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EXPLANATION OF MEASUREMENTS.

1. Height standing.—Let the person stand close to the wall in front of the measuring rod. His heels must be close together, touching the wall, and he must stand perfectly straight, looking straight ahead without raising or dropping the chin, the head touching the wall. Read off the height of the erown of the head by means of the triangle, pressing one side against the rod, the other against the crown of the head.

otior against the crown of the heid. 2. Height sitting.—Put a low, level seat (for instance, a small wooden box) in front of the meas-uring rod. Let the person sit on it so that his knees are about 5 inches higher than the seat, which is accomplished by making the seat sufficiently low, or by using a footstool. Let the per-son sit far back, close to the wall, keeping his back ereet against the wall. If must look straight ahead without ruising or dropping the chin, the head touching the wall. Give the heights of the seat and of the crown of the head. 3. Finger-reach.—Let the person touch a vortical post or wall with the second finger of one hand, and stretch along the measuring rod as far as he can reach. The rod must be held hori-zontally at right angles to the wall, in front of the body, along the median line of the arms. Lot the person make the greatest possible efforts in stretching out his arms before you read off

the figures.

4. The weight is to be taken in ordinary indoor costume.

The instrument used was a rod divided into 210 centimeters.¹ The index arm was a separate piece, consisting of a wooden angle, the sides of which were long enough to insure perfect contact with the measuring rod and with the crown of the head of the person being measured. The head measurements were taken by carefully trained observers; the others by the teachers. The personal data were given by the parents of the children. Owing to the peculiar social conditions prevailing in Toronto, certain groups of the population are represented by very few individuals. This is true particularly in regard to the French population, the greater part of whose children seem to attend the parochial schools. There are also very few children of the professional classes included in our material.

The success of the collection of measurements is largely due to the assistance exten ded by Mr. James Hughes, and to the lively interest on the part of the teachers who undertook the arduous task of obtaining the necessary information from the parents, and who took many of the measurements. To all of them my thanks are due. I have also to thank Dr. Alexander F. Chamberlain for the efficient management of the whole undertaking.

THE METHODS OF TREATING STATISTICS OF GROWTH.

The treatment of anthropometrical observations, particularly of growing children, offers peculiar difficulties. During the past years a vast number of observations referring to the growth of children have been accumulated. The method of treating the results of such observations has largely been a comparison of averages and of the frequency of occurrence of measurements between certain limits; for instance, frequency of occurrence of statures from inch to inch or of weights from pound to pound. It is generally assumed that these figures express immediately the physiological facts relating to growth.

In almost all cases the observations have been taken only once, and on a great number of individuals, not repeatedly through a long number of years on the same individuals. For this reason the series, when arranged according to years, will not be homogeneous. The younger groups contain many individuals who will not reach the adult stage, while the older classes contain only few individuals who will die before becoming adults. When we assume the whole series to be homogeneous, we imply that the value of the measurement under consideration has no relation to the liability to die at a certain age, which assumption seems to be very doubtful. Without considering details, it would seem very likely that individuals far remote from the average, who show either too small or too large measurements, approach the limits between pathological and physiological varia-tion, and are therefore more likely to die. This would imply a greater variability of the measurements of deceased individuals of a certain age than of living indi-viduals of the same age. The series of living individuals of all ages can be equally constituted only when the measurements of the living and of the deceased show the same values. This fact has already been pointed out by H. Westergaard.⁹

There are a few series of observations which seem to make the identity of the series of measurements of the living and of the deceased individuals of the same age very improbable. The most important among these is the peculiar decrease in the brain weight in males after the twentieth year. This can hardly be explained in any other way than by assuming an increased death-rate among men with very largo brains at an age of about 20 years.