

T H E A N C E S T R A L D E S C E N T O F I M P O R T A N T

H A M P S H I R E S H E E P

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
REVIEW OF LITERATURE	2
History and Development of Hampshire Sheep	2
Review of Genealogical Studies of Various	
Breeds of Livestock	7
Other Pertinent Literature	11
THE INVESTIGATION	14
Procedure	14
Results	15
Rating Important Sires of Show Ring Winners	15
Rating Important Rams as Sires of Ewes Able	
to Produce Winners	22
The Genealogy Table	30
Breeding Systems Followed in Production of	
Winning Sheep	49
Relation of Age of Sire and Dam to Quality	
of Offspring	51
Sexual Preferential of Offspring as Indicated	
by Important Sires	54
DISCUSSION	59
SUMMARY AND CONCLUSIONS	63
LITERATURE CITED	65
ACKNOWLEDGMENT	68

INTRODUCTION

The objects of this study were first, to determine important sires of the Hampshire breed of sheep in the United States; second, to show the ancestral descent of important sires by preparing a genealogy table; third, to determine whether the breed has developed as separate families and if so to determine the importance of each; fourth, to study systems of matings responsible for the production of winning individuals as a guide for future breeding programs; fifth, to determine the effect of the age of sire and dam on the offspring; and sixth, to compare the ability of outstanding rams to sire both male and female offspring of equal winning ability.

REVIEW OF LITERATURE

History and Development of the Hampshire Breed of Sheep

According to information from Carter (3) and Squarey and Rawlence (18), breeds of livestock of English origin very often developed from local races or sub-groups in isolation, to become distinct breeds. Crosses of two or more of these local groups or races very often occurred, and subsequent periods of inbreeding and strict selection fixed desired type and characteristics. The early development of Hampshire sheep is not unlike this plan.

The counties of Wilts, Hants, and Berks in south central England taken collectively are the birthplaces of Hampshires. This area is known as the West County Downs and has a rolling fairly fertile chalk soil heavier, and more fertile than soils of Sussex to the east, the birthplace of the Southdown breed.

Two native breeds of sheep were found in this area, the Wiltshire Horned breed in Wilts and the Berkshire Knots in Berks. These two breeds differed greatly. The Wiltshire Horn was a large, rangy, thin breed with poor mutton qualities. Curved horns and white or mottled face, ears, and legs were characteristic. They sheared a light fleece of rather fine wool. Their early economic value was principally for dung and wool. The Berkshire Knots were similar in mutton qualities but were much smaller animals. Typical face and leg coloring was brown to

black. Short horns or scurs were the rule although the polled condition existed. These two breeds merged with each other, especially on border lines, and also with the early Southdowns along the Sussex border and with the Dorset Horns in Dorsetshire.

Cropping systems began to be improved, commercial fertilizers came into existence, market demands started shifting from mutton cuts from one and two-year-old wethers, to lamb. These shifts led to the desire for earlier maturity and better fleshing qualities than the Wilks and Berks breeds possessed. Consequently there was a rush for Southdown rams in order to get better fleshing qualities, while farmers who had Sussex ewes and wanted to increase the size used Wiltshire rams. Under this system, the old Wiltshire and Berkshire breeds did not last long, and the resulting hybrids were lacking in uniformity because of the varying amounts of Southdown blood which had been used by individual breeders. This new breed, destined to become the Hampshire, had not yet been reduced to the uniform characteristics necessary for recognition as an individual breed.

Outstanding among early Hampshire breeders was William Humphrey of Oak Ash near Wantage in Berks. In 1834-35 Humphrey set out to buy the best Hampshire ewes available, and many of the desirable characteristics of present day Hampshires may be traced to his enterprise. It would not be undue recognition to give credit to Humphrey and his breeding methods for the very

existence of modern Hampshires. Impressed with Cotswolds which he saw on a visit to the Royal Agricultural Society Show at Oxford, Humphrey learned that early improvements of this breed had been made from matings with Leicesters. This gave him the idea of using the best Southdown ram he could secure on his carefully selected Hampshire ewes. This ram he purchased from Jonas Webb, outstanding Southdown breeder of the day. He used this son of the famous Babraham as long as he could and in the meantime purchased other Webb rams but never used them extensively because they were not giving him what he desired. He did, however, buy the first prize ram at Liverpool, also a Webb ram, which proved to be what he wanted. He used these two rams as foundation stock and closed his flock to outside blood, using sons of one ram on daughters of the other. The only recorded outside blood added was through the purchase of twenty-five Hampshire ewes a few years later. The Southdown influence resulted in a loss of size and Humphrey culled frequently and heavily to get rid of ewes too small. He did not make a practice of selling ewes for breeding purposes, but Humphrey rams became noted for the influence they had on other flocks.

Another early breeder of note was James Lawrence who made his contribution through the use of Southdown ewes and Wiltshire rams.

This new breed of sheep was recognized in the showyard classifications of the English Royal in 1840 as West County Downs but was put before the public as Hampshires at the same show in 1857, according to the first volume of the English flock book. The Hampshire breed association was organized in 1889, with their first flock book Volume in 1890. The system of recording was almost entirely by flocks, with individual registrations on a few rams. New flocks were admitted upon application to the inspection committee provided the committee approved and the owner paid half the inspection costs. In 1898 rules and restrictions came into force whereby new flocks could not be admitted to the association, even if the committee acted favorably, unless the owner was able to prove that for the past five years only rams from registered flocks had been used. Replacements, therefore, could not be added to registered flocks unless they came from registered flocks.

Individual ewe registrations were indeed slow to come. 1907 was the first year any deviation from the flock entry method was made.

Development and Growth in the United States

In 1889 the American Hampshire Sheep Association was organized in Chicago as the Hampshire Down Breeders Association of America, by a dozen breeders who became its first members.

In 1890 there were thirty-five members with 739 sheep registered in the first flock book published. Registrations were limited to sheep traceable in all lines to recognized English flocks. No provision has ever been made for registering grades, although a few purebred flocks whose registrations had lapsed have been readmitted upon inspection. At the end of five years there were eighty-six members, a few as far west as Nebraska, one in South Dakota, one in Wyoming, but more in New York than any other state.

Membership and the number of sheep registered in the Association grew rather slowly until around 1906 to 1910. As the popularity of Hampshire rams as sires of range lambs increased, there was a boom in Hampshire importations with one firm alone importing over 1,000 ewes in 1909. The Wood Livestock Company of Spencer, Idaho, was one of the first large sheep ranchers to use Hampshire rams. They imported and bred many Hampshires and were responsible for much of their use in the west. Robert Blastock, Idaho breeder, imported purebred Hampshires over a period from 1910-1920. Many of his importations went to Kentucky and Idaho. Although importations dropped off after 1911, the breed continued to increase in numbers until 1929 there were almost 30,000 head registered. Since 1929 registrations have

been established at around 20,000 head annually. The breed is well distributed over the entire United States but the greatest concentrations can be found in the western range area of Montana, Idaho, Washington, Oregon, Wyoming, and Colorado; and the spring lamb area of the middle south in such states as Tennessee, Kentucky, Virginia, West Virginia, and Missouri.

Genealogical Review of Other Breeds of Livestock

Outstanding in the investigation of the ancestral descent of various breeds of livestock is the work of Professor R. E. Hunt (6) and associates. In breeds studied, Hunt points out that important sires of the breed will link themselves up strikingly well to common ancestry, showing that sires with abilities to transmit desirable characteristics come principally through closely related lines of ancestry. He points out that in the case of Berkshire swine (6) the boar named Longfellow 16835 is responsible through his offspring for most of the important present day Berkshire hogs. The offspring of this great boar, notably three important sons, Baron Lee VI, Longfellow's Model, and Baron Lee IV, created important bloodlines, and the chances of success for Berkshire breeders using boars not traceable to Longfellow 16835 are greatly lessened.

Such facts are discovered by taking the showing winnings for a period of from ten to twenty years from the show, or shows,

considered the best for the particular breed of livestock studied. The sires of these winning individuals are traced back through ancestral lines and tabulated in genealogy tables.

A ten year study of Poland-China swine (7) reveals the boar named Tom Corwin 275 to be the progenitor of the pedigree of most of the important boars of the breed. In fact, every United States showing winner in this breed has been able to claim Tom Corwin in his pedigree.

In the case of Duroc-Jersey swine (8), honors for originating the best families are shared by two boars, Protection 4697, and his four sons, Ohio Chief 8727, Ohio Chief 41419, King John, and Lincoln Wander are the sires of one important line while an apparently unrelated line is traceable back to Walt's Colonel 5795 through his five grandsons, Ed's Favorite, Carl's Colonel, King the Colonel, Top Colonel, and Colonel Algo.

A study of Aberdeen-Angus sires (9) from 1900 to 1930 proves Old Jock 126 to be the foundation sire to which all great bulls of the breed can be traced. Through the three sons of Hanton 80, grandson of Old Jock, come our most outstanding Angus families, for example - the Earl Marshall's.

Using the American Royal winnings from 1899 to 1931 the genealogy of Hereford cattle (10) shows clearly the development of outstanding Hereford sires from the bull Longhorns 2239, from

which all Anxiety 4th bred Herefords are descended and it is these Herefords that have lived and bred on. Another line of cattle descended from the bull Chance 119 through which origin come the Fairfax and Woodford lines. So far as is known, Chance and Longhorns were not related, and it is the descendants of Longhorns rather than Chance that have achieved the greater prominence. A similar study of Shorthorn cattle (11) from 1900 to 1927 shows that the bull Champion of England 17526, and his four sons, are the ancestors of those bulls able to sire Shorthorn cattle good enough to win at the Chicago International.

Similarly with Belgian horses (12), with the exception of two individuals of very little importance, winners of the shows in the United States are traceable directly back to the stallion Forton and his two sons, Orange and London.

With Clydesdale horses (13), according to their genealogy table, prepared from the winnings from 1907 to 1928, the horse Glancer alias Thompson's Black Horses 335 is responsible for the line of Clydesdales leading in importance today. A several times removed grandson, Baron's Pride 9122, has probably sired more winners and more sons able to sire winners than any other Clydesdale horse.

The Percheron genealogy (14), shows the horse Jean Le Blanc 739 to be the foundation upon which rest prominent sires in Percheron circles. The great-grandson Vieux Chaslin 713 and his grandsons,

especially Brilliant (756) 1899, through whose lineage comes the great Fenelon (38) 2682, sire of Seducteur and Brilliant III, are doubtless the most popular lines that present day Percherons can trace back to. Out of this lineage comes the noted Laet, Carnot, Dragon breeding, so sought after today by horse breeders.

Noteworthy Thoroughbreds (15) present themselves down through two rather important ancestral lines. The seven important sons of Fair Play, of which Man O'War is most famous, have a direct linkage back to an important sire named Gadalphin Arabian. The originator of another line that has lived and achieved fame and importance is the horse named Darleys Arabian. Unusual performers have been produced through his blood lines by sires such as Voltigeur, Ben Brush, Whalebone, Camel, and New Minister.

Stake winners at the Kentucky State Fair (16) up to an including 1931, likewise have two important ancestral lines through which winners may descend. Through Gaines Denmark 61 and his two sons, Diamond Denmark and Washington Denmark, come such important sires of winners as Rex McDonald 833 who sired seven winning sons and daughters, and Rex Peavine 1796 who sired twenty-one important sons. Another important line comes through Messenger down to Bourbon King 1788, whose sons and daughters and their progeny have won forty-seven places in the stake classes of the Kentucky State Fair up to 1931. This is a record unequalled by any other saddle horse. He sired twenty-seven sons that have "carried on" in the

shows and as sires of winning individuals.

No such work has been done with sheep to the writer's knowledge, but in light of the facts presented by studies of other breeds of livestock, it would not seem unlikely that they too might follow somewhat the same genealogical behavior.

Other Pertinent Literature

The effect of the age of sire and dam on the quality of the offspring was studied by Allen (1) by taking from the records of Advanced Registry in the American Holstein-Friesian Association seven-day butterfat production records on a group of high producing cows and on a similar group of low producers. The object was to determine whether the parents of a group of high producing cows was older or younger than the parents of low producing cows. Conclusions drawn were that the parentage of superior or high producing dairy cows is no older than the parentage of comparatively inferior or low producing cows. Thus, the old animal is no more valuable as a parent than the young animal. The young from dairy cows seem to be just as valuable born at one time of either parent's life as another. However, on an average, cows make their best production records at about six years of age.

Chandhuri (2) studied Shorthorn cattle and drew about the same conclusions as Allen did in his work on age and quality of offspring. From the showyard winnings of Shorthorns at the Highland

and Agricultural Societies Show, leading show in Scotland, the first five prize winners in each class from 1902 to 1925, with the exception of the four years when no show was held, were taken and the age of the sire and dam of these winners was traced in the Coates herd book. Conclusions showed that the maximum number of prize winning offspring belonged to dams which were three and four years old, and that the majority of prizewinners are produced by sires two years old when their progeny was born. However, it was then decided to study the breed as a whole as to the age of sire and dam. The ages of parents recorded for each one hundredth birth for twenty years back from 1925, and this study showed that actually more cows were calving at three and four years of age than any other, and that two and three year old bulls did most of the siring of calves in the random sample. Therefore, final conclusions show that one may not expect any particular age of parents to be more apt to produce outstanding individuals than any other age.

Donaldson (4), working with rats, shows that birth weight increases with increasing age of the dam, but explains that it is due to environmental rather than genetic causes. Some interesting sidelights on age limits are pointed out by Pearl (17), who reports a ewe to have lived nineteen years, sheared nineteen fleeces, and raised thirty-six full grown lambs. In Chandhuri's work reference is made to the Aberdeen-Angus cow "Old Grannie", who produced a calf in her twenty-ninth year. Jones and Rouse record a cow calving

at the age of thirty-three and two multiple births at the age of twenty-five are recorded in the Hereford and Angus herd books. Wood records a Thoroughbred mare breeding at the age of thirty-three.

Hultz (5), at the Wyoming Experiment Station, is an effort to help breeders determine the excellence of individual sheep, took body measurements in the yearling and lamb classes of Hampshire sheep exhibited at the International Livestock Show during the five years 1930 to 1934, inclusive. He concludes, however, that mechanical measurements cannot effectively be substituted for the mental balance of points that takes place in the judge's mind, that mechanical measurements may serve as a supplementary guide, but are not wholly reliable since there are no mechanical measurements of style, masculinity, femininity, straightness of legs and pasterns, breed character, thickness of fleshing, and general appearance.

After we have used all the mechanical measurements at our command and after we have secured an opinion of the most excellent judges, we have still omitted a most important matter in the selection of a stud ram if a knowledge of blood lines and breeding has been neglected.

THE INVESTIGATION

Procedure

The procedure for rating sires and other investigations of the Hampshire breed of sheep is based on the assumption that showing winners represent the most meritorious individuals of the breed, and that the International Livestock Exposition at Chicago is one of the best shows to obtain an equitable representation of such meritorious individuals since leading flocks from twenty-six states and two foreign countries have been exhibited there. Therefore, any analyses of breeding method and rating of sires made in this study are based on winnings at this show from 1913 through 1938*. Winning individuals for the first, second, third, and fourth places, Champion, and Reserve Champion, in all Hampshire sheep classes except groups were used. These winning individuals are listed by numbers on the show records corresponding to their entry numbers in the flock books of the Hampshire Sheep Association. By these numbers, when reference is made to the flock books, the sire of each winning individual can be noted. A system of points was worked out whereby each sire was given appropriate credit for each individual sired possessing excellence sufficient to gain from first to fourth in its respective class.

*Due to the outbreak of foot and mouth disease no show was held in 1914 or 1915.

For example, each individual placing fourth won one point for its sire, each individual placing third won two points for its sire, each individual placing second won three points for its sire, each individual placing first won four points for its sire, each individual placing Reserve Champion won five points for its sire, each individual placing Champion won six points for its sire.

Results

Rating of Important Sires of Showring Winners

Table I lists the following in order of importance the sires of winners figured in accordance with the system above. The ram C-1659 heads the list with 127 points. He was bred by Mt. Haggin Land and Livestock Company, Anaconda, Montana, was made first and Champion at the International in 1926 as a lamb and was then retired to stud duty in the Mt. Haggin flock as long as he lived. He sired fifteen ewes and eleven rams that won from championship to fourth place in their respective classes at the same show. Four were champion and five were reserve champions. His most outstanding son so far is Number 84029 who stands fourth in the list of outstanding sires with a score of 52. Other sons ranking high are 68007, the tenth ram of the list, and 58591 in twelfth place, with grandsons in seventh and sixteenth places. Carter (3) found this ram to be three percent related to all Hampshire sheep. His sire, 45215, Blendworth Herriard, stands in fifth place on the list and has a relationship of 2.4 percent

to the breed. These are the most outstanding blood lines brought out by Table I.

The ram in second place on the list, 39869, Blastock 504, popularly called "Commander", was imported as a lamb by Robert Blastock, of Idaho, and used by Mrs. Winnie Miller of Thousand Spring Farm, and as an aged ram was sold to Mr. J. C. Penny of New York for the reported price of \$1,000. Of 197 rams studied as sires of winners at the International, this ram is the only one to have been made champion ram two years in succession. He was the sire of twelve winning daughters and five winning sons. His sire is H-965 Norton Thruxton, the ram in eleventh place on the list. This seemingly brilliant career has been marred however by the fact that not a single son of 39869 appears on the list as having sired a winner. There may be explanations offered that sons of this ram were never used in flocks that showed sheep at the International, or that the dispersions of the Penny and Thousand Springs flocks where he was used greatly lessened his chances of having successful sons, or that the genetic make-up of this ram did not permit the transmission of desirable characteristics on through his sons. Whatever the explanation; facts remain unaltered.

Table I.

This table lists in order of important, Hampshire rams which sired winners at the International from 1913 to 1938, and gives their score which is based on points won by individuals sired.

Name and Number		Total Score
C-1659	C-6 - Mt. Haggin* -----	127
39869	Blastock 504 Commander* -----	99
83001	Foxhill 45 L-253 -----	59
84029	H-75 Mt. Haggin* -----	52
45215	Blendworth Herriard J-128 -----	44
29627	Harkness 486 -----	42
92845	J-701 Mt. Haggin -----	36
B-5243	B-55 Mt. Haggin -----	33
14574	Fonthill Fatherland C-724* -----	32
68007	F-25 Mt. Haggin -----	28
H-965	Norton Thruxton -----	24
58591	E-22 Mt. Haggin* -----	24
93816	B & D. R. V. F. - 35 -----	22
46549	Burcombe Favorite J-482 -----	20
A-4156	A-526 Mt. Haggin -----	18
76079	G-668 Mt. Haggin -----	16
61841	Invincible of Herriard II -----	16
39220	Finch 272 -----	15
18969	Dean's Thicket 81 -----	15
14308	Sherwoods 131 -----	14
11860	Cholderton A-918 -----	14
45223	Pendley's Goldseeker J-294 -----	13
46548	Norton Twilight J-549 -----	13
E-428	Fonthill Fatherland #7 -----	13
H-936	Crawley 89 -----	12
75344	Bonny Leas 1159 -----	12
89201	M. M. 2059 -----	12
96280	Gretzer 40 -----	11
68949	Bonny Leas 1073* -----	11
58579	E-7 Mt. Haggin* -----	11
70317	Blendworth Basildon -----	11
46554	Blastock Braemore -----	11
39870	Blastock 503 Hulse* -----	11
C-435	Stonehenge 405 -----	10
D-615	Fonthill Clipperfield 3 -----	10
H-148	Pendley Basildon -----	10
17739	Sherwoods 189 -----	10

Name and Number		Total Score
E-287	Hursley's Farley Mount -----	10
F-826	Burcombe Chilmark 51 -----	10
15867	Renks 201 -----	10
17418	Renks 232 -----	10
H-405	Wandsworth Duke -----	10
H-546	Floral Tribute p-----	10
H-587	Bonnie Boy -----	10
J-206	Norton Tiptop -----	10
K-527	Blendworth Basildon -----	10
L-511	Foxhill 51 -----	10
87206	H-42 Mt. Haggin -----	10
104963	366 N Mt. Haggin -----	10
M-804	Basildon Supreme -----	10
N-803	Basildon Promise -----	10
44113	Sherwoods 20 -----	10
N-78	Basildon Forward -----	9
83229	G-855 Mt. Haggin -----	9
J-378-B	Annables Burcombe -----	9
E-875	Cholderton 149 -----	9
14571	Peter Pan 777 B-962* -----	9
H-309	Cocum Jovial -----	9
30277	King -----	8
41546	Straloch 34-2 -----	8
67054	Bonny Leas 1061 -----	8
76041	G-19 Mt. Haggin* -----	7
H-839	Knut -----	7
18967	Dean's Masterpiece 19 -----	7
22151	Burcombe 121 -----	6
42154	Finch 423 -----	6
46547	Blastock N. T.* -----	6
A-2267	Bonny Leas 290* -----	6
109834	B. & D. R. V. F. 220 -----	6
61843	No. 7 (K951) Herriard Topper -----	6
105152	164 X Mt. Haggin -----	5
M-317	Foxhill #93 -----	5
50039	Norton Truant 1379 Can. Reg. -----	5
35817	Blastock 13* -----	5
H-797	Farmers Union -----	5
35830	Blastock 219 King -----	5
11756	Miles 420 -----	5
15616	Trusty Servant -----	5

Name and Number		Total Score
B-540	Fatherland -----	4
1274	Cleveland Tariff -----	4
11513	Harkness -----	4
E-967	Kitchner -----	4
10508	Cholderton 510 -----	4
F-815	Wandsworth C -----	4
30285	King -----	4
34277	Basildon Bright Eyes H-42 -----	4
J-142	Braemore Arundel -----	4
A-2022	R. W. H. & S. - 85 -----	4
42183	Blastock 485 -----	4
43562	Oklahoma A & M #21* -----	4
51035	Shapwick Superb -----	4
C-273	Chase #41 -----	4
52208	Borma -----	4
67262	Blendworth 119 L-53-A -----	4
84550	G-1900 Mt. Haggin -----	4
68012	F-7 Mt. Haggin -----	4
M-105	Englefield Delight -----	4
M-395	Lockings Juggler -----	4
M-724	Englefield Guardsman -----	3
114798	T. C. 42 -----	3
91526	Hamilton 1344 -----	3
89213	W. M. 2826 -----	3
90061	Mt. Haggin J-161 -----	3
79599	T. S. F. 724 -----	3
88897	Sunny Brook 377 -----	3
94265	Remlence 60-Seaver* -----	3
66695	Princeton 281 -----	3
51272	Stettbacher 189 -----	3
58585	E-15 Mt. Haggin -----	3
70319	Foxhill 41-L-190 -----	3
A-1611	Mt. Haggin A-521 -----	3
41717	Bonny Leas 11* -----	3
45089	Bonny Leas 121* -----	3
38683	M. A. C. 1865 -----	3
26418	Foothills 159 -----	3
38772	Pride of Penn. 33 -----	3
35859	Blastock 218 -----	3
H-846	Herriard Goldmine V -----	3
H-622	Wandsworth Exc. -----	3

Name and Number		Total Score
H-135	Burcombe 55 -----	3
26513	Darland 6 -----	3
30316	Ismay -----	3
15614	Briton D-369 -----	3
F-817	Antiseption -----	3
F-442	Basildon Crawley -----	3
F-397	Iwerne Swell -----	3
H-310	Cocum Joseph -----	3
17135	Harkness 59 -----	3
16098	Hursley's Fortune -----	3
F-977	Iwerne Tonic -----	3
F-283	Britian -----	3
15626	Judd -----	3
B-975	Cholderton 347 -----	3
D-633	Young Frolic -----	3
C-720	Fonthill Burntwood -----	3
C-731	Bexton -----	3
B-678	Borough 137 -----	3
B-947	Cholderton 697 -----	2
D-545	Blendworth Dibben -----	2
7612	Iwerne Initiom -----	2
7657	English -----	2
11862	Cholderton 428 -----	2
11457	Harkness -----	2
11420	Harkness -----	2
7551	Rory O'More -----	2
15618	Cocum Eucalyphis -----	2
F-766	Basildon Flower Dean -----	2
15905	Flowers 359 -----	2
17132	Harkness 56 -----	2
17231	Sherwood 174 -----	2
H-17	Blenheim Chilmark #1 -----	2
F-495	Wadsworth Burntwood -----	2
15625	Waters -----	2
23971	Harkness 190 -----	2
30294	Judd -----	2
H-234	Blendworth 56 -----	2
H-627	Wadsworth Dollar -----	2
H-844	Herriard Goldmine III -----	2
J-397	Braemore Bachelor -----	2
39871	Braemore Barton H-836 -----	2
35816	Blastock 4 -----	2

Name and Number	Total Score
39329 Newman 1 -----	2
45219 Pendley Footman J-290 -----	2
B-173 Straloch 5121 -----	2
A-4196 A-963 Mt. Haggin -----	2
M-522 Burnham Champion -----	2
B-5223 Mt. Haggin A-919 -----	2
57306 Pendley Quartus K-713 -----	2
67261 Blendworth -----	2
95991 M. Monc 2844 -----	2
98594 Sunny Brook 502 -----	2
67050 Bonny Leas 1051 -----	2
M-569 Lockinge Keystone -----	2
104968 Mt. Haggin L-1295 -----	2
N-8 Shapwick Advocate -----	2
B-5324 Mt. Haggin B-371 -----	2
H-147 Pendley Flower -----	2
88896 Sunny Brook 376 -----	1
98008 Mt. Haggin K-1377 -----	1
88876 Coldmine 2nd, Bonny Leas 1355 -----	1
93656 Brownell 6-33 -----	1
52537 D-72 Mt. Haggin -----	1
B-5470 B-374 Mt. Haggin -----	1
C-772 Bonny Leas 424 -----	1
A-302 Straloch 481 -----	1
39877 Major Morrison -----	1
38829 Kingman 644 -----	1
35089 Barlow H. C. -----	1
39036 Camden 2 -----	1
35863 Blastock 216 -----	1
J-48 Pendley Quality -----	1
J-397 Braemore Bonar Law -----	1
H-602 Herriard Horlock -----	1
21728 Taylor 2930 -----	1
25637 Griggs 41 -----	1
21103 Harkness 42* -----	1
16157 Chilmark 2 (Can. Reg.) -----	1

*Refers to rams that are not only sires of winners but are winners themselves.

Rating of Important Rams as Sires of Ewes Able to Product
Winners at the International

Could it be possible that rams listed in Table I as important sires might not have acquired this rating at the expense of some great ram in the background, the sire of the ewes upon which the ram was used to produce winners, and might not some of the credit for his greatness go to the ram which sired the dam of the winner?

The dams of the above mentioned winners were recorded from the Flock Books of the American Hampshire Sheep Association, and they in turn were traced back to find their respective sire. As was the case in individual winners, a ewe the dam of a winner of fourth place won for her sire one point. A ewe the dam of a winner of third place won for her sire two points. A ewe the dam of a winner of second place won for her sire three points. A ewe the dam of a winner of first place won for her sire four points. A ewe the dam of a winner of reserve champion won for her sire five points, and a ewe the dam of a winner of champion won for her sire six points.

Table II on the following page shows the rating of rams on this basis.

Table II.

This table lists and score the sires of ewes which were dams of winning individuals from 1913 - 1938, both inclusive, at the International.

Number and Name	Total Score
45215 Blendworth Herriard J-128* -----	38
30697 S & G 887 Mt. Haggin -----	35
A-4148 A-405 Mt. Haggin -----	32
J-51 Pendley Gold Tanner -----	31
A-3034 Finch 930 -----	30
45233 Dogdean Blenheim J-320 -----	27
7551 Rory O'More* -----	25
52537 D-72 Mt. Haggin* -----	25
45237 Chilmark Flint Jack -----	23
C-1659 C-6 Mt. Haggin* -----	22
H-971 Norton Triumph -----	22
J-49 Pendley Goldmine 45228 -----	21
C-1325 T. S. F. 891 -----	18
H-912 Pendley Airman -----	17
23971 Harkness 190* -----	16
A-362 Bonny Leas 219 -----	16
Gurston Ram (No Number) -----	16
B-1611 Nickols 310-F -----	15
6745 English -----	14
15867 Renks 201* -----	14
45808 F. S. C. 1162 -----	14
B-5737 A-999 Mt. Haggin -----	14
83001 Foxhill 45 L-253* -----	13
J-206 Norton Tiptop* -----	13
21417 Bishopstone Crawley F-820 -----	13
7612 English* -----	13
C-772 Bonny Leas 424* -----	12
B-1610 Nichols 351 F -----	12
K-527 Blendworth Basildon* -----	12
22137 Williams 79 -----	11
B-685 C. L. M. 18-25 -----	10
58591 E-22 Mt. Haggin* -----	10
B-5753 B-465 Mt. Haggin -----	10
A-4102 N-810 Mt. Haggin -----	10
39594 L-15 Mt. Haggin -----	10
H-627 Wandsworth Dollar* -----	10

Number and Name		Total Score
H-546	Floral Tribute* -----	10
11294	Burntwood Royal -----	10
L-43	Blendworth 110 -----	9
84551	H-2 Mt. Haggin -----	9
58594	E-52 Mt. Haggin -----	9
67261	Blendworth* -----	9
C-4390	C-209 Mt. Haggin -----	9
58610	C-601 Mt. Haggin -----	9
58585	E-15 Mt. Haggin* -----	9
45223	Pendley Gold Seeker J-294* -----	9
46549	Burcombe Favorite J-482* -----	9
25957	S & G 859 Mt. Haggin -----	9
35824	Blastock 12 -----	8
H-255	Inverne Hog -----	8
39870	Blastock 503 Hulse* -----	7
11322	Harkness -----	7
C-585	Flewry -----	7
15613	Harkness -----	7
67262	Blendworth 119 L-53A -----	6
B-5752	B-19 Mt. Haggin -----	6
J-179	Basildon George -----	6
39869	Blastock 504* -----	6
39596	L-495 Mt. Haggin -----	6
78251	G-738 -----	5
68949	A. R. H. 1073* -----	5
25347	Sherwood 361 -----	5
K-576	Nugget of Herriard -----	5
20431	4520 H Butterfield -----	5
15237	King Arthur -----	5
6191	English -----	5
134	Waters -----	5
8359	English -----	5
10168	Torcable -----	4
15626	Judd* -----	4
F-369	Leonard 33 -----	4
12678	Harkness -----	4
23805	Finch 24, Crawley 50, F783 -----	4
30282	King Camden -----	4
J-48	Pendley Quality* -----	4
30631	K-147 Mt. Haggin -----	4
28678	D. F. D. 147 -----	4
45213	Blendworth Improved J-368 -----	4

Number and Name	Total Score
A-4096 N. 776 Mt. Haggin -----	4
46880 Latimer 7 -----	4
B-3539 B-362 Mt. Haggin -----	4
A-4156 A-526 Mt. Haggin* -----	4
11505 Harkness -----	4
72100 F-10 Mt. Haggin -----	3
58579 E-7 Mt. Haggin* -----	3
48110 Finch 835 -----	3
A-4180 A-832 Mt. Haggin -----	3
78290 G-1274 Mt. Haggin -----	3
89201 M. W. 2059* -----	3
95525 J-305 Mt. Haggin -----	3
68004 F-13 Mt. Haggin -----	3
89911 H-219 Mt. Haggin -----	3
35841 Watercourse H-601 -----	3
58608 C-117 Mt. Haggin -----	3
48807 Strutz 1035 -----	3
45699 The Victor 530 -----	3
A-4144 O-836 Mt. Haggin -----	3
35825 Blastock 22 -----	3
51035 Shopwick Superb K-690 -----	3
A-1609 N-915 Mt. Haggin -----	3
51980 Allison -----	3
29957 Dimmit -----	3
H-969 Norton Turbine -----	3
25171 Harkness 254 -----	3
H-918 Pendley Clipperfield -----	3
38940 Ballard 14 -----	3
35830 Blastock 219 King* -----	3
19343 Miles 821 -----	3
26320 H & S 202 -----	3
15616 Trusty Servant* -----	3
17657 I. S. C. 224 -----	3
I-125 Blendworth Sprat -----	3
18755 Harkness 105 -----	3
H-316 B. Best -----	3
F-857 Borough -----	3
H-499 Pendley Trooper -----	3
11612 D-917 Taylor -----	3
18969 Dean's Thicket -----	3
22105 Stephens 28 -----	3

<u>Number and Name</u>		<u>Total Score</u>
19413	Inwerne Robertson 26-15 -----	3
9272	English -----	3
14009	Harkness -----	3
8738	English -----	3
13946	Harkness -----	3
D-598	Cocum Dulcimer -----	3
11513	Harkness* -----	3
8071	English -----	2
8060	English -----	2
11862	Cholderton 428 -----	2
291	Fulchuro -----	2
11400	Harkness -----	2
8720	English -----	2
12757	Harkness -----	2
17739	Sherwood 189 -----	2
10021	Cholderton 8 -----	2
6494	English -----	2
11860	Cholderton A-918 -----	2
15757	McLaughlin Number 8 -----	2
14566	Prince Arthur 400 -----	2
	Phillip's Reg. Ram -----	2
25653	Cholderton 31 -----	2
59381	Bonny Leas 829 -----	2
15810	Taylor 973 -----	2
H-461	Beacon -----	2
30297	Judd -----	2
19678	McCraw 36 -----	2
22179	Stalwart 41 -----	2
19814	McKays 226 -----	2
16287	Beers 244 -----	2
42859	Gilbert 764 -----	2
45219	Pendley Footman J-290* -----	2
45230	Norton Trump II J-467 -----	2
K-147	Pendley Exchange -----	2
B-4326	Sherwood 14 -----	2
38194	Riches Brothers 60 -----	2
37373	Cooper 97 -----	2
A-4113	N-854 Mt. Haggin -----	2
K-799	Blendworth 104 -----	2
B-5243	B-55 Mt. Haggin* -----	2
59752	M. M. 376 -----	2
B-1618	A-918 Mt. Haggin (K719) -----	2
57312	Pendley Triple Invincible II -----	2

Number and Name		Total Score
58595	E-57 Mt. Haggin -----	2
86806	J. C. P. 443 -----	2
74970	J. L. S. -----	1
78055	M. M. 577 -----	1
76079	G-668 Mt. Haggin* -----	1
77694	Son Blendworth Basildon -----	1
68007	F-25 Mt. Haggin* -----	1
80214	M. M. 1627 -----	1
93884	Henderson 1 -----	1
68946	Bonny Leas 1065 -----	1
63796	F. B. & S. 1113 -----	1
49731	Chase Brothers 45 -----	1
65094	E-142 Mt. Haggin -----	1
48218	Renk 553 -----	1
A-4105	N-823 Mt. Haggin -----	1
52540	D-665 Mt. Haggin -----	1
C-4350	C-28 Mt. Haggin -----	1
C-760	Bonny Leas 412 -----	1
58766	M. W. M. 27 -----	1
E-969	W. G. Miles 1678 -----	1
58823	M. W. M. 131 -----	1
J-554	Pendley Invincible -----	1
29627	Harkness 486* -----	1
E-1622	B-197 Mt. Haggin -----	1
45218	Herriard Forester IV J-411 -----	1
39220	Finch 272* -----	1
I-126	Blendworth 70 -----	1
H-959	Norton Topper -----	1
26342	Williams 1 -----	1
37647	Bordner 182 -----	1
35816	Blastock 4 King* -----	1
23954	Harkness 224 -----	1
H-809	Blendworth Quality -----	1
	A. E. Blackwell Reg. Ram -----	1
17397	Taylor 1692 -----	1
15817	Taylor 798 -----	1
14571	Peter Pan 777* -----	1
18755	Harkness 105 -----	1
B-253	Bright Eyes -----	1
	Lady Hulse Reg. Ram -----	1
17573	Anoka 62 -----	1
14232	McLaughlin -----	1
16098	Hursleys Fortune* -----	1
	G. H. Genjafields Reg. Ram -----	1
84550	G 1900 Mt. Haggin* -----	1

*Refers to rams that sired winners and sire ewes that are dams of winners.

The asterisks (*) following names of rams in Table II denote those individuals that are both sires of winners and are sires of ewes that are dams of winners. These two tables are remarkably similar in several respects. The ram 45215, Blendworth Herriard, heading the list in Table II and fifth in Table I, C-1659, tenth in Table II and first in Table I, and the ram 83001, in third position in Table I and twenty-third in Table II, are good examples of important rams in both divisions. 83001 sired eight winning ewes and six winning rams at the International. Foundation stock from this ram is an important factor in the success of Malcom Monereiffe, Big Horn, Wyoming breeder.

This is sufficient evidence to show that strong blood lines will figure in the winnings from either the ewe or the ram side, and suggests that they are the blood lines that "will live and breed on" in the language of the breeder.

Another side of the question is pictured by the ram 30697 S & G 887 in second place as a sire of ewes, the dams of winners, and also his sire 22137, Williams 79 in thirtieth place. Neither of these rams appears as the sire of showing winners. Also, the discussion above, concerning 39869 in second place in Table I, points out that he had no sons able to sire showing winners, yet he has a son, C-1325, in thirteenth place as a sire of ewes the dams of winners. The ram 7551, Rory O'More, which Carter (3) finds

to be one percent related to the breed, also occupies a very minor part in Table I, but is in seventh place as a sire of ewes in Table II, meaning that his relationship exists through his daughters and granddaughters rather than through sons. In contrast is the ram 29627, found by Carter (3) to be one and two-tenths related to the breed which as a sire of International winners stands sixth but as a sire of ewes is practically at the bottom. Rams are not possessed with equal abilities for siring offspring with desirable characteristics.

Interesting, though perhaps not so significant, is the fact that out of 197 rams the sires of winners, only 22 were themselves show rams. Only 3 were good enough to win the championship at the Chicago International. They occupy first, second, and fourth positions in Table I as sires of winners. Upon a hurried examination of the facts one would expect a higher coordination in individual excellence and ability to sire winners than actually exists. In other words, it would seem that a ram good enough to sire winners should have been a winner himself, but this is not necessarily the case. There can be only one champion each year but there are thousands of rams produced each year and used as sires. The attending damage to reproduction which sometimes accompanies heavy and continued fitting for show purposes keeps many potential winning rams at stud duty in the flocks rather than

on show circuits. The odds are heavily against his winning and more good will be accomplished by his use at home in the flock.

Of the 182 female winners in the period from 1913 to 1938, only 14 were good enough to win from first to fourth two years in succession. Of the 242 rams studied, only 13 were good enough to win from first to fourth for more than one year. Hultz conclusions as to the limitations of mechanical measurements as a satisfactory basis for determining the excellence of sheep (5) would seem to be borne out here since such non-measurable points as style, color, breed character, straightness of legs and pasterns, would not change from year to year. However, this particular point has not been conclusively studied.

The Genealogy Table

Although at first glance the extreme length of the following tabulation of important sires and their ancestors may seem forbidding, it does in fact provide an expeditious method of locating the ancestors of any individual ram once the arrangement of the table has been explained. To use this table, find the ram by name and number about whose ancestry information is desired. The animal whose name is directly above and slightly to the left is the sire, the one above and slightly to the left of that is the grandsire and so on until at the top appears the several times removed grandsire.

The individual in question may have an important son or sons, and if such is the case just beneath his name will be a broken line dropped downward far enough to include all his sons. Following along this broken line each son is marked with a number set opposite his name and registry number. Sons are closest the broken line while indentations from the broken line represent removals; namely, grandson, greatgrandson, etc. Important sires of winners have their score from Table I set opposite their names.

The vast majority of rams that have made lasting contributions to Hampshires are traceable directly to the great ram The Swell 4668. However, seven rams to which some importance may be ascribed are not descendants of this ram. The Swell was bred by Sir T. F. Buxton of England in 1902. Two of this rams sons were used in the Buxton flock, namely Royal Swell and Royal Dean, while two were used by Mr. James Flower, namely Fine Figure and F. B.'s Favorite. These four rams are the foundation upon which rests modern United States Hampshires.

Royal Dean and Fine Figure are so far superior to their brothers in importance that all available space will be allotted to them in this discussion. Descendants of Royal Dean through five sons are Jock Dean, British Dean, Farley Mount, Faithful Lad and Dogdean LXXV 6297 and have exerted a powerful influence on flocks in the United States. Down through the Jock Dean lineage comes

Commander 39869, the ram used so successfully by Mrs. Minnie A. Miller of Idaho, who later sold him to J. C. Penny of White Plains, New York, for astounding price of \$1000. Commander was a remarkable show ram, being one of the very few rams to win the championship twice at Chicago, also a great sire. His sons and daughters won enough to rank him near the top as a sire, but strangely enough he has never had a grandson or granddaughter to win from first to fourth at Chicago. The offspring of British Dean, another son of Royal Dean have not gained major recognition, but this is not true of the progeny of Farley Mount, third son of Royal Dean, because rams traceable to him have been used successfully in the flocks of Mt. Haggin, Walnut Hall, University of Pennsylvania, Renk, Judd and Vandyke. He has at least six sons of importance. Faithful Lad, another of Royal Dean's sons is the originator of the famous Norton Twilight lineage which has figured strongly in the development of such flocks as Buck and Doe, Mt. Haggin, F. W. McDowell, and more particularly the Bonny Leas flock owned by Mrs. A. R. Hamilton in Pennsylvania.

The son of Royal Dean whose progeny has covered the widest field has been that of Dogdean LXXV, whose score of grandsons were used in such flocks as Brownell, University of California, Mt. Haggin, Blastock, Finch, Oklahoma Agricultural and Mechanical College, Straloch Farms, Newman, Butterfield Livestock Company, Earlow,

William, R. J. Hogg and Sons, Walnut Hall, Bonny Leas and Chase Brothers.

Fine Figure, brother of Royal Dean, looks more important in some respects than any other foundation ram, however, it would be a little too bold to claim major distinction for him over his brother, especially in the East. However, descended from him we have Wandsworth Exchange, one of the most prepotent rams of the breed, with five important sons, Goldmine being the most outstanding. From Goldmine comes seven outstanding sons through whose lineage Goldmine is claimed by many to have made the greatest contribution to the breed of any ram. His most outstanding son, Blendworth Herriard, sired seven sons, all of which were important, but most outstanding is C-1659, the ram that heads the list as a sire of winners. Blendworth Herriard was imported from England by the Mt. Haggin Land and Livestock Company, Anaconda, Montana in 1923. Much of the fame gained in western shows by this company's sheep is through the get of this ram and his great son C-1659, who in turn sired five sons who have had sons and daughters as winners at Chicago. It would be a most difficult task to find an outstanding flock of Hampshires in the United States that had not been influenced by the blood of Goldmine and his offspring.

The Genealogy Table of Important Rams and Family Lines

49 Bishopstone 10 Bred by E. Dibben (Born 1889)

424 Bishopstone 21

1121 Bishopstone 44

1820 Bishopstone 73

2210 Freeboeter

2557 Fossill

2884 Duke of Connaught

4333 Dogdean XXXV

4668 The Swell

:1 7156 Royal Swell

: :1 7454

: : Taylor 12919

: : 21728 Taylor 2990 (1)

: : 26513 Darland 6 (3)

: :2 8593 Cholderton 108

: : 11756 Miles 420 (5)

: :3 7612 Cholderton 125

: 11495 Harkness

: 12737 Harkness 78

: 27599 Seaver 31

: 45313 S & B B-38

: B-1622 Mt. Haggin B-197

: 52537 Mt. Haggin D-72 (1)

:2 5313 F. B.'s Favorite

: 5662 Royden

: 6188 Rob Roy

: 7165 Robin Hood

: 8068 Cholderton Robin Hood

: 7551 Rory O'More (2)

: :1 14308 Sherwoods 131 (14)

: :2 17231 Sherwoods 174 (2)

: :3 17739 Sherwoods 189 (10)

: 20314 Sherwoods 259

: 44113 Sherwoods (10)

:3 5316 Fine Figure

: 5728 Stonehenge 87

: :1 7612 Iwerne Initium (2)

: : 11420 Harkness (2)

: : 17132 Harkness 56 (2)

: :2 6231 Stonehenge 117

4668 The Swell

:3 5316 Fine Figure

: 5728 Stonehenge 87

: :2 6231 Stonehenge 117

: : :1 7216 Stonehenge 142 (The Druid)

: : : 8464 Chilton LVIII

: : : 9106 Clipperfield IV

: : : :1 A-017 Best Brother

: : : : :1B-658 Fonthill Clipperfield

: : : : : C-719 Fonthill Clipperfield 1st

: : : : : D-615 Fonthill Clipperfield 3rd (10)

: : : : :2C-629 Burcombe Joe

: : : : : E-504 Burcombe Blendworth 42

: : : : : F-829 Burcombe 54

: : : : : H-7 Cocum Irreproachable

: : : : : 30294 Judd (2)

: : : : : 42183 Blastock 485 (4)

: : : :2A-106 Brother Best

: : : : B-293 Bovingdon

: : : : C-812 Spiers' Favorite II

: : : : D-710 Pendley's Right Sort

: : : : :1D-783 Silver Cup 40

: : : : : E-675 Cholderton 149 (9)

: : : : : :1 18986 Dean's Peacemaker 98

: : : : : : 38683 M. A. C. 1865 (3)

: : : : : :2 18969 Dean's Thickset 81 (15)

: : : : : :3 18967 Dean's Masterpiece 19 (7)

: : : : :2D-955 Cholderton 272

: : : : : F-819 Flamstone XV

: : : : : F-951 Blendworth Boxer

: : : : : H-234 Blendworth 26 (2)

: : : :2 7522 Chilton XLV

: : : : 8468 Chilton LXII

: : : : 9109 Coleshill 6

: : : : :1 A-024 Coleshill 15

: : : : : B-301 Coleshill 30

: : : : : C-731 Coleshill Buxton (3)

: : : : :2B-303 Coleshill 32

: : : : :1C-739 Dogdean 102

: : : : : :1E-495 Dogdean 111

: : : : : : F-490 The Flower

: : : : : : 22108 Troy 38

: : : : : : 26418 Foothills 159 (3)

: : : : : : 35720 H & Son

: : : : : : B-842 H & Son 1148A

: : : : : :2E-392 Lasham 2

4668 The Swell

:3 5316 Fine Figure

: :2E-303 Coleshill 32
 : :1C-739 Dogdean 102
 : : 2E-392 Lasham 2
 : : E-833 Boat Swain
 : : F-392 Iwerne Choice
 : : 30316 Ismay (3)
 : :2E-387 Coleshill 66
 : 15616 Trusty Servant (5)
 : E-998 Fonthill Burntwood
 : :1F-506 Bishopstone Blendworth
 : : F-817 Anticipation (3)
 : :2F-360 Blendworth 49
 : : F-941 Blendworth Goldseeker
 : : H-322 Basildon Swell
 : : H-465 Bison
 : : J-52 Pendley Dean
 : : 45219 Pendley Footman J-290 (2)
 : :3F-827 Burcombe Blendworth 52
 : F-949 Blendworth Exchange
 : :1H-808 Blendworth Swell
 : : :1J-240 Burcombe Norton 72
 : : : 46549 Burcombe Favorite J-482 (20)
 : : : C-772 Bonny Leas 424 (1)
 : : :2 J-206 Norton Tip Top (10)
 : : J-429 Basildon Tip Top 2d
 : : J-946 Blendworth Tip Top
 : : K-526 Blendworth Topper
 : : K-898 Burcombe Topper IV
 : : L-106 Basildon Amport
 : : L-208 Englefield Champion
 : : L-487 Englefield Account
 : : L-687 Blendworth Royal Warwick
 : : L-934 Foxhill 80
 : : M-105 Englefield Delight (4)
 : :2H-622 Wandsworth Exchange (3)
 : :1H-883 Wandsworth Pride
 : : J-48 Pendley Quality (1)
 : :235816 Blastock 4 (2)
 : :3 35817 Blastock 13 (5)
 : : 45808 I. S. C. 1162
 : : C-1336 I. S. C. 113
 : : 52208 Klocke (4)

4668 The Swell

:3 5316 Fine Figure

: :2 H-622 Wandsworth Exchange (3)
 : :4J-167 Wandsworth Don
 : : :1 J-397 Braemore Bonar Law (1)
 : : :2 J-407 Herriard Don II
 : : : J-554 Pendley Invisible
 : : : :1 61841 Invincible of Herriard 2nd K825 (16)
 : : : : :1 L-343 Herriard Triumph
 : : : : : L-493 Pendley Masterpiece
 : : : : : :1 M-805 Kiddington Talisman
 : : : : : : N-78 Basildon Forward (9)
 : : : : : :2 M-41 Ickleton 133
 : : : : : : M-339 Burnham Big Boy
 : : : : : : M-522 Burnham Champion (2)
 : : : : : : :1 N-803 Basildon Promise (10)
 : : : : : : :2 M-804 Basildon Supreme (10)
 : : : : : :2L-89 Herriard Invisible VI
 : : : : : L-591 Herriard Conqueror
 : : : : : L-862 Shapwick Hill Fox
 : : : : : :1 M-294 Shapwick Copper
 : : : : : : M-423 Shapwick Special
 : : : : : : M-569 Lockinge Keystone (2)
 : : : : : :2 M-32 Shapwick Pride
 : : : : : : 16157 Chilmark 2 Can. Reg. (1)
 : : : : :2 K-115 Basildon Paragon 7th
 : : : : : K-605 Basildon Paragon 9th
 : : : : : K-910 Ampport Pride
 : : : : : L-173 Ampport Pride II
 : : : : : :1L-533 Burnham Ampport
 : : : : : : L-794 Blendworth Burnham
 : : : : : : L-936 Foxhill Blendworth
 : : : : : : M-113 Foxhill 88
 : : : : : : M-274 Burnham Burton
 : : : : : : M-478 Englefield Foreman
 : : : : : : M-724 Englefield Guardsman (3)
 : : : : :2 L-517 Foxhill Ampport 2nd
 : : : : : L-731 Foxhill 66
 : : : : : L-948 Chilmark Fine Fox
 : : : : : M-114 Foxhill Chilmark 5
 : : : : : M-317 Foxhill 93 (5)
 : : : :3 J-416 Herriard Don III
 : : : K-275 Herriard Don XVIII
 : : : K-446 Englefield Policy
 : : : K-737 Englefield Connaught
 : : : L-99 Basildon Masterstroke
 : : : L-346 Herriard Masterstroke
 : : : L-511 Foxhill 51 (10)

4668 The Swell

:3 5316 Fine Figure

: :2 H-622 Wandsworth Exchange (3)
 : :4 J-167 Wandsworth Don
 : :5 H-597 Goldmine
 : :1 H-844 Herriard Goldmine III (2)
 : :2 J-410 Herriard Goldmine 13th Can. Reg. 4263
 : : 66695 Princeton 28 (3)
 : :3 H-847 Herriard Goldmine VI
 : : J-205 Norton Taffy
 : : 50039 Norton Truant Can. Reg. 4379 (5)
 : :4 H-842 Herriard Goldmine
 : : J-49 Pendley Goldmine
 : : 45223 Pendley Goldseeker J-294 (13)
 : : E-5324 Mt. Heggins B-371 (2)
 : :5 H-846 Herriard Goldmine V (3)
 : : J-142 Braemore Arundel (4)
 : : J-484 Burcombe Braemore 79
 : : J-785 Shapwick Burcombe
 : : K-361 Shapwick Swell
 : : K-690 Shapwick Superb (4)
 : :6 J-154 Basildon Goldmine X
 : : K-5 Basildon Goldmine
 : : K-303 Basildon Goldmine
 : : K-527 Blendworth Basildon (10)
 : : :1 61239
 : : : 26806 J. C. P. 443
 : : : 109834 B & D R. V. F. 220 (6)
 : : :2 70317 Blendworth Basildon (11)
 : : ::1 90154 T. S. F. 134
 : : :: 96280 Gretzer 40 (11)
 : : ::2 79599 T. S. F. 724 (3)
 : : :3 L-36 Blendworth Golden Quality
 : : : :1 70319 Foxhill 41 L-190 (3)
 : : : :2 83001 Foxhill 4b L-253 (59)
 : : : :1 89213 M. M. 2826 (3)
 : : : :2 95991 M. M. 2844 (2)
 : : :4 L-305 Blendworth Golden Model
 : : : L-486 Englefield Access
 : : : L-836 Lockinge Gallant
 : : : W-20 Lockinge Royal Honour II
 : : : M-216 Lockinge Imperialist
 : : : W-395 Lockinge Juggler (4)
 : :7 45215 Blendworth Herriard J-128 (44)

4668 The Swell

- : 3 5316 Fine Figure
- : : 7 45215 Blendworth Herriard J-128 (44)
- : : : 1 A-4196 Mt. Haggin A-963 (2)
- : : : : 58608 Mt. Haggin C-117
- : : : : 84550 Mt. Haggin C-1900 (4)
- : : : 2 B-5223 Mt. Haggin A-920 (2)
- : : : 3 C-4360 Mt. Haggin C-67
- : : : : 83229 Mt. Haggin G-885 (9)
- : : : 4 C-1660 Mt. Haggin E-15
- : : : : 58585 Mt. Haggin E-15 (3)
- : : : 5 J-638 Blendworth Quartus
- : : : : 1 K-432 Pendley Quartus
- : : : : : 57306 Pendley Quartus 2d K-713 (2)
- : : : : : 59547 Bonny Leas 844
- : : : : : 91526 Bonny Leas 1344 (3)
- : : : : 2 K-220 Blendworth Nuggett
- : : : : : 67262 Blendworth 119-L-53a (4)
- : : : : : K-792 Blendworth Birthday
- : : : : : L-51 Blendworth 115
- : : : : : L-306 Blendworth Salisbury Champ
- : : : : : M-225 Blendworth Briton
- : : : : : M-245 Shapwick Nick
- : : : : : M-594 Shapwick Progress
- : : : : : N-8 Shapwick Advocate (2)
- : : : : 3 K-219 Blendworth Model
- : : : : : K-633 Burcombe Model II
- : : : : : K-902 Burcombe Model IV
- : : : : : K-986 Lambdens No. 26
- : : : : : L-691 Burnham Lambdens
- : : : : : L-953 Burnham Landford
- : : : : : 104557 Burnham Alla Fire M 132
- : : : : : 109727 T - O - 19
- : : : : : 114798 T - O - 42 (3)
- : : : 6 J. 640 Blendworth Sextus
- : : : : K-46 Norton Text
- : : : : K-338 Norton Tourist
- : : : : K-596 Lockinge Burcombe
- : : : : K-827 Lockinge of Herriard
- : : : : 61843 Herriard Topper (6)
- : : : 7 C-1659 Mt. Haggin C-6 (127)

4668 The Swell

:3 5316 Fine Figure

: :7 C-1659 Mt. Haggin C-6 (127)
 : :1 58591 Mt. Haggin E-22 (24)
 : : 92870 Mt. Haggin J-1358
 : : 105152 Mt. Haggin 164-X (5)
 : :2 58579 Mt. Haggin E-7 (11)
 : : :1 76079 Mt. Haggin G-668 (16)
 : : :2 92845 Mt. Haggin J-701 (36)
 : : 104963 Mt. Haggin 366-N (10)
 : :3 68007 Mt. Haggin F-25 (28)
 : :4 76041 Mt. Haggin G-19 (7)
 : :5 84029 Mt. Haggin H-75 (52)

:4 5631 Royal Dean:1 7505 Borough 87

: A-492 Borough 125

: B-256 Pains Best of All

: B-786 Cholderton 618

: E-450 Borough Buster

: E-967 Iwerne Kichener (4)

:2 7163 Jock Dean

: 8532 Eclipse

: 9521 Eclipse II

: A-208 Stratford Bishopstone II

: :1 D-545 Blendworth Dibben (2)

: : E-924 Blendworth Captain

: : :1 F-410 Herriard Captain

: : : F-742 Major

: : : H-280 Herriard Necho II

: : : H-703 Norton Tallor

: : : H-965 Norton Thruxton (24)

: : : 39869 Blastock 504 Commander (99)

: : :2 H-240 Blendworth Aaron

: : H-568 Blendworth Right Stamp

: : J-368 Blendworth Improved

: : J-630 Blendworth Vanquisher

: : K-525 Blendworth Ducket

: : 67261 Blendworth (2)

: : 89201 M. M. 2059 (12)

: :2 A-572 Eclipse III

: B-762 Favorite

: E-950 Iwerne Joeffre

: F-390 Iwerne Pharoah

: F-701 Food Problem

: F-934 Fiore

: H-175 Beresford

5661 Royal Dean
 : H-175 Beresford
 : H-548 Final Blend
 : H-803 Fusion
 : J-106 Chilmark Forecast
 : J-372h Annabeles Burcombe (9)
 : 3 7157 British Dean
 : : 1 8272 Fiscal Reform
 : : 9170 Stonehenge 229
 : : A-091 Stonehenge 264
 : : : 1 C-435 Stonehenge 405 (10)
 : : : C-951 Cholderton 641
 : : : 15618 Cholderton Eucalphis (2)
 : : : 2 C-433 Stonehenge 403
 : : : D-383 Coleshill 62
 : : : 15626 Judd (3)
 : : 2 8269 Farley Mount
 : : : 1B-556 Fision
 : : : 16098 Hursley's Fortune (3)
 : : : 17418 Renk 232 (10)
 : : : 2B-428 Hursley Mount I
 : : : E-287 Hursley's Farley Mount (10)
 : : : 3B-541 Fest and Free
 : : : D-517 Friar Tuck
 : : : E-422 Flower Dean
 : : : F-766 Basildon Flower Dean (2)
 : : : H-149 Pendley Basildon (10)
 : : : 4B-540 Fatherland (4)
 : : : C-724 Fonthill Fatherland 4th (14574) (32)
 : : : E-428 Fonthill Fatherland 7th (13)
 : : : 21103 Harkness 42 (1)
 : : : 5B-549 Fred Frolic
 : : : C-734 Frolicsome Mount
 : : : D-633 Young Frolic (3)
 : : : E-439 Fresh Frolic
 : : : F-015 Alresford Reservist
 : : : : 1F-495 Wandsworth Burntwood (2)
 : : : : H-119 Wandsworth Charles
 : : : : H-309 Cocum Jovial (9)
 : : : : 2 35830 Blastock 219 (5)
 : : : : 38772 Pride of Penn '33 (3)
 : : : 6 9250 Dog Rose

5661 Royal Dean

:3 British Dean

: : :6 9250 Dog Rose

: : A-279 Free from Flaws

: : B-536 Lemberg

: : :1 D-514 Festnette

: : : F-088 Ickleton No. 22

: : : E-832 Beneficient

: : : F-285 Bar None

: : : F-805 Dog Dean 131

: : : H-122 Wandsworth Dog Dean

: : : 30277 King (8)

: : :2 D-336 Everlasting

: : E-646 King Peter 266

: : F-551 Cholderton 32

: : H-354 Cholderton 38

: : H-508 Cholderton Hero 35

: : H-987 Burcombe Swell

: : 39877 Morrison (1)

: : B-5243 Mt. Haggin B-55 (33)

: : :1 87206 Mt. Haggin H-42 (10)

: : : 104968 Mt. Haggin L-1295 (2)

: : :2 89142 Mt. Haggin J-12

: : 98594 Sunny Brook 502 (2)

: :3 8281 Faithful Lad

: A-156 Fidelity

: B-358 Stonehenge 334

: E-211 Stonehenge 506

: F-028 Crawley 24

: :1 F-442 Basildon Crawley I (3)

: : 34277 Basildon Bright Eyes H-42 (4)

: : :1 39056 Camden (1)

: : :2 H-289 Herriard Menes

: : H-587 Bonnie Boy (10)

: : 39871 Braemore Barton H-836 (2)

: :2 F-788 Crawley 55

: F-987 Iwerne Baltic

: H-311 Cocum Jacobite

: :1 31437 Anoka 2508

: : 38829 Kingman 644 (1)

: :2 H-611 Cocum Kingfisher

: H-795 Flashlight

: :1 J-153 Herriard Dogdean

: 45233 Dogdean Blenheim

: A-1611 Mt. Haggin A-521 (3)

: :2 45548 Norton Twilight J-549 (13)

5661 Royal Dean

:3 7157 British Dean

: :2 46548 Norton Twilight J-549 (13)
 : 46547 Thompson (6)
 : A-2267 Bonny Leas 290 (6)
 : :1 67050 Bonny Leas 1051 (2)
 : : 88876 Bonny Leas 1355 (1)
 : :2 68949 Bonny Leas 1073 (11)
 : :3 67054 Bonny Leas 1061 (8)
 : : 94265 Ramlence 60 (3)
 : :4 59546 Ramlence 825
 : : 93816 B & D R. V. F. 35 (22)
 : :5 75344 Bonny Leas 1159 (12)
 : :1 88896 Sunny Brook 376 (1)
 : :2 88897 Sunny Brook 377 (3)

:4 6297 Dogdean LXXV

:1 A-231 Donald
 : C-558 Dauntless 49
 : F-066 Dogdean 120
 : F-291 Boreas
 : F-632 Botha
 : F-985 Iwerne Celtic
 : H-224 Fresh Tenant
 : :1 H-552 Farmers Club
 : : H-797 Farmers Union (5)
 : :2 H-546 Floral Tribute (10)
 : J-112 Chilmark Florist
 : 45235 Chilmark Flower J-360
 : A-4156 Mt. Haggin A-526 (18)
 : :1 65161 Mt. Haggin E-832
 : : 98008 Mt. Haggin K-1377 (1)
 : :2 68012 Mt. Haggin F-220 (4)

:2 7158 Marquis 2nd

: :1 8071 Baron Hampshire
 : : 11860 Cholderton A-918 (14)
 : : 17135 Harkness 59 (3)
 : :2 10166 Teaseal Policy
 : : 11513 Harkness (4)
 : :3 A-272 Fobro
 : : B-661 Mainstay
 : : C-720 Fonthill Burntwood (3)
 : :4 9455 Burntwood Marquis
 : : :1 11294 Burntwood Royal

5661 Royal Dean
 6297 Dogdean LXXV
 :2 7158 Marquis 2nd
 : :4 9455 Burntwood Marquis
 : : :1 11294 Burntwood Royal
 : : : 15867 Renks 201 (10)
 : : :2 A-476 Little Don
 : : C-730 Alresford Don
 : : D-691 Dogdean 108
 : : E-497 Dogdean 113
 : : F-069 Dogdean 123
 : : F-355 Fisherman
 : : F-699 Free and Easy
 : : H-147 Pendley Flower (2)
 : :5 A-273 Frontal Attack
 : : B-630 Kitchner
 : : D-526 Face the Foe
 : : E-337 Follow the Flag II
 : : E-919 Fight to the Finish
 : : F-353 Festubert
 : : F-826 Burcombe Chilmark 51 (10)
 : : F-815 Wandsworth C (4)
 : : H-17 Blenheim Chilmark 1 (2)
 : :6 9272 Fonthill Leader
 : : :1 D-586 Chilmark Iwerne 6
 : : : F-499 Burcombe Iwerne 47
 : : : 22151 Burcombe 121 (6)
 : : :2 B-417 Flowers Fonthill
 : : 15617 Stonehenge 482
 : : :1 23971 Harkness 190 (2)
 : : :2 29627 Harkness 486 (42)
 : : 41717 Bonny Leas 11 (3)
 : : :1 C-273 Chase 41 (4)
 : : :2 45089 Bonny Leas 121 (3)
 : :7 8278 First Lord
 : 9281 Fresh Star
 : A-491 Borough 124
 : B-678 Borough 137 (3)
 : :1 14571 Peter Pan 777-B-962 (9)
 : :2 D-647 Borough 161
 : : :1 15905 Flowers 359 (2)
 : : :2 E-503 Burcombe Chilmark 31
 : : 15625 Waters (2)
 : : E-969 Iwerne Frolic
 : : F-736 Iwerne Clipper
 : : F-977 Iwerne Tonic (3)

5661 Royal Dean
 6297 Dogdean LXXV
 :2 7158 Marquis 2nd
 :
 : :2 D-647 Borough 161
 :
 : :3 E-382 Iwerne Interprise
 : :1 F-482 Shapwick Interprise
 : : F-738 Iwerne Cavalier
 : : H-310 Cocum Joseph (3)
 : :2 E-955 Iwerne Goffre
 : : F-731 Iwerne Rising Star
 : : H-21 Basildon Free Lad
 : : H-405 Wandsworth Duke (10)
 : :3 F-397 Iwerne Swell (3)
 : : H-275 Iwerne 12
 : : 38462 Ismay H-D-20
 : : 48495 F. F. Inc. 329
 : : A-2022 R. N. H & S-85 (4)
 :
 :3 8243 Dogdean 223 of '07
 9173 Stonehenge 232
 :1 A-081 Stonehenge 254
 : 10508 Cholderton 510 (4)
 :2 A-083 Stonehenge 256
 : B-258 Baron Dogdean I-314
 : B-947 Cholderton 697 (2)
 :3 339 Stonehenge
 C-725 Fonthill Stonehenge
 D-630 Fonthill Cocum
 E-181 Buoy
 :1 F-283 Britian (3)
 :2 F-089 Ickleton 23
 : H-150 Pendley Squire
 : 26361 Williams 20
 : 35089 Barlow (1)
 :3 E-593 Darkwell
 : F-380 Braemore Birch
 : 25315 Finch 73
 : 34177 Butterfield 8262
 : 39329 Newman I (2)
 :4 E-819 Bill
 : F-387 Iwerne Farley
 : F-695 Flourisher
 : 38524 Imported Formation H-229
 : 41546 Straloch 34-2 (8)
 : :1 A-302 Straloch 481 (1)
 : :2 B-173 Straloch 5121 (2)
 :5 E-817 Bountiful
 : F-494 Wandsworth Iwerne
 : F-810 wandsworth Joe

5661 Royal Dean

E-181 Buoy

: 5 E-817 Bountiful

: F-494 Wandsworth Iwerne

: F-810 Wandsworth Joe

: : 1 H-135 Burcombe Clipperfield 55 (3): : 2 H-298 Joseph

: : H-602 Herriard Horlock (1)

: : 3 F-981 Iwerne Favorite

: 35863 Blastock 216 (1)

: 43562 Oklahoma A & M 21 (4)

: 6 F-284 Brave Boy: : 1 F-702 Full Flight

: : F-937 Flight Commander

: : 42022 Finch 225

: : 42154 Finch 423 (6)

: : 2 H-149 Pendley Brave Boy: : 1 H-444 Pendley Victor

: : H-600 Herriard Typhoon

: : H-936 Crawley 89 (12)

: : 2 45225 Pendley's Young Brave

: B-5470 Mt. Haggin B-374 (1)

: 65190 E-1165 Mt. Haggin

: 90061 Mt. Haggin J-161 (3)

: 7 E-815 Rameses I: 1 F-813 Wandsworth Lasham: : 1 30285 King (4): : 2 H-407 Wandsworth General

: : H-627 Wandsworth Dollar (2)

: : 3 H-399 Wandsworth Rameses

: H-649 Basildon Record

: H-839 Knut (7)

: 39870 Blastock 503 (11)

: 2 F-825 Burcombe Herriard

H-601 Herriard Watercourse

H-840 Herriard Watercourse II

J-155 Herriard Watercourse III

J-397 Braemore Bachelor (2)

46554 Blastock Braemore (11)

58853 Mt. Haggin N-179

82186 U. of C. 1340

93656 Brownell 633 (1)

431 Bishopstone 28 Bred by Edwin Dibben*
 2183 Bishopstone 93
 2699 Berry Court 66
 2853 Palmer 30
 3317 Meon VII
 3824 Cambrian
 4282 Cardigan
 4735 Stonehenge II
 5671 King Ho
 6189 King Stoker
 7161 King Highworth
 8100 Coleshill 4
 9114 Coleshill 11
 10014 Leet 289
 11841 Leet 553
 27701 Bowers 1793
 39220 Finch 272 (15)

1816 Bishopstone 69**
 2332 Berry Court 56
 2695 Berry Court 62
 2840 Cairo
 3299 High Clere XVII
 :1 3768 Stoker
 : 5162 Ampert Stoker
 : 5812 Bishopstone 199
 : 6286 Bishopstone 204
 : 8235 Bishopstone 233
 : A-616 Cholderton 40
 : :1 B-975 Cholderton 347 (3)
 : :2 11862 Cholderton 428 (2)
 :2 4575 Cholderton LXXIX
 4986 Hambleden XXXI
 5483 Hambleden XXXVII
 5843 Fardon Ferry
 :1 7315 Five Bells
 : 8394 Tumpety I
 : 9400 Tumpety
 : A-319 Blendworth Tumpety
 : B-567 Blendworth Swell
 : 15614 Briton D-369 (3)
 :2 7327 Fascinator
 8538 Fendley Fascinator
 9086 Duke of Britian
 A-826 Cholderton 263
 C-681 Brea Flow

*Has no connection with above table

**Apparently is non-related to above table

C-681 Brea Flow
 E-391 Lasham I
 F-295 Bulwark
 F-859 Bretwalda
 H-164 Bayard
 35859 Blastock 218 (3)

322 Waters C-12*
 639 Waters C-15
 726 Middleton 32
 1164 Frontier
 1524 Foxhall
 2142 Middleton 74
 2505 Middleton 79
 3348 Nelson Foster
 3839 Middleton 108
 4855 First Principle
 5497 Hambleden First Principle
 6663 Coleshill Chilmark
 7169 Coleshill Duke
 8069 Cholderton Coleshill
 9095 Cholderton 400
 10158 Cholderton 796
 11457 Harkness (2)

Flowers Ham (registered but no number)
 7096 Flower Hitchings
 9526 Snowcraft 60
 12971 Snocraft 353
 17771 Robeson Brothers
 25697 Griggs 41 (1)

35 Middleton I
 119 Baron Crow Marsh
 558 Baron Bateman
 888 Oxford Hero
 1274 Cleveland Tariff (4)

1979 Waybrook Ix
 3798 Highclere XXAV
 4373 Flitaway
 5066 Lord Chilmark
 7657 Cholderton 218 (2)

Breeding Systems Followed in the Production of Winning Sheep

Fifty-two of the nations outstanding Hampshires, produced in thirteen years, including champions at the International Live-stock Show, which covers roughly three generations with seventeen individuals each generation, were studied to arrive at a decision as to the breeding systems in use to produce champions. An extended five-generation pedigree was used for each individual.

Eighteen of the fifty-two were found to be the result of concentration of Goldmine* blood. Traceable directly to Goldmine on both sire and dam side.

Another eighteen were sired by Goldmine rams and traceable on the dam's side to Royal Dean. Goldmine is a several times removed grandson of Fine Figure, brother of Royal Dean. The various branches of the Royal Dean lineage represented on the dam's side of these individuals are Norton Twilight, Flight Commander, Chilmark and Commander.

Five of the fifty-two were produced from Norton Twilight or very closely related lines on both sire and dam side, one individual being strongly Norton Twilight inbred. All lines in the five trace to Royal Dean.

Three individuals are sired by Commander and out of Goldmine ewes. This represents a cross of the Royal Dean and Fine Figure

*Brothers are included in the word Goldmine, which used here refers to a family.

lines. There are no inbred Commanders in these results.

Results indicate that -

1/3 of the important winners studied are produced by concentrating the blood of Goldmine, both sire and dam.

1/3 of the important winners studied are produced by crossing Goldmine sires on Royal Dean dams.

1/10 of the important winners studied are produced by concentration of Royal Dean lines, both sire and dam, mainly through Norton Twilight and related lines.

1/17 of the important winners studied are produced by Royal Dean sires on Goldmine dams.

The remaining 8 individuals were only traceable on the sires side and were not counted.

These sheep are the best representatives of the following flocks in the period covered from 1926 - 1938:

1. Mt. Haggin Land and Livestock Company, Anaconda, Montana
2. F. W. McDowell, Fredonia, Pennsylvania
3. University of Wyoming, Laramie, Wyoming
4. J. C. Penny and Company, White Plains, New York
5. Mrs. Minnie W. Miller, Idaho and Utah
6. Buck and Doe Run Valley Farms, Coatesville, Pennsylvania
7. Glen Retreat Farms, Dorchester, Texas
8. Malcolm Moncreiffe, Bighorn, Wyoming

This gives a representative cross section of the breeding systems used in the United States.

Relation of Age of Sire and Dam to Quality of Offspring

The winning individuals in the Hampshire sheep classes were studied with regard to the age of sire and dam at the time the winning individual was born, in much the same way Allen (1) and Chaudhuri(2) studied cattle and with the same purpose in mind, to ascertain whether there is any significance correlation between parent age and quality of offspring.

In order that sire and dam ages of the show sample might be compared with sire and dam ages of the breed as a whole, a random sample of the breed as a whole was taken from flock books of the American Hampshire Sheep Association from 1917 to 1936, inclusive. Since it was from these volumes that the parent age of the show sample was taken, it took sixteen individuals from each of these flock books to equal in number the show sample dams, while eighteen were taken from each book to represent the sires. A random sampling was made by inserting ordinary playing cards in each volume; eighteen each year for sires and sixteen for dams. The book was then opened at each card and the individual recorded whose name appeared at the top of the right hand page. The parent ages were then recorded.

Table IV shows the tabulated ages of parents at the time the lamb was born.

Table IV

Age of Parents in Years	<u>SHOW SAMPLE</u>		<u>RANDOM SAMPLE</u>	
	Number Ewes	Number Rams	Number Ewes	Number Rams
1	5	62	17	57
2	56	86	81	121
3	61	83	61	70
4	87	76	60	57
5	60	42	44	31
6	26	25	34	13
7	14	7	11	6
8	14	12	9	4
9	4	1	5	0
10	1	0	2	2
11	0	0	3	0
12	0	1	1	0
Total	328	395	328	360

Average Age of Parents

Ewes in the show sample = 4.15 years

Ewes in the random sample = 3.92 years

Rams in the show sample = 3.43 years

Rams in the random sample = 2.94 years

The question may arise as to why there were only 328 ewes in the show sample. To be sure, it took more ewes than that to be the mothers of the winners at the International from 1913-1938, but many of them were imported from England, in which case, although they were in a registered flock, they were not registered individually, therefore could not be traced.

From an analysis of the first half of Table IV it would seem that a majority of show individuals were dropped by four-year-old ewes. The average age for the show sample is 4.15 years. Upon examination of the other half of the table it will be noted that the breed as a whole is dropped from dams 3.92 years old, or roughly three months younger than the show sample. Therefore, it must be concluded that at no particular age of the dam are you more apt to get a winning individual. The rams siring the show sample are approximately six months older than those siring the breed as a whole. This represents no greater difference than would be expected from the fact that a breeder with a ram of unusual ability to sire winners would hold him a little longer than an average ram of the breed as a whole. It follows, therefore, from a genetic standpoint, that at no particular year in a ram's life may he be expected to sire more winners than any other time. These conclusions are in agreement with work of Allen (1) and Chudhuri (2), reviewed above.

With regard to the above discussed factor Dr. H. C. Gardner, President of Mt. Haggin Land and Livestock Company, says the following in a manuscript under date of November 17, 1939.

"We have plotted ram capacities for sixteen or seventeen years by a complicated method of rating and find that as yearlings they are 80% effective; as two, three, and four year olds, they are rated as 100% effective; as five year olds they are 50% effective, and as six year olds they are almost out of the picture in connection with their capacity to produce outstanding individuals. We electrically collected semen from seventeen properly cared for and properly exercised six year old rams a year ago and only three of them had viable spermatozoa. We ourselves do not use six year old rams. We have tested their capacity long enough to consider them valueless!"

This observation comes out of the practical experience of Dr. Gardner, president of the largest establishment of purebred Hampshire sheep in this country. It runs slightly counter to other investigations in this field.

Sexual Preferential of Offspring as Indicated by Important Sires

A thorough examination of the question involving abilities of rams to sire outstanding ewes only or outstanding rams only, or to sire outstanding ewes and rams equally, would involve deep and

lengthy systems of grading, rating, and scoring which have not been undertaken in this study. However, there are several interesting facts which suggest conclusions, rather than prove them, that may be brought out from this study of important sires in the Hampshire breed of sheep. As the scoring of important sires progressed, an accurate account of the sex of his winners was kept. The information is given in Table V.

Table V. Showing the number of rams that sired winners and the sex of their winners

Number Rams	Number Winning Ewes Sired	Number Winning Rams Sired
1	15	11
1	12	5
1	8	6
1	6	5
1	3	4
1	10	6
1	5	4
1	7	2
1	4	6
1	2	3
1	1	3
1	3	1
1	3	0
1	2	4
1	0	4
1	4	1
1	1	4
1	3	2
1	1	5
2	2	2
2	0	3
3	2	1
4	1	2
8	1	1
9	0	2
12	2	0
44	1	0
60	0	1
37		Aged rams only

From Table V it will be seen that thirty-seven rams sired only aged rams, sixty sired no ewes and only one ram each; forty-four sired one ewe and no rams. These are insignificant numbers and are not used. However, a comparison can be made of individual siring two or more winners.

A. Group Showing No Preference as to Sex

Rank of Importance Table 1	Number of Sires	Number and Sex of Winning Offspring	
		Ewes	Rams
1	1	16	11
3	1	8	6
4	1	6	5
5	1	3	4
7	1	5	4
9	1	4	6
10	1	2	3
20	1	3	2
	2	2	2
	8	1	1
Total	18	58	53

B. Group Showing Preference for Ewes

Rank of Importance Table I	Number of Sires	Number and Sex of Winning Offspring	
		Ewes	Rams
2	1	12	5
6	1	10	6
8	1	7	2
13	1	3	1
58	1	3	0
16	1	4	1
Total	6	39	15

C. Group Showing Preference for Rams

Rank of Importance Table I	Number Sires	Number and Sex of Winning Offspring	
		Ewes	Rams
12	1	1	3
14	1	2	4
15	1	0	4
17	1	1	4
31	1	1	5
Total	5	5	20

This table shows eighteen rams in Group A to have sired fifty-eight ewes and fifty-three rams that were good enough to win. This group sired ewes and rams equally well and the first eight rams have an average standing of seventh in Table I as outstanding sires.

There are six rams in Group B that sired thirty-nine ewes and fifteen rams, which showed preference for the siring of ewes instead of both ewes and rams. The average standing in importance in Table I is sixteenth place for the rams.

The C Group of rams, five in number, sired five ewes and twenty rams, showing a heavy inclination toward siring rams instead of both ewes and rams. The average standing for this group of rams in Table I is eighteenth place.

As formerly stated, these figures are not as conclusive as they are suggestive, but they show that out of five outstanding rams one may be expected to sire better ewes than rams, one to

sire both equally well, and one to sire better rams than ewes; thus suggesting a 1:3:1 ratio. It may be further concluded that the more able a ram is to sire both ewes and rams of merit, the higher he stands in the list of outstanding sires. Group A in this study had a standing of seventh for the eight individuals, whereas the groups showing a choice of sex ranged down the list to sixteenth and eighteenth places.

DISCUSSION

The battle between man to mold four legged animals into useful servants and nature to preserve natural and primitive characteristics is more apt to be a victory for man if he has a fuller understanding of the origin of the forces he endeavors to overcome. The Hampshire sheep breeder must overcome weaknesses such as coarseness, stub horns or scurs, blue skins, long necks, poor fleeces, and black fiber in his breed of sheep before he has the most useful animal. These defects are deeply inherent in the breed as is shown by the early ancestry in the review of the development of Hampshires. By realizing the depths of these defects, in the genetic make-up, man knows better the extent of the work necessary to overcome them.

Breeders have established a standard of excellence for Hampshires, and livestock shows employ judges that will fit this standard of excellence to individual cases. Hence, the winners must be the individuals which more nearly approach perfection. This process is one of selection, man's very important tool in the process of improving any breed of livestock. By selection, breeders eliminate undesirable characteristics from their livestock and use individuals to breed from that more nearly approach the ideal. This method uses hereditary or genetic principles

to aid in improvement. By using individuals as parents which possess desirable characteristics, the breeder is trying to give the resultant offspring a double dose, so to speak, of the characteristics desired because half of its genetic make-up comes from the sire and half from the dam. He, therefore, aids his process of selection, theoretically at least, because the individual produced by the above method is more apt to have these desirable characteristics doubly strong in his genetic make-up. Therefore, when used as a breeder, a higher percentage of the resultant offspring should possess the characteristics sought. Prudent systems of mating related strains of livestock, or inbreeding, especially with individuals possessing the desired characteristics has been the history of the fastest development and improvement among breeds of livestock.

Carter (3) found only a fractional interrelationship within the breed of Hampshire sheep, meaning that one individual's relation to every other individual of the breed was indeed small. This is partially explained by the fact that our seed stock in the beginning was from varied sources and large in number, and also from the fact that Hampshires may have divided up into families on a geographic basis and have not developed as one unit.

With Hampshires we know approximately from "whence they came" and since there are standards of excellence established

we know the goal for the future but the important question is how to get there. Those who have more nearly reached the goal, if the shows are a criterion are the descendants of the ram Goldmine, bred by James Goldsmith of England. His son, 45215, Blendworth Herriard, stands fifth as a sire of winners and first as a sire of ewes, the dams of winners. Blendworth Herriard was imported from the flock of Major and Mrs. Jervoise, Herriard Park, Basingstoke, Hants, by Mt. Haggin Land and Livestock Company. His most outstanding son was C-1659, first as a sire of winners and tenth as sire of ewes, the dams of winners. Certainly this line of breeding has been the most important of any used in the United States, taking the International Livestock Show at Chicago as the basis for calculation.

Since this is a family of proved value it would seem wise to set up a breeding system using a concentration of this blood along with rigid selection, since it is a known fact that a large percentage of show ring winners are the result of the concentration of this blood. There are other important families and combinations that can be deducted from the tables of this work as well as the Goldmine line; for example, Goldmine sires on Royal Dean dams, or a concentration of the Royal Dean blood on both sides or the use of Norton Twilight lines.

Breeders may expect the offspring from old parentage to

be genetically equal to those from young parentage, however, nutritional disturbances may cause differences. Rams of similar breeding may not give equal results due to slight or large genetic differences. There is a possibility that they may be good as sires of ewes or rams but not both. Man's control over several of these factors is very slight but he must be armed with all the facts possible if he is to bring the breed to its most useful contribution to civilization.

The wise use of inbreeding to prolong the influence of highly desirable individuals and improve the breed has been practiced in the production of forty-eight percent of the fifty-two most outstanding individuals studied, while fifty-two percent showed no inbreeding coefficient whatever. A good slogan for the future might be suggested as, "Concentrate wisely the blood of outstanding individuals."

SUMMARY AND CONCLUSIONS

The ram C-1659 is the sire of more outstanding winners at the International Livestock Exposition from 1913 to 1938 than any other ram. Blendworth Herriard 45215, the sire of C-1659, is the most important sire of ewes the dams of winners at the same show. Concentrations in varying proportions of the blood of these two rams and other sons and grandsons of Goldmine, have produced more important winning sheep than any other blood or families used in the United States.

As far as the age of either parent is concerned with Hampshire sheep, the offspring born at one age is no more apt to be a winner than the offspring born at another. A good breeding individual is apt to be so from the beginning. However, ewes for example, may respond very differently to two rams of unlike breeding as far as quality of offspring is concerned.

Rams may differ in their ability to transmit desirable characteristics to their offspring on the basis of sex of the offspring. Some may sire better ewes, while some may sire rams of superior quality. This work suggests that there may be a 1:3:1 ratio among outstanding rams so that of five sires randomly selected, one would sire superior ewes, one superior rams, and three could do both equally well.

Breeding systems followed in the production of winners are; first, a concentration of Goldmine breeding on both the sire and dam side; second, Goldmine bred sires crossed on Royal Dean ewes; third, a concentration of Royal Dean on both sides; fourth, the concentration of various crosses with Norton Twilight lines; and fifth, the use of rams sired by Commander on Goldmine ewes.

Important rams of the present and past are largely traceable to one ram, 4668 The Swell, through his four sons. Rams in the past that did not follow this ancestral descent were short lived and unimportant.

Inbreeding was found in forty-eight percent of the most outstanding individuals of the breed produced in the thirteen year period. This inbreeding ranged from a fraction of one percent to twenty-five and three tenth percent. Fifty-two percent had no inbreeding.

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