Natural History memoir, made from new observations during the same journey. In addition the Committee have received from Mr. L. van der Stroude, and published, observations and notes made by him during a recent journey east of Jordan. The results of the survey, so far as it has been completed, will appear in a map reduced to a scale of about three miles to an inch, showing the routes of the river Jordan, instead of being on the western side only. This portion of the work is under the direction of Col. Sir Charles Wilson, R.C.M.G., F.R.S. The Society has also published, for a popular account, by Prof. Hule, of his recent journey, called "Mount Seir," and reprints of Capt. Conder’s popular books, "Ten Weeks in Palestine" and "On Herb and Marsh." Finally, the Committee have completed the issue of their great work, the "Survey of Western Palestine," with the last volumes of "Jerusalem," the "Flora and Fauna," and a portfolio of plates showing the excavations and their results.

SECTION II

ANTHROPOLOGY

OPENING ADDRESS BY FRANCIS GALTON, F.R.S., ETC., PRESIDENT OF THE ANTHROPOLOGICAL INSTITUTE, PRESIDENT OF THE SECTION.

The object of the Anthropologist is plain. He seeks to learn what mankind really are in body and mind, how they came to be what they are, and whether their races are tending; but the methods by which this definite inquiry has to be pursued are exceedingly diverse. Those of the geologist, the antiquarian, the jurist, the historian, the philologist, the traveller, the artist, and the statistician, are all employed, and the Science of Man progresses through the help of specialists. Under these circumstances, it is necessary to acquire an example occasionally set by presidents of sections, by giving a lecture rather than an address, selecting for my subject one that has long been my favourite pursuit, on which I have been working with fresh data during many recent months, and on which I have something new to say.

My data were the Family Records entrusted to me by persons living in all parts of the country, and I am glad to think that the publication of some first-fruits of their analysis will show to what careful and intelligent correspondents the painstaking has not been thrown away. I shall refer to only a part of the work already completed, which in due time will be published, and must be satisfied with, if I have finished this address, some few ideas that lie at the root of heredity shall have been clearly apprehended, and their wide bearings more or less distinctly the more disinterested of speaking on the subject, because, judging from private conversations and inquiries that are often put to me, the popular views of what may be expected from inheritance seem neither clear nor just.

The subject of my remarks will be "Types and their Inheritance." I shall discuss the conditions of the stability and instability of types, and hope in doing so to place beyond doubt the existence of a simple and far-reaching law that governs hereditary transmission, and to which I once before ventured to draw attention, on far more slender evidence than I now possess.

It is some years since I made an extensive series of experiments on the produce of seeds of different sorts but of the same species. They yielded results that seemed very noteworthy, and I used them as the basis of a lecture before the Royal Institution on February 8, 1877. It appeared from these experiments that the offspring did not tend to resemble their parent seed in size, but to be always more mediocrum than they—or smaller than the parents, if the parents were large. I have been careful, if the parents were not larger, that the point of convergence was considerably below the average size of the seeds contained in a large bag I bought at a nursery-garden, out of which I selected those that were sown.

The experiments showed further that the mean filial regression towards the mediocrum is directly proportional to the parental deviation from it. This curious result was based on many plantings, conducted for me by friends—living in various parts of the country, from Nairn in the north to Cornwall in the south, during one, two, or even three generations of the plants, that I could entertain no doubt of the truth of my conclusions. The exact ratio of regression remained a little doubtful, owing to the variable influences; therefore I did not attempt to define it. After the lecture had been published, it occurred to me that the grounds of my misgivings might be improved as objections to the general conclusions. I did not think it necessary to show them of the moment, but as the inquiry had been surrounded with many small difficulties and matters of detail, it would be scarcely possible to give a brief and yet a full and adequate answer to such objections. Also, I was then inclined to what I now perceive to be the simple explanation of the phenomenon, so I thought it better to say no more upon the subject until I should obtain independent evidence. It was anthropological evidence that I desired, caring only for the seeds as means of throwing light on heredity in man. I tried in vain for a long and weary time to obtain it in sufficient abundance, and my failure was a serious misfortune, together with its effect in inducing me to make an offer of prizes for family records, which was largely responded to, and furnished me last year with what I wanted. I especially guarded myself against making any allusion to this particular paper until I had been in pursuit of results, and it supplies me with the means of facts I wanted to investigate—the degrees of family likeness in different degrees of kinship, and the steps through which special family peculiarities become merged into the typical characteristics of the race at large.

An analysis of the records fully confirms and goes far beyond the conclusions I obtained from the seeds. It gives the numerical value of the regression towards mediocrum from 1 to 10, with unexpected coherence and precision, and it supplies me with the means of facts I wanted to investigate—the degrees of family likeness in different degrees of kinship, and the steps through which special family peculiarities become merged into the typical characteristics of the race at large.

The subject of the inquiry on which I am about to speak was Hereditary Stature. My data consisted of the heights of 923 adult children and of their respective parents, or sibs, for evidence.

In every case I transmuted the female stature to their corresponding male equivalents and used them in their transmuted form, so that no objection grounded on the sexual difference of stature need be raised when I speak of averages. The factor I used was 1.08, which is equivalent to adding a little less than one-twelfth to each female height. It differs very little from the factors employed by other anthropologists, who, moreover, differ a little in the case of each sex, because, by the principle of the estimation of the results, and the way that I first transmuted the figures used a somewhat different factor, yet the result came out closely the same.

I shall explain with fulness why I chose stature for the subject of inquiry, because the peculiarities and points to be attended to in the investigation will manifest themselves best by doing so. Many of its advantages are obvious enough, such as the ease and frequency with which its measurement and variability during thirty-five years of middle life, its small dependence on differences of bringing up, and its inconsiderable influence on the rate of mortality. Other advantages which are much less great. One of these lies in the fact that stature is not a simple element, but a sum of the accumulated lengths or thicknesses of more than a hundred bodily parts, each so distinct from the rest as to have a name by which it can be specified. The list of them includes about fifty separate bones, situated in the skull, the spine, the pelvis, the two legs, and the two sides and feet. In the bones of the legs and feet the average length of these lower limbs is computed, because in the average length of these limbs we have the greatest relative proportions of the general carriage. The cartilages and bones, the mean of which is excellent and large, that contributes to the general carriage. The cartilages interposed between the bones, two at each joint, are rather more numerous than the bones themselves. The flexible parts of the head and of the poles of the face, the cheeks, and the chin, the muscles of the face, the mouth, and the nose, are the parts of the body that give the general carriage of the face. The face should also be taken of the shape and set of many of the bones which contribute to the nose and mouth, and to the face.

The skull is the skeleton of O'Brien, the most famous statue in the world. It is the skull of a man 7 feet 4 inches tall, who was the tallest skeleton in any museum, that his extraordinary stature of about 7 feet 4 inches tall would have been paralleled. His face of his dorsal vertebrae had been more parallel and his back face of his dorsal vertebrae had been more parallel and straight, so that it was straighter and stronger.

The beautiful regularity in the statures of a population, whenever they are statistically marshalled in the order of their heights,
is due to the number of variable elements of which the stature is the sum. The best illustrations I have seen of this regularity were the curves of male and female statues that I obtained from the careful measurements made at my Anthropometric Laboratory in the International Health Exhibition last year. They were almost perfect.

The multiplicity of elements, some derived from one progenitor, some from another, must be the cause of a fact that has produced very considerable, and in the average stature of the two parents, and may be considered in practice as having nothing to do with their individual heights. The fact was proved as follows:—After transmuting the female measurements in the way already explained, I sorted the children of parents who severally differed 1, 2, 3, 4, and 5, or more inches into separate groups. Each group was then divided into similar classes, showing the number of cases in which the children differed 1, 2, 3, &c., inches from the common average of the children in their respective families. I confined my inquiry to large families of six children and upwards, that the common average of each might be a trustworthy point of reference. The entries in each of the different groups were then seen to run in the same way, except that in half of them the children showed a slight tendency to fall into two classes, one taking after the tall parent, the other after the short one. Therefore, when dealing with the transmutation of stature from parents to children, the average height of two parents, or, as I prefer to call it, the "mid-parental" height, is all we need to know about them.

It must be noted that I use the word parent without specifying sex, the further he is from the male parent the less he resembles the father, and the female parent the less she resembles the mother. The methods of statistics permit us to employ this abstract term, because they are inseparable. In a tall father being married to a short mother, we may expect that the height of the children will be an average of the two parents, and that the same will be true of their children; but if the union be the reverse, there will be a decided tendency of the children to resemble the mother, and the average height of the family will be more nearly the same as that of the father. The mean stature will then be the same as that of the race; in other words, it will be mediocre. Or, to put the same fact into another form, the most probable value of the mid-parental stature deviations in remote generations is zero.

For the moment let us confine our attention to the remote ancestry and to the mid-parental stature deviations, and ignore the intermediate generations. The combination of the zero of the ancestry with the deviate of the mid-parental stature deviations is no deviation at all. The product throughout is one of proportionate dilutions, and therefore the joint effect of all of them is to weaken the original wine in a constant ratio.

We have no word to express the form of this ideal and complete progeny, whom the offspring of similar mid-parental heights nearly resemble, and from whose stature even the highest heights are not much greater, and the smallest heights not much less, than those of the group. We may say that the group is defined by the equations of the straight line. All the groups are alike, and the group is no group.

We have only to observe that the deviation of the offspring from the mean stature of the parents is no deviation at all. The product throughout is one of proportionate dilutions, and therefore the joint effect of all of them is to weaken the original wine in a constant ratio.

The average regression of the offspring to a constant fraction of their respective mid-parental deviations, which was first observed in the diameters of seeds, and then confirmed by examination of human stature, is now shown to be a perfectly reasonable law which might have been deduced a priori from the facts. The law is so simple a character that I have not made it a point to test it with any large series of data. The only data which I have obtained on this subject are the measurements of the height of the children of known parents.
THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The meeting of 1855 of the American Association for the Advancement of Science was held at the Ann Arbor University. The total attendance, according to Science, was not a large one, the number reaching only to 395; the number of papers was 176. Two changes in the organisation were made; by one, the section of histology and microscopy was abolished, as it has been urged for some time that a special science of microscopy does not exist, the microscope being rather a tool to be used by scientific men in various branches. The other change was in the name of the section of mechanics, the words "and engineering" being added to the title, that it may be more clearly understood by Americans that those interested in all branches of engineering are invited to take part in the proceedings. As this was the first meeting since the action of the Government in regard to the Coast Survey, the question was generally discussed. The matter was referred to a committee, which offered to a general session of the Association the following resolutions, which were unanimously accepted:

WHEREAS, The attention of this Association has been called to articles in the public press, purporting to give—and presumably by authority—an official report of a Commission appointed by the Treasury department to investigate the condition of the U.S. Coast Survey Office, in which report the value of a certain scientific work is designated as "meagre."

And WHEREAS, This Association desires to express a hope that the decision, as to the ability of such scientific work, may be referred to scientific men.

Resolved, That the American Association for the Advancement of Science is in earnest sympathy with the Government in its every intention to secure the greatest possible efficiency of the public service.

Resolved, That the value of the scientific work performed in the various departments of the Government can be best judged by scientific men.

Resolved, That this Association desires to express its earnest approval of the extent and high character of the work performed by the U.S. Coast Survey—especially as illustrated by the

* For early copies of the addresses and papers we are indebted to the editor of Science.