

## 188 (2148)

## Hereditary factors in body build.

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Some physiologists of nutrition seem inclined to conclude that all obesity is exogenous or nutritional obesity; that any excess of energy of intake over what is required to maintain the temperature of the body, and to enable it to do its work, due allowance being made for loss in feces and urine, must be stored as body fat. That there are endogenous factors is shown in cases of hypothyroidism and disfunction of some other endocrine glands. But Van Noorden, for example, is inclined to reject heredity as a factor in obesity. It is, indeed, recognized that in some races and in some families the individuals have heavier body build than in others. Thus the Scotch are slender and the Greeks and Eastern Jews are stout. But the racial as well as the familial idiosyncracies in build he would explain on the grounds of what may be called social heredity *i. e.*, the handing on of traditions of feeding. On the other hand the degree of functioning of the endocrine glands is hereditary.

To see if there are hereditary factors in build, a mass of between 2,000 and 3,000 sets of measurements of build, taken chiefly from random family records was distributed by the indices of build, and the number of individuals possessing each index was determined. This gives Figure 1. Figure 1 is the distribution of build of adults referred to about 50 years of age. These adults are grouped in five large classes: Very Slender, Slender, Medium, Fleshy and Very Fleshy. A similar polygon might be made persons 18 years of age, 14 years, 12 years, 8, 4, and 1 year or at birth. The means at these different years would vary—thus from 55 per cent. relative chest at 50 years to 47 per cent. at 12 years and to 67 per cent. at birth.

A figure was shown of the curve of average relative chest girth from birth to 21 years. There is an ontogenetic change in mean build and, at any age, a variability in build.

Again the variability polygon differs in shape and position in different families—in the progeny of different matings. Also the variability is different with different distribution polygons. What does this mean? Is it fully explained by social heredity?

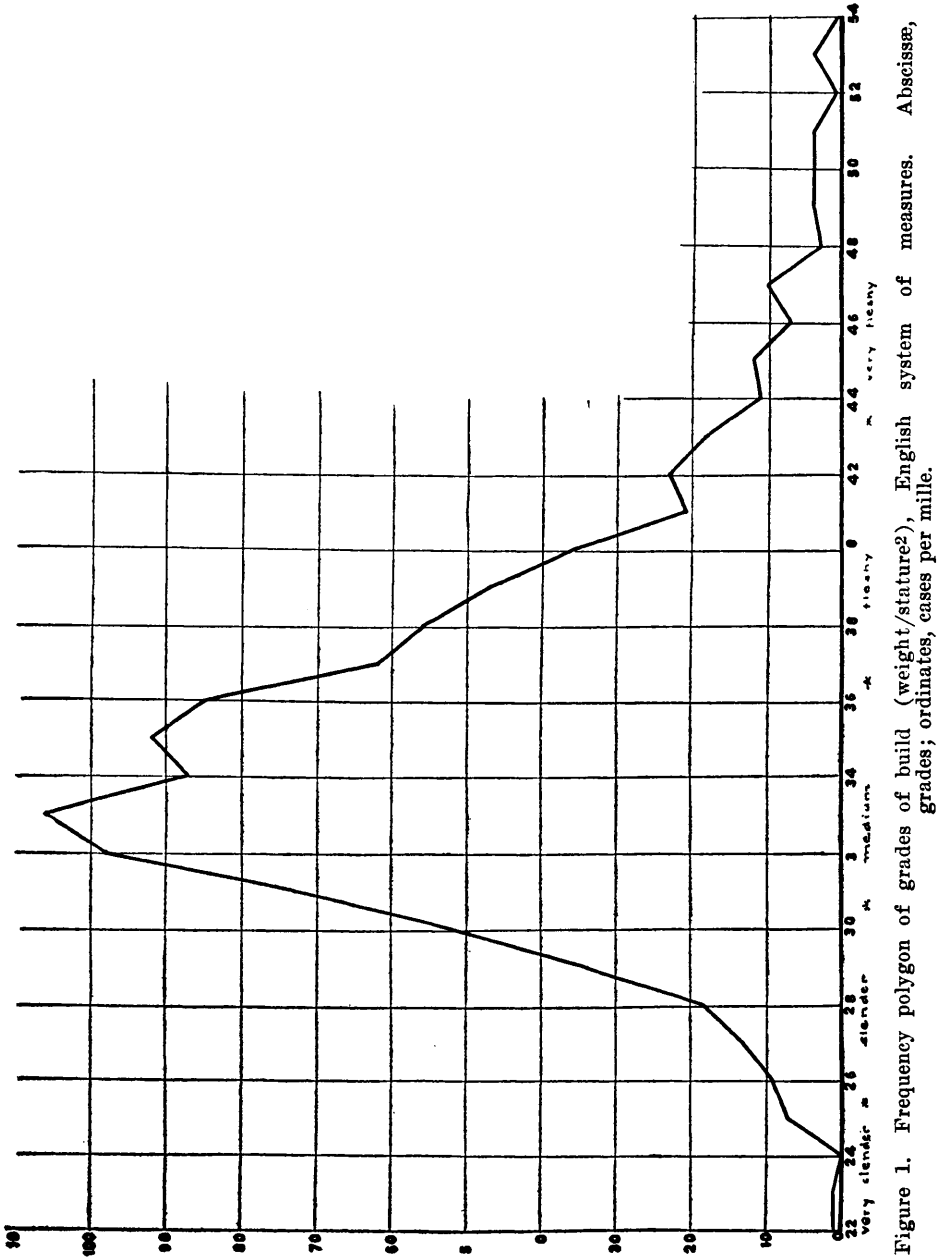


Figure 1. Frequency polygon of grades of build (weight/stature<sup>2</sup>), English system of measures. Abscissæ, grades; ordinates, cases per mille.

No; for one outstanding fact is that two healthy brothers may differ at the same age, one being slender, the other very fleshy. Different human strains differ in build just as Jersey steers differ from Aberdeen Angus steers. Armsby has inquired into the cause of the difference in build of such steers: he concluded that it is partly due to different amounts of food consumed; the Jersey steer is a lighter eater. It is also due to the fact that the Jersey's excess calories are used in building up protein which stores up a relatively great amount of energy, per kilogram, while in the Angus, the excess calories are stored in the form of fat which uses up relatively little energy per kilo. There is a difference in the method of metabolizing. Apparently this difference is found also in families,—so that we have some families in which the members store fat, in others, protein; at least, some fatten easily, others with difficulty. Probably the constitutional difference in human families is that which distinguishes chow dogs and grey hounds, Cochin china pigs and razor backs.

Returning to humans, one finds that the offspring of two very slender parents are practically all slender. But the progeny of two parents of medium build in certain cases range from very slender to very fleshy. Slenderness is recessive; but fleshiness is not differentiated genetically from slenderness by a single factor, but sometimes by at least two independent factors, possibly more. However this may be, the analysis that can be applied to the 500 matings studied, shows that the capacity of fattening easily depends on germinal factors just as truly as stature does.

### 189 (2149)

#### The action of salicylates on the isolated heart.

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Most of the experiments were carried out on the frog heart but turtles were also used occasionally. Sodium salicylate in different concentrations in Ringer's solution produced the following results: