proportionate—one the dominant, the other the recessive type. Two such flies have been bred to the recessive form and have given long- or short-winged offspring—no fly with both types of wing. Inbreeding these longs to shorts again has not yet produced a single fly with both types of wings. Evidently the asymmetrical condition is due to a somatic change that takes place in the development of the individual; a change comparable to that that takes place in the germ cells of Mendelian hybrids. The same explanation applies to the case of the spotted eyes also. The spotted condition appears therefore to be an ontogenetic segregation.

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HEREDITY IN INSANITY

THE fact that nervous and mental diseases are often transmitted by heredity was known to Hippocrates and has since his time been amply illustrated by insane-hospital statistics. but the exact conditions under which such transmission occurs have never been fully understood. A recent study has, however, revealed some data which seem to indicate that certain forms of insanity are transmitted from parent to offspring in the manner of a trait which is, in the Mendelian sense, recessive to normal.[1] The accompanying table shows the actual findings recorded in the study here referred to; these findings, it will be observed, are in fairly close correspondence with theoretical expectation, which is as follows:

1. Both parents being neuropathic, all children will be neuropathic.

2. One parent being normal, but with the neuropathic taint from one grandparent, and the other parent being neuropathic, half the children will be neuropathic and half will be normal but capable of transmitting the neuropathic make-up to their progeny.

3. One parent being normal and of pure normal ancestry and the other parent being neuropathic, all the children will be normal but capable of transmitting the neuropathic make-up to their progeny.

4. Both parents being normal but each with the neuropathic taint from one grandparent, one fourth of the children will be normal and not capable of transmitting the neuropathic make-up to their progeny, one half will be normal but capable of transmitting the neuropathic make-up, and the remaining one fourth will be neuropathic.

5. Both parents being normal, one of pure normal ancestry and the other with the neuropathic taint from one grandparent, all the children will be normal, half of them will be capable and half not capable of transmitting the neuropathic make-up to their progeny.

6. Both parents being normal and of pure normal ancestry, all the children will be normal and not capable of transmitting the neuropathic make-up to their progeny.

Types of Mating	Number of Matings	Total Offspring	Neuropathic Offspring	Normal Offspring			Died in Childhood	Data Unascertained
				Neuropathic Progeny	Without Progeny	Normal Progeny		
RR × RR ∞ RR	3	16	10	0	0	0	5	1
DR × RR ∞ DR + RR	19	129	45	14	20	27	20	3
DD × RR ∞ DR	5	18	0	8	2	7	1	0
DR × DR ∞ DD + 2DR + RR	7	54	12	6	18	10	8	0
DD × DR ∞ DD + DR	1	4	0	1	0	3	0	0
DD × DD ∞ DD	0	0	0	0	0	0	0	0

D = Dominant. R = Recessive.

RR = Neuropathic subject (nulliplex inheritance).

DD = Normal subject of pure normal ancestry (duplex inheritance).

DR = Normal subject with neuropathic taint from one parent (simplex inheritance).

[1] "Preliminary Report of a Study of Heredity in Insanity in the Light of the Mendelian Laws," by G. L. Cannon and A. J. Rosanoff. Read before the New York Neurological Society, October 4, 1910.

Results similar to those recorded in the table here given have been obtained in a much more extensive study of heredity in feeble-mindedness which was recently reported by Goddard.[2]

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THE TEXAS-CALIFORNIA ARC OF PRIMARY TRIANGULATION

A great arc of primary triangulation more than 1,200 miles in length, extending from central Texas to the Pacific coast, has just been completed by the Coast and Geodetic Survey. It connects the 98th meridian primary triangulation in the vicinity of Weatherford, Texas, with the Pacific coast primary triangulation in the vicinity of San Diego, California.

It is connected with the United States and Mexican Boundary at a number of places and is joined to and correlates a number of detached government surveys. It furnishes the geographic positions on the U. S. Standard Datum, of more than two hundred points which can be used to control all future public surveys within the region traversed.

There are 92 primary stations in the main scheme of this triangulation and, in addition, 38 stations in secondary schemes which provide for the connections with United States-Mexican boundary monuments and existing triangulation. The total area covered by the triangulation is 48,400 square miles, the average length of line east of El Paso is 17 miles, and from that place to the Pacific coast it is 62 miles. The maximum length of line is about 120 miles. The observations were made with a 12-inch theodolite, the pointings being made on heliotropes and acetylene lamps mounted at the stations observed upon. During the progress of the triangulation two primary bases were measured and 24 primary azimuths were observed.

The reconnaissance for this work was made between September, 1907, and February, 1908, and the observing was done in three seasons between November, 1908, and February, 1911. The total work was done in less than three years and six months, and the observations in less than two years and four months.

While the Coast and Geodetic Survey has, in the past, made more rapid progress on primary triangulation in the United States than that made in any other country, yet the rate of progress on the Texas-California arc exceeds that on any other arc in this country and the unit costs per square mile of area covered by the main scheme and per mile of progress are only about one half those of the triangulation between Marysville, Cal., and Tacoma, Wash., the arc for which, previously, these unit costs were the lowest. The accuracy, as measured by the closing errors of triangles of the Texas-California arc, is greater than that specified in the requirements for such work.

The remarkable rapidity of progress and the low cost of the work were largely due to the small amount of camp equipage used by each unit of the party; to the fact that only two officers had charge of field work, the writer on reconnaissance and a portion of the first season's observing, and Mr. J. S. Hill on the remainder of that season's work and that of the succeeding two seasons; and to the services of a most efficient signalman, Mr. J. S. Bilby, who was attached to each party from the beginning of the reconnaissance to the end of the observing. The parties were organized and managed, in the main, in a manner similar to that of the parties engaged on other pieces of primary triangulation done by this survey in recent years, only such changes being made as were necessary to meet new conditions which were encountered in semi-arid and arid sections, much of which was also mountainous.

This arc of primary triangulation will not necessarily be discussed separately by this survey in investigations of the figure of the earth, as were the two great arcs, one extending across the continent along the 39th parallel of latitude and the other paralleling the Atlantic coast from Maine to the Gulf, and known, respectively, as the "transcontinental arc" and

[2] *Amer. Breeders Magazine*, Vol. I., No. 3.