A SIMPLE METHOD OF ILLUSTRATING MENDELIAN INHERITANCE

BY

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In a recent issue of this Journal, Ajrekar (1) has outlined a method for demonstrating Mendelian inheritance involving one or two pairs of factors to elementary classes in Genetics. It consists in taking glass beads of different colours, sizes and shapes, mixing them in a bag, and taking out at random one or two pairs as the case may be and recording the results in a suitable manner. The method illustrates the principle of random mating and the operation of the law of chance.

A simpler method than the one described by Ajrekar has been referred to by Sinott and Dunn (2). Briefly it consists in taking. for monohybrid ratios, two coins preferably two quarter anna pieces and tossing them a hundred or more times. The heads may be designated by the letter H and the tails by the letter h. The throws will arrange themselves into three groups, heads heads, heads tails, and tails tails or as HH, Hh and hh. The exercise will show with equal precision the principle of random mating and the operation of the law of chance. The lettering as suggested above will also introduce the students to the concepts of homozygosity, heterozygosity, phenotypes and genotypes.

For dihybrid ratios two copper coins and two silver coins tossed together as above will be found to be extremely satisfactory. The symbols may be :

Copper : heads H, tails h

Silver : heads S, tails s

The throws will arrange themselves, or in the language of the geneticists, segregate as follows :

1	H	H	S	S	All heads
2	H	h	S	S	Copper head and tail, Silver all heads
2	H	H	S	s	Copper all heads. Silver head and tail
4	H	h	S	s	Copper head and tail, silver head and tail
1	H	H	s	s	Copper all heads, silver all tails
2	H	h	s	s	Copper head and tail, silver all tails
1	h	h	S	S	Copper all tails, Silver all heads
2	h	h	S	s	Copper all tails, silver head and tail
1	h	h	s	s	All tails

Each student may be asked to make a hundred throws or more and to record the observations as above. Whatever numbers the individual students may obtain and however much they deviate from calculated numbers, if the instructor writes on the black-board the classification of the throws and records under each head the figures obtained by the students and adds them up, it will be observed how slightly the totals under each genotype depart from the calculated numbers.

For the ease of operation and the simplicity of materials needed, this method is hard to beat.

1. AJREKAR, S. L.—A simple method of illustrating Mendelian monohybrids and dihybrid ratios. Jour. Ind. Bot. Soc. 9: 62–64. 1930.

2. SINOTT, E. W., AND L. C. DUNN. Principles of Genetics, McGraw-Hill Book Cmopany New York, 1927.