-504). (Justinee's Golden Queen 17552 (593)). | | | |
| | | | 3. Ramee's Sequel 10463 (11-467). (Gracieuse III of the Ramee 18676). | | | |
| | | | 4. Raymond of the Preel 11353 (17-451). (Justinee I 4054 G). | 1. Raymond of the Preel II 13381 (12-475). (Flower of the Preel 2099-G). | Raymond's Pourquoi Pas 17653 (4-501). (Daisy II of the Vi-declius 4039-G). | Dan Patch of the Isle 21293 (11-517). (La Fleur du Jardin XIII 36189). |
| | | | | 2. Raymond of the Preel IV 19235 (17-505). (Fillpail XIV 26619). | Raymond's Pearl King 24301 (16-506). (Princess May of the Hunguets IV 7574-G). | |
| | | | | 3. Raymond of the Preel VI 14360 (12-467). (Flora of the Effards 2773-G). | | |
| | | | | 4. Raymond of the Preel VII 14361 (5-466). (Lady Alderney 5682-G). | Preel VII's Champion Butter Boy 26132 (13-425). (Beauty of the Willowdale 27348 (432)). | |
| | | | 5. France's Jewel V 11396 (7-466). (France VI 4620-G). | Jewel's Royal Combination of Wawa 15655 (11-589). (Jewel of Haddon 11259 (437)). | | |
| | | | 6. Billy's France 12476 (7-500). (Justinee I 4054-G). | 1. Billy's France of the Isle 21183 (24-506). (Fascination II 4665-G). | Sailor Boy 28600. (Valentine III 7514-G). | Sailor Lad of the Fontaines 51090 (17-605). (Fanny III of the Port 10592-G). |
| | | | | 2. Billy's Fancy 2205-G (4-636). (Daisy V of the Effards 5647-G). | | |

2. Romulus VI 979-G	Rival of Mont Marche 1164-G.	Mate 1270-G.	Prince of La Vrangue 1493-G.	Lord Mar 14359 (30-557). (Miriam of the Isle 21337).	Lord Mar V 18961 (10-456). (Countess of les Nouettes 36184).	1. Flora's Sequel II of Vimiera 28603 (19-608). (Flora of Vimiera 45954).	2. Honoria's Sequel II 40668 (16-568). (Sequel's Honoria 6722-G).	Valentine's Honour of the Passee 3784-G (13-640). (Valentine III 7514-G).					
									3. Masher's Masher 1314. (France's Milk Maid 15341 (761)).	7. Sequel's Monogram 15649 (30-543). (France's Honoria 4670-G).	1. Clara's Sequel 29414 (52-584). (Clara XVI of the Rouvets 5476-G).	1. Flora's Sequel II of Vimiera 28603 (19-608). (Flora of Vimiera 45954).	2. Honoria's Sequel II 40668 (16-568). (Sequel's Honoria 6722-G).
2. Guernsey Champion 8218 (2-513). Sheet Anchor's Honoria 9163).	Triple Champion 13067 (18-544). (Violet IV of the Quartiers 18896 (446)).	Bell-founder 11681 (19-694). (Island Blossom 18886 (429)).	8. Fanny's Sequel 19563 (28-478). (Masher's Fanny 5070-G).	9. Galaxy's Sequel 16904 (53-523). (Galaxy 4422-G).	1. Aimable of France 13739 (10-552). (Armour des Frances IV 5208-G).	2. Gay Lad du Braye 2026-G (18-543). (Gay Lass of Lilyvale 4526-G).	Gay Lad's Hero 2514-G (13-485). (Lizette I of the Spurs 35334).	3. Duke of Moulpied 2045-G (11-523). (Golden Reality 4868-G).	4. Justinees Sequel of the Preel 2119-G (39-539). (Justinee IV 5091-G).	5. Sequel's Delight 2442 (10-589). (Fac-simile 4669-G).	6. Dandy of La Hougue 15005. (Miriam VI 27821 (519). King Masher's King 24686	May King of Frie Baton 21184 (6-561). (May Rose II of la Masse 3519-G).	Emblem of France II 3246-G (6-501). (Lily du Preel XIV 50403).
3. Bell-Metal 9052. (Belvidera 7644 (438)).	Bell-founder 11681 (19-694). (Island Blossom 18886 (429)).	Mate 1270-G.	8. Fanny's Sequel 19563 (28-478). (Masher's Fanny 5070-G).	9. Galaxy's Sequel 16904 (53-523). (Galaxy 4422-G).	1. Aimable of France 13739 (10-552). (Armour des Frances IV 5208-G).	2. Gay Lad du Braye 2026-G (18-543). (Gay Lass of Lilyvale 4526-G).	Gay Lad's Hero 2514-G (13-485). (Lizette I of the Spurs 35334).	3. Duke of Moulpied 2045-G (11-523). (Golden Reality 4868-G).	4. Justinees Sequel of the Preel 2119-G (39-539). (Justinee IV 5091-G).	5. Sequel's Delight 2442 (10-589). (Fac-simile 4669-G).	6. Dandy of La Hougue 15005. (Miriam VI 27821 (519). King Masher's King 24686	May King of Frie Baton 21184 (6-561). (May Rose II of la Masse 3519-G).	Emblem of France II 3246-G (6-501). (Lily du Preel XIV 50403).

*Son of Masher's Masher (in third column above) Jardiniere's Masher 20957 (14-661).
(La Belle Jardiniere 24945).

CHART IV.—Sires Descended from Sheet Anchor 2934 (4-480) (Bienfaitrice 4th 3657; Sired by Lord Stranford 2187 (Miss Maggie 2216-G); Sired by Chronicer 418-G.

- | | | | | | | | |
|---|---|---|---|---|---|---|--|
| 1. Best Bower 4715 (4-476).
(Belvidera 7644 (438)). | { | Strong Anchor 5849 (15-491).
(Deanie 3d 7643). | { | 1. Roy of Norwood 8141 (18-530)
(Nancy Mac 11523). | { | Uncle Jim 16740 (17-540).
(Topsy of the Grandes
Capelles 16504). | |
| | | | | 2. Milford Lassie 2d's Anchor
8467 (3-490).
(Milford Lassie 2d 15257).
Glenwood Chief of Haddon 7076
(4-431).
(Glenwood Girl 2d 9108). | | | Betsey's Glenwood 12319 (2-
564).
(Betsey of Maplehurst
15426 (369)). |
| 2. Main Stay 3789 (9-439).
(Rutila's Daughter
6670). | { | 1. Donald of Pinehurst 5643.
(Cora 2d of Level Green
7432). | { | Glenwood's Main Sheet 8876 (10-
495).
(Auricula 2d 12209 (606)). | { | Glenwood's Son of Gayhead
19617 (10-551).
Olive of Chatham 16814) | |
| | | 2. Main Sheet of Pinehurst
6525.
(Glenwood Girl 4th
9110). | | | | | |
| 3. Glenwood's Main Stay 6067
(26-482).
(Glenwood Girl 6th
9113 (579)). | { | 1. Glenwood's Reputation
7687 (20-533).
(Glenwood Girl 2d 9108) | { | Reputation of Portage 10695 (11-
632).
(Jeweller's Fantine 14714). | { | Ideal's Senator 14736 (13-474).
(Ideal of Prospect Farm
15345 (454)). | |
| | | 2. Glenwood's Main Stay 6th
8641 (8-426).
(Arbutus of Haddon
10841). | | Senator Trowbridge 1135 (6-522).
(Lady Trowbridge 14085
361). | | | |
| | | 3. Glenwood's Main Stay 16th
9384 (10-597).
(Bess of Bendbrook
10003 (529)). | | Barmouth of Pencoyd 11059 (12-
461).
(Mary McFarland 13226
582). | | | 1. Bob Rilma 16141 (7-584).
(May Rilma 22761
1087). |
| | | 4. Selma's Main Stay 17493.
(Selma of Pinehurst 3d
23798 (612)). | | Selma's Main Stay's Son 23585
(14-476).
(Alphea of Pinehurst 3d
35069 (470)). | | | 2. Major Rilma 18791 (14-
549).
(Miss Rilma 19834 (610)). |
| 5. Glenwood's Main Stay 40th
28108 (12-537).
(Crease of Haddon 28923
(448)). | { | Fantineilly's Glenwood Boy 9508
(Fantineilly's 14898 (343)). | { | Christie's Combination 14651
(10-475).
(Conovia 14648 (434)). | | | |
| 6. Main Stay's Glenwood
Boy 7607.
(Jewel of Haddon 11259
(437)). | | | | | | | |

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|--|---|--|---|---|---|--|
| 4. Sheet Anchor 3d 4714.
(Deanie 3d 7643). | 1. Prince of Groton 9841 (29-474).
(Neuetzin 10658). | 2. Sea-dog 6313.
(Deanie 7th 10926). | 1. Nansen 8235 (3-495).
(Nectar 2d 9371). | Norfolk Squire 11365 (14-504).
(Nana 3d 11432). | | |
| | | | | | 2. Couleur's Sheet Anchor 13499
(2-582). | 1. Florham Golden Lad 18119
(12-571).
(Golden Lassie of Paxtang
24696 (715)). |
| 5. None-Like 7624.
(Rutila's Daughter
6670). | | | | | | |
| 6. Rutila's Sheet Anchor 5701
(11-505).
(Rutila's Daughter
6670). | 1. Florham King 8401.
(Charmante of the Gron
1442 (685)). | 2. Marshall of France 9051
(12-549).
(Bonne et Belle 14455). | 3. Pretor 9316 (14-524).
(Pretoria 14443 (633)). | 1. Charmante's Rose King 11746 (11-624).
(Rose of York 17290 (505)). | | |
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CHART V.—Sires Descended from Loyal of the Hunguets 978-G (Beauty of les Fauxquets 1st 1799-G); Sired by Sautteur 283-G.

Claremont 1091-E.	Westward Ho	Yeo 1440-E. (Claremont Hyacinth 4740-E).	Yeoman 8618 (9-594). (Hayes Rosie 15476 714).	1. Modena's Yeoman of Langwater 10764 (15-553). (Modena 11779 (731).	Duke of Waumesit 13480 (12-555). (Sonie of Waumesit 19724).
				2. Dimple Bloom 14369 (10-557). (Langwater Dolly Dollars 21332).	
				3. Langwater Princeling 14906 (19-484). (Langwater Princess 22138 (855).	
				4. Yeoman's King of the May 17053 (84-610). (Florham Daisy 18115).	Dean of the May 21815 (20-526). (Sultau's Bonny 25396 (629)
				5. Yeoman's King Victor 22295 (15-539) (Presidents Italia 29151).	
				6. Langwater Peerless 19227 (12-559). (Langwater Nancy 27943 (1012).	
				7. Langwater Advocate 20514 (8-564). (Langwater Dolly Bloom 22136 (868).	Langwater Islander 31329 (10-530). (Polly of the Russel 33217 (442).

CHART VI.—Sires Descended from Golden Secret 12599 (15-529) (Rose of Gold 3668-G); Sired by Columbia R. G. A. S. 1185 P. S. (3-508) (Daisy des Vinaires R. G. A. S. 1925 F. S.; Sired by Massachusetts R. G. A. S. 293 F. S.

1. Golden Secret of Lillyvale 10028 (23-674). (Lady Beatrice of Lillyvale 18526).	2. Golden Noble 10508 (5-535). (Eva of the Spurs 18884 (484).	3. Goldseeker of Anna Dean Farm 26106 (18-547) (Itchen Lily 4112-E).	4. Pencoyd's Golden Secret 16550 (14-538). (Langwater Early Rose 19145).	5. Victor of Pencoyd 18901 (18-575). (Jessie of Maple Lane 23457 (598).	6. Golden Secret of Pencoyd 23462 (22-536). (Rose of Pencoyd 27300 (874).	7. Langwater Golden Secret 26510 (14-579). (Langwater May Queen 22141 (778).	Golden Noble II 1836-G (29-590). (Dairy Maid I du Briquet 23219).	1. Squire II of the Camp 15237 (2-508). (Sarah Bern 34971).	Baubigny's Squire of Keewaydin 21834 (11-577). (Baubigny's Daisy 25801 (642).
								2. Panama Lad 15383 (11-463). (Panama 2590-G).	

CHART VII.—Sires Descended from Pat of Haddon 3919 (4-472) (Bess of Ogier 835; Sired by Darius 1164 (Daisy Le Galle 1100); Sired by Forget Me Not 587 (Leslie 586-G); Sired by Cato 137-G.

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|---|---|---|--|--|---|---|
| Glenwood Boy of Haddon 4605
(26-521).
(Glenwood Girl 2d 910S). | } | 1. Glenwood's Combination 8927 (5-509).
(Glenwood Girl 6th 9113 (579)). | { | Glenwood's Combination Sth 12550 (11-492).
(Elberon of Fairview S907 (489)). | | |
| | | 2. Glenwood's Stranford 9386 (20-516).
Stranford's Princess 11740 (742). | | | | |
| | | 3. Marcia's Glenwood of Pinehurst 11560 (10-546).
(Marcia of Pinehurst 13094 (534)). | | | | |
| | | 4. Selma's Glenwood 12596 (19-478).
(Selma of Pinehurst 14521 (776)). | | | | |
| | | 5. Stranford's Glenwood of Pinehurst 13609 (14-565).
(Stranford's Princess 11740 (742)). | { | Dairymaid's Pride of Iowa 14941 (15-518).
(Dairymaid of Pinehurst 24656 (969)). | } | 1. Dairymaid's Standard of Iowa 28946 (12-541).
(Lady Dairymaid of Pinehurst 29723 (819)). |
| | | | | 2. Jessy Rose's Pride of Iowa 23955 (19-519).
(Jessy Rose X 28373 (771)). | | |
| | | | 3. Dairymaid's Criterion of Iowa 28187 (12-598).
(Itchen May Rose 6th 40319 (720)). | | | |
| | | 6. Dairymaid's King 12898 (21-490).
(Dairymaid of Elm Place 14197 (677)). | | | | |
| | | 7. Dairymaid's Choice of Pinehurst 13618 (13-497).
(Dairymaid of Elm Place 14197 (677)). | | | | |
| 8. Christy of Pinehurst 13619 (7-480).
(Christine of Pinehurst 13940 (510)). | { | Christy of Pinehurst 31st 31984 (10-479).
(Oak Lawn Lassie 11374). | | | | |
| 9. Glenwood's Champion 15639 (28-527).
(Coralie of Pinehurst 13057). | | | | | | |

CHART VIII.—Sires Descended from Count Fernwood 958 (Countess of Fernwood 1464); Sired by Sir Fernwood 490 (Elegante 592); Sired by Fernwood 190 (Fernwood Fancy 37).

Count Pauls- dale 1655. (Countess of Fern wood 1464).	S p r i n g e r 2 6 8 5 (2-485). (Miss Amy 504).	1. Standard 4652 (3-622). (Duchinette 2d 7237).	1. Capt. Robbie 7146 (11-442). (Robiline 7618).	2. Starlight Excelsior 7992 (24-521). (Starlight of Geneva 9183 (504).	Ukiah 14344 (14-405). (L a d y Lavene 12896 (529).	Overture of Prospect 32821 (10-456). (Contessa's Delight 27340 (485).	1. Mayflower's Casterilius 13933. (Mayflower of Eagle 18119 (464).	2. Casterilius of Nelsonville 18052 (10-587). (Trislette's Luetta 26074 (535).	Joker of Riv- erside 21447 (10-595 (Com- eta's Best 26135).					
										2. Filius 4397 (3-472). (Maternalette 2d 6S54).	Derilius 6643 (7-442). (Cinderella 3251).	Casterilius 10980 (18- 463). (Castello 9754).	1. Mayflower's Casterilius 13933. (Mayflower of Eagle 18119 (464).	2. Casterilius of Nelsonville 18052 (10-587). (Trislette's Luetta 26074 (535).
										3. Spring Morning 4944. (Morn 5947 (423).	Lily Ella's Squire 6597 (15- 494). (Lily Ella 7240).			

CHART IX.—Sires Descended from Bonny Boy 1097 (Bonnie Lassie of Fernwood 1485); Sired by Fernwood Royal 645 Liliputian 694-G); Sired by Presto 14-G.

1. Sammy of Paulsdale 1748. (Annie of Paulsdale 2706).	1. Treynore 3525 (5-524). (Tricksey 3d 3191).	2. Sammy, Jr., 3054. (Cinderella 3251).	Skeezicks 9979 (13-484). (Yeksa Lind 14275 (716)	Sammy's Sampson 4483. (Susaline 2085).	Lord Yeksa 6451 (7-580). (Yeksa's Queen 6631).	Lord Waukesha 10148 (18-575) (Rubina T. 6223).					
							2. Viscount 2177 (2-402). (Countess of Fernwood 1464).	Coralette's Son 3987 (12-399). (Coralette 5722).			
							3. Bonny Boy 2d 3427. (Fernwood Lily 1468).	Paxinosa 4454. (Normandle of Paulsdale 4865).	Divan 5846 (4-622). (Kitty Clover 8803).	Dan Patch 6851 (10-500). (Maid of Orange 4155).	

CHART X.—Sires Descended from Barney 1568 (Coraline 1790); Sired by Buckskin 834 (Beauty of Bloomfield 2d 101); Sired by Traveller 340 (Jessie of Lester Manor 740).

Lord of Kenosha 2660 (Champion Sweet Briar 3d 3021).	1. King or Rosendale 4488. (Queen of Chenequa 6544).	2. Buckthorn 4781 (11-547). (Queen of Chenequa 6544).	3. Gold Basis 4660 (2-409). (Fantine 2d 3730).	King Coral 5238 (22-474). (Lady Coral 8605).	Rutila's Gold Basis 5625 (13-487). (Sheet Anchor's Rutila 9170 (484).	General Bay 16177 (11-506). (Ononbago's Bay 10868 (446).			

CHART XI.—A Genealogical Chart Showing the Sires Descended from Several Notable Guerensey Bulls.

Jumbo 59-A. (Cherry 332-A).	{ Masher 63-A (33-469). (Nellie 393-A).	{ 1. Alderney Raymond 26357 (29-516). (Lively II 346-A).	{ Raymond of Blaye Farm 191-A (13-521). (Daisy II 794-A).
		{ 2. Masher of Sarnia 19167 (11-541). (May 496-A).	{ Giltedge of Koshkonong Place 21989 (21-538).
		{ 3. Prince of Sarnia 22000 (21-523). (Queen of Anna Dean Farm 47585).	{ (Galaxy's Pride of Koshkonong Place 35637 (399).
		{ 4. Masher of Rose Farm 75-A (11-480). (Cherry 332-A).	
Guiding Star of the Tertre 1448-G.	{ 1. France's Jewel VII 10564 (6-459). (France XIV 26617 (527)	{ Jewel of Koshkonong Place 12202 (9-442). (Roselyn I of Rose Farm 19693).	{ 1. Julian of Koshkonong Place 14409 (10-598). (Blossom of Koshkonong Place 24507 (730).
			{ Golden Lassie's Julian 27704 (18-674). (Golden Lassie of Pax- tang 28211 (715).
	{ 2. Taylor's Nelson 1775-G (4- 519). (Amy of St. Andrew's 35518).	{ Surprise 2054-G (13-610). (Miriam VI 27821 (520).	{ 2. Jury of Koshkonong Place 16793 (24-497). (Blossom of Koshkonong Place 24507 (730).
Squire of Les Vauxbelets 35-G.	{ 1. Squire of Les Vauxbelets 4th 771. (Lady Emily Foley 2d 1700).	{ 1. Tricksey's Squire 2542. (Tricksey 1760).	{ Success of Avon 2900. (Yound Prudy 4815).
			{ Violets Duke 4222 (2-464). (Violet des Prevosts 4988).
			{ Sir Henry of Home- stead 8782 (2- 468). (Grace Fern- wood 16395).
			{ Smith of Home- stead 10654. (Countess of Level Green 4198).
			{ Golden Anne's Fernwood of Home- stead 11916 (16-461). (Golden Anne 13135)
	{ 2. Count Lonan 3516 (2-457). (Emma's Luella 4449).	{ Wolfram 5640 (10- 470). (Materna 1334).	{ Robiana's Standard 7254 (21-473). (Robiana 9182).
			{ Prince of the Em- erald Farm 12120. (Fesca 7619 (363).
			{ Daisy's Valentine 16603 (10-504). (Fes Lips Daisy 19843).
	{ 2. Squire 5th of Les Vauxbe- lets 1269. Silver Gem 2479).	{ Solomon F. 2386 (2-466). (Sardinia 1861).	{ Solomon F. 2d 3951 (4-521). (Belle F. 5558).
			{ Malcolm of Maple- hurst 5626 (12- 454). (Elite of Maplehurst 8452 (483).

Herald 206-G. { Herald 2d 994. (Nora 2d 165-G). { Herald's Select 1364 (Select 2243). { Vidette 1874 (Rose Martin 162). { Gurdyette 3966 (5-667). (Yeksa's Queen 6631). { 1. Endymion S916 (16-533). (Linda-nora 12754 379). { 2. Rinaldo S917 (11-601). (Belie R. 6933). { Guiding Star 12423 (15-486). (Starlight of Geneva 9183 594). { Sir Snowdown 19252 (20-496). (Yeksa Sun-burst 22576 605).

Lord Stranford 2d 560-G. { Golden Knight 3405. (Jesse 7th 1988-G). { 1. Penwyn 4590 (3-537). (Victress 5626). { 2. Lord Hardwick 3910. (Select of Wayland 6232). { Penwyn 2d 7559 (10-400). (Dairymaid of Elm Place 14197 677). { Lord Hardwick 2d 5981 (8-458). (Dairy Queen 2d of Falmouth 3595). { Penwyn of Rosendale 11282 (11-566). (Meralette 2d 14731 665). { Hardtack 9S11. (Long Queen 8166). { Hardtack of Groton 11697 (12-493). (Angela of Groton 10674).

Freedom 58-A { Nelson II 52-A (12-497). (Judy 416-A).

Golden Jewel 1336-G. { Princess Jewel 24877 (31-515). (Princess Raglan 18887). { Diamond of the Tertre 24878 (12-468). (Daisy of the Tertre 3112-G).

Chieftain 62-A (2-410). { Chieftain of des Chevaliers 18419 (8-505). (Daisy III 857-A). { Nelson of the Cachellere 174-A (12-511). (Primrose of Cachellere 5542-A). { Francis Jewel 3738. { Le Grand of Ches-ter 4169. (La Grippe 4801). { Le Grand Duke 6193 (2-545). (Beauty of Berwyn 5160). { Ollie's King of Belle Vernon 8041 (11-482). (Ollie of Belle Vernon 10775 560). { Cora's King of Bellevue 9779 (11-569). (Cora White 13515).

His Majesty II 1187-G. { His Majesty III 11211 (4-418). (Royal Daisy 4287-G). { Roman Emperor 10212 (2-628). (Bilinda II 2288-G). { Emperor's Harvest 12180 (4-621). (La Fontaine II 5510-G). { Lehigh's Golden Emperor 15761 (18-517). (Nelly of the Clos 22691).

Pas Mal IV 945-G.

{ Royal of La Lande 6223 (S-440).
(Belle Robine 1962-G). } Vaillant Coeur 7749 (13-416).
(Francette 4th 12095).

Duke of Normandy 712.
(Duchess of Normandy 317-G); sired by Cato 137. { Gully's Duke 1664.
(Gully 5th 1590). } Lilly's Prince 2205.
(Lily de la Haye du Puits 1594). } Duke of B. Royal 3105.
(Duchess of Brittany 2d 3526). } Gully's Duke of German 4645
(2-464). (Gully 5th's Daughter 4582). } Prince Hiawatha 6216.
(Princess Jane Ford 6320). } Onoko 8826 (3-393).
(Juganita 11097 (463). } Onoko of Maple Row 11522
(10-537). (Winona Langlois 9989).

Loyal 2d 110-G. { Safeguard 1790.
(Diss 1329-G). } Rocmont 2021.
(Rosette 5th 3696). } Rocmont of Level Green 3759 (2-523).
(Gipsy 2d of Level Green 4200). } Dewey of Riverside 5710
(2-465). (Gipsy 3d of Level Green 4201). } Fernwood of Homestead 7448 (8-556).
(Gallezette 2d 13131). } Brockton of the Glen 15739
(10-667). (Phillipena of the Glen 12778).

Sir Champion 38 { Jeweller 117.
(Worthy Beauty 295). } Jeweller 15th 1274.
(Buttercup of Martel 1044). } Benjamin 1931 (4-498).
(Tricksey 1760). } Ben Loeman 4685.
(Fernwood Roanoke 2d 8297). } Radium 9193 (12-445).
(Custer's Belle 9514).

Cromwell 520 (Guernsey Buttercup 1361). { Cromwell 2d 977
(Brunette 2173). } Cato's Prince 1957.
(Brunette 2137). } Monibars 2799.
(Tostevina 3d 3826). } Vesta's Son 5011.
(Nubia's Vesta 5986). } Gypson 6471.
(Gypsy of Racine 9639). } Gypson's Count 8125 (18-434).
(Count Topsy 11680).

Vaillant 55-G { St. Peter Port 993.
(Lad y Flora 639-G). } Reformation 2894
(Peters Rachel 5246). } Vigilant 3404
(Verona 2722). } Don of Hampshire 5044
(Damsel 4030). } Daledon 7355.
(Hephzibah 9070). } Jewel's Independence 10324 (10-626).
(Little Jewel 7517). } Fernwood Lily's Son 3931. } Mohonk 6246.
(Jenny of the Fries 9693). } Norwich Chief 7686.
(Isabel Hayes 9124). } Lucretia's Chief of Waumesit 12385 (13-518).
(Lucretia's Glenwood Girl of Haddon 16240).

Rival of Mont Marche 1164-G. { Rival of Spotswood 8839.
(Lady West 2d 6218-G). } Spotswood's Rival 8346 (12-581).
(Itchen Laly 2d 15194).

My Fancy 1949-G. { Robert's Boy 21662 (13-520).
(Lady Roberts 2116-G). } Robert's Criterion of Bellview 26887 (18-589).
(France XXVIII 8333-G).

San Francisco of the Brickfield 1886-G. { Sir Henry 2213-G (10-620).
(Rouge of the Brickfield 40144).

Governor II of the Pordevins 2050-G. { Rouge II's Son 18587 (10-471).
(Rouge II of the Brickfield 28335).

Similax of the Niaux II 1508-G. { Northern Boy 1779-G (11-448).
(Confidence III 4890-G).

Itchen Raider 1679-E. { Moss Raider 22155 (15-536).
(Itchen Moss Rose 40308 (478). { Itchen Red Raider 27342 (10-549).
(Itchen May Rose 4839 E). { 1. Border Raider 22243 (30-618).
(Itchen Verbena 5501 E). { Lohier's Beta Raider of Wad-
dington 35442 (20-516).
(Lohier's Polly II 33688 (634).
2. Itchen May King 25174 (20-574). { Itchen May King of Stannox
(Itchen Verbena 5501 E). { 34377 (13-534).
(Sequel's Christine of the Isle 48455 (622).

Itchen Royal 1756-E. { Hayes Branch 2034-E.
(Olive Branch 5258-E). { Hayes Cherub 2d 25147 (16-630).
(Hayes Golden Cherry 3d 44965). { 1. Cherub's Winner 34180 (14-575).
(Rosalie of Moulpied 37755).
2. Ladysmith's Cherub 30760 (12-688).
(Ladysmith of the Isle 28355 (610).

Beda's Last 2119-E. { Beda's May Day 34995 (10-546).
(Itchen May Rose 5th 8572-E).
