PREPOTENCY IN AIREDALE TERRIERS

I HAVE recently had occasion to make a careful analysis of the ancestry and get of Airedale terriers. In view of the fact that this variety of dogs was manufactured only some fifty years ago out of known materials[1] and now breeds true to type the results are interesting, especially when compared with Davenport's studies in trotting-horse pedigrees.[2]

The records of the English and American Kennel Clubs' Stud Books show that to January, 1913, 80 dogs and 69 bitches have won their championship in both countries. Since to become a champion, a dog must receive a certain number of awards under at least three different judges, it is safe to assume that winners of the title are above the average of the variety. Certainly to breed a champion is the object of dog fanciers' breeding experiments.

Of the 80 dog champions, 39 were sired by champions. Of the 80 champions 38 had one grand-sire a champion, and 23 champions had both grand-sires champions. Just one less than half of all dog champions were sired by a champion, and about three fourths had either one or both grand-sires champions.

Of the 80 dog champions, however, 53 never sired a champion of either sex. Only 27 of the dog champions produced championship winners. Of these 27 sires of champions, but 13 produced more than one champion. However, these 13 exceptional sires produced 49 of the 149 Airedale champions; almost a third of all the champions of both sexes.

In the second generation, sons of champions sired 47 dog and 38 bitch champions, and daughters of champions were the dams of 43 dog and 22 bitch champions. It should be noted that champions both of whose grand-sires were champions get into these figures twice, as both the get of a champion's son and also of a champion's daughter. Of the 80 dog champions, 17 are bred this way.

Of the 80 dog champions, however, only 24 actually appear as grand-sires of champions, and but 10 are the grand-sire of 4 or more champions. Even more striking evidence of the prepotency of certain dogs as producers of champions is that those dogs who sired 2 or more champions almost invariably appear among those whose sons and daughters have produced more than 4 champions. The exceptional sires are also the exceptional grand-sires. The following table shows the champions in the ancestry and get of these exceptional breeding individuals.

Champion Ancestry					Champion Get					
					Sire of		Sire's Sire		Dam's Sire	
No.	Sire	Dam	Grand Sires	Grand Dams	♂	♀	♂	♀	♂	♀
5			1	1	2	2	1			1
9							2	1	2	
17	1		1		5	3	8	4	6	6
21			2		5	1	7	5	1	2
22	1		1			2	1		1	
28					1	2	1			
44			1		4	1	12	10	7	2
45			2		1	1	5	3		3
47	1		1		1		2	1	3	1
53	1	1	1		2	1				
56	1		1				2	1	1	
58					2	1	1	2	3	1
59	1		1		4					
65	1		2			2		3	1	
66	1				1	2				
72	1				2	2	3	5	2	2
16	9	1	8/3	1	30	20	45	35	27	18

These 16 champions have sired 50 champions, or, in other words, a third of all the Airedale champions have been sired by something less than a third of the dog champions.

Moreover, a glance at the pedigrees of these 16 phenomenal producers show them all to be more or less closely related. All trace back to Cholmondeley Briar (No. 9 in the above table). The three greatest producers of the lot are Master Briar (44), Clonmel Monarch (17), and Crompton Oorang (21). Master Briar is a grand-son of Cholmondeley Briar and the sire of Clonmel Monarch. Crompton Oorang is by a son of Master Briar out of a daughter of Clonmel Monarch. Without tracing out all the relationships in the dogs of the table, it may be said that the two living dogs (21 and

[1] Buckley, "The Airedale Terrier," 1907; Haynes, "The Airedale," 1911; Palmer, "All about Airedales," 1912.

[2] "Principles of Breeding," pp. 551–567.

59) are Crompton Oorang and his son, Rockley Oorang.

Practically all show dogs are placed at public stud, and any champion, thanks to the advertising his winnings give him, will be popular. The 53 champions who never sired a champion can not therefore be excused on the plea of lack of opportunity. They would certainly receive more bitches than a non-champion, unless this dog had made a great reputation as a sire.

The full table, showing the ancestry and get of all Airedale champions, and a similar one for Scottish terriers will be published in my forthcoming book on dog breeding.

WILLIAMS HAYNES

MITOSIS IN THE ADULT NERVE CELLS OF THE COLORADO BEETLE

IN a recent study of the development of the nerve cells through larval, pupal and adult stages in the honey bee, we had ample opportunity to note the method of division and growth. After the very early larval stages there is formed a regular mitotic figure in each multiplying nerve cell. These division figures are not equally abundant in all our material, which may account for the assumption that there is a rhythm in the normal growth of nerve cells. Mitosis does not stop at the end of the larval period, but continues for a time in the pupal stage. We have observed perfect mitotic figures in bees in the early pupal stages of metamorphosis. These figures are exactly like those occurring in the larval stages.

The larval life of the honey bee is relatively inactive, which affords an interesting contrast with the active existence of the common potato beetle. The results of this comparison will appear in a separate paper. While making the comparative study of the larval as well as pupal and adult stages in the growth of the nerve cells we noted in some of the adult material unmistakable evidence of nerve cell division. Close examination showed that there were many nerve cells in one animal dividing in the normal mitotic manner. Centrosomes, spindle fibers and astral rays were all complete. The chromosomes were too compactly massed to be counted. In one field of the 2 mm. oil immersion objective we found six cells undergoing division. Others appeared in other parts of the ganglionic mass.

Our study upon the growth of the nerve cells in the honey bee and the potato beetle indicate that we may expect to find nerve cells regularly dividing by mitosis through the pupal and into adult life.

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SCIENTIFIC BOOKS

Sigma Xi Quarter Century Record and History 1886–1911. Compiled by HENRY BALDWIN WARD, Secretary of the Society of the Sigma Xi, with the assistance of the Chapter secretaries. University of Illinois. Urbana-Champaign. Pp. xii + 542.

A brief statement of the society whose achievements for a quarter of a century are given in the octavo volume which has just been published under the above title will perhaps best describe its importance.

In the early spring of 1886 the feeling that students of science who were not eligible to election in the well-known honor college fraternity, Phi Beta Kappa,[1] should organize a similar honor society to which those worthy followers of Agassiz, Darwin and Haeckel should be admitted was clearly recognized at more than one college, and especially at those universities where science was made an important feature of the curriculum.[2]

Accordingly, at Cornell University in November, 1886, the society of the Sigma Xi was

[1] Organized in 1776 at William and Mary College in Virginia.

[2] Let me call attention at this point to the fact that very early in the history of the School of Mines of Columbia University in New York those students who were able to enter the senior class without conditions were given the privilege of wearing the badge of crossed hammers in the course of mining engineering, and of the Liebig's potash bulbs in the chemical course.