

it is never desirable or profitable to keep the latter class of fowl.

Furthermore, the present invention enables the poultryman to use only his most profitable fowls for breeding purposes and will also enable him to have on record the exact egg-producing capacity of each hen offered for sale, and thereby obviate the necessity of separately penning up "prize" fowl in pens, as has heretofore been the custom.

This patent was filed on October 17, 1898, so that this statement dates from the same year as Gowell's experiment began. Gowell lived in Maine, and Lytle in Wisconsin, so the basic idea of using trap-nests in poultry selection seems to have been quite wide-spread at that time.

The records of the Patent Office also yield another approach to this problem of selective breeding which has not attained any great popularity although the inspired ingenuity displayed does deserve a place in a history of breeding. In 1910 a patent was issued to

Stanley A. Merkeley covering a marking and dating device which, attached to the hen, identified her egg by applying a rubber stamp to it as it came into the world. A brief description of this device should be, and herewith is, incorporated into the literature of irrelevant geneticana. It consisted of an elastic ring carrying inking rollers—the whole attached to the vent of the hen by four metal clips, somewhat as a nose-ring is attached to a hog. The inking roller (or rollers) on the elastic ring produced a code of different colored stripes, dots, and dashes, which identified each egg. Fortunately for the comfort of our feathered barnyard friends, the device has not proved to be a best seller. It does, however, represent an ingenious approach to a biological problem even though one which the S.P.C.A. might take exception to.—Ed.



COMPLICATIONS IN EAR GENETICS

IN the JOURNAL OF HEREDITY for June, 1937, appears a brief report on "Ear Lobe Inheritance." From the interesting pedigree there presented, the authors conclude that adherent ear lobes are pure recessives in their inheritance to free ear lobes.

In 1931, in the course of some studies on the inheritance of the blood groups (*Jour. Immunology*, vol. 20, p. 371, 1931; *Human Biology*, vol. 5, p. 577, 1933), data were also collected on the inheritance of ear lobes and the method of clasping the hands and folding the arms (*American Naturalist*, vol. 66, p. 365, 1932). Since the data on the inheritance of ear lobes have never been published, it occurred to me that it might be appropriate to present it at the present time.

First, I should point out that the arbitrary classification into two sharply defined types: one with completely attached ear lobes, and the other with

completely free ear lobes gives a false picture, since all gradations between the two extremes are encountered. Moreover, in occasional individuals the two ears may exhibit differences, and, in rare instances, one may be free and the other attached. Hence, I found it necessary to classify the individuals into at least four arbitrary groups which I

TABLE I. EAR LOBE INHERITANCE

CROSS	NO. OF FAMILIES	CHILDREN				Totals
		0	1	2	3	
0-0	3	12	2	0	0	14
0-1	7	21	5	10	2	38
1-1	6	20	17	3	1	41
0-2	16	45	19	11	2	77
0-3	9	17	9	12	4	42
1-2	19	33	31	29	4	97
1-3	12	13	15	19	4	51
2-2	24	39	31	47	6	123
2-3	22	20	19	55	17	111
3-3	2	0	2	7	2	11
TOTALS	124	220	150	193	44	607

have designated as 0, 1, 2, and 3, respectively, where 0 corresponds to the completely free ear lobe, 3 to the completely attached ear lobe, and 1 and 2 represent intermediate types. Table I summarizes my findings.

It will be seen that, although there is a definite correlation between the types of ear lobes in the parents and in the children, no simple mechanism of inheritance can be derived. Probably, as with other quantitative differences, more than a single pair of allelomorphous genes is involved, or possibly

there is only a single pair of genes, but the effect of these genes is modified by the combined influences of the other genes.

The purpose of this communication, therefore, is to take the occasion offered by the report on "Ear Lobe Inheritance" to present some unpublished data on the inheritance of this trait and also to correct some misconceptions which the reader may possibly derive from reading that report.

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STABILITY AND INSTABILITY OF SEXUAL CONDITIONS IN MORUS ALBA*

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IN the spring of 1936, the writer had a considerable number of young white mulberry trees (*Morus alba* L.) coming into bloom. Ten of these trees, ranging in height from 9 to 12 feet, were very carefully studied for their sex expressions and labeled, in order that any possible future changes might be definitely determined. These trees were seedlings four years old and were planted in very rich garden soil. Five of the trees were completely carpellate or female and five were completely staminate or male. There was no indication of inter-sexual expression in any of their catkins.

When these trees bloomed again in 1937, they had increased in size and now ranged from 10 to 14 feet in height. Three of the five trees that were pure female in expression in 1936 were again pure female but two of them showed some sex-reversal, having developed some pure staminate catkins and some mixed catkins, containing both staminate and carpellate flowers, along with the numerous carpellate catkins. Of the five trees that were of pure male expression in 1936, three

were still pure staminate, showing no sign of femaleness in any of their catkins, but two had also undergone sex-reversal. One of these two trees was still decidedly male, but had a few carpellate catkins among the numerous staminate catkins. The other tree had changed to extreme femaleness, having large numbers of carpellate catkins, which later produced abundant fruit, and only a very few staminate catkins. Had the previous history of this tree not been known it would have been regarded as a carpellate tree with the slightest indication of sex-reversal to maleness. Some of the carpellate catkins were small and short, sometimes with not more than six flowers. The great majority of the catkins, however, were normal in size and both the large and small catkins developed into fruits. At maturity this tree appeared as abundantly fruitful as any of the trees which had been carpellate originally and had remained so.

This change from a pure male condition to a nearly pure female condition took place in a single year and apparently without any outside influ-

*Papers from the Department of Botany, The Ohio State University, No. 393.