memory in the process, a chapter is devoted to a rather miscellaneous description of the appearances in a typical subject. The relation of these facts to the influence of mind over body is next ably discussed, and this is followed by a study of suggestion in the waking state. Here the exposition is interrupted by a controversial chapter, and the course of thought again changed to afford room for a brief historical sketch. Theoretical considerations conclude the first portion of the work. Part II. consists of a careful analysis of over one hundred cases in which the curative effects of suggestion were illustrated, with some account of the nature of the action in such cases. These cases are derived from the most various types of disease, and prove, that, in the hands of a careful expert, this means of betterment and cure is most valuable. Instead of filling out the skeleton plan of the work just given, it may be more serviceable to the prospective reader to illustrate the chief results of this laborious study.

The hypnotic condition is found to be only a somewhat extreme case of natural sleep. Every night we place ourselves in an accustomed attitude, seek a monotonous course of ideas, and will to go to sleep. It is auto-hypnosis. In artificial hypnotism the sleeper remains subject to the control of an operator, because that is the dominating idea in going to sleep. From this it follows that no one can be hypnotized totally against his will: the patient must have some notion that something unusual is to happen. Time and again has an operator, unknown to the subject, willed the latter to sleep, but to no purpose. Just as in sleep the will is subdued but not extinguished, so in hypnotism the patient is not totally in the hands of the operator. An act shocking to the moral susceptibilities must be insisted upon, and repeatedly, before it is executed. Nor is the individuality of the subject lost. His past attainments are all that can be drawn upon: no new power is developed, but the hidden recesses of the unconscious are ransacked.

A distinctive point is the memory the subject retains of what was done during the hypnotic condition. In all the deeper stages, upon awakening, nothing is recalled: the interval is a complete blank. But Dr. Bernheim most ingeniously shows that the knowledge is latent only, not lost. By careful hinting, the subject can be made to recall all that happened; and, if a suggestion be given that he is to recall what happens, then remembrance is complete. It is at this stage that the medico-legal interest centres. The unconsciousness of the victim would be the safeguard of the criminal. Not only this, but a suggestion can be given that hours, days, or weeks after awakening, the subject is to commit some outrage, and insist that it was done of his own free choice. In some cases "retro-active" suggestions are possible. The subject is told that he has been a witness to certain acts. He assimilates the incident to his experiences, elaborates it, and is certain of his testimony. The Tisza-Eslar affair is a case in point. The judicial complications arising from these facts have yet to be satisfactorily solved.

Hypnotism magnifies the action of the mind upon the body, shows that processes usually beyond voluntary control or influence can by extreme attention be psychically influenced, wounds can be made and cured, the pulse be slowed or quickened, and even stigmata be produced. Here lies the essence of all the mind-cures; and it is only by a conscientious study of all such facts that mental healing can be placed upon a sound basis. Hypnotic cures act by keeping up a hopeful disposition, by focusing the attention on the object of cure, by dispelling worry, — all naturally efficacious processes. It is avowedly impotent in cases of organic lesion, but finds its special application in cases of impairment of nervous function.

Finally, hypnotism illustrates the extremely subtle steps of unconscious suggestion. The least change of facial expression, indicative of surprise, of gratification, of anxiety, is enough to give the clew to a sensitive subject. In this way many observers have been misled into attributing to physical or more mysterious influences what they have unconsciously suggested. This fact makes this field of study at once fascinating and treacherous. It requires peculiar talents and great shrewdness.

Such are a few of the main points which hypnotism has contributed to a scientific psychology. This contribution is of the greatest value, and especially when contrasted with the pernicious tendencies of the uncritical and sensational consideration of the same phenomena thereby displaced. While great credit is due to Dr. Charcot and his associates for introducing the scientific era into hypnotism, and braving the contempt that such a step involved, equally great is the merit of the school of Nancy for relieving the phenomena of much of their mystery, and adding in every direction to our knowledge of these valuable conditions.

Natural Inheritance. By FRANCIS GALTON, F.R.S. London and New York, Macmillan. 8°. $2.50.

MR. GALTON hardly needs an introduction to American readers. His researches into the heredity of genius, his study of the predominant traits of English scientists, his invention of composite photographs, together with a large number of interesting and original memoirs, have made his name and work known wherever new applications of scientific methods are appreciated. In the present work the author takes up the general problem of the processes of inheritance, upon special aspects of which he has expressed his views upon various occasions. His data are derived from entries according to the plan of the "Record of Family Faculties." This, it will be recalled, is a convenient book for the recording of the chief physical and mental characteristics of an individual, his parents and grandparents, his brothers and sisters, his own children, and so on. Prizes were offered for the most complete sets of such records; and from the answers to this competition for the prize, as well as from measurements taken at the Health Exhibition, Mr. Galton is able to deduce a few important and many subsidiary results.

A prominent feature in the present work is the application of the "probability curve" to the facts of physical variation, — an attempt to apply mathematical conceptions in the field of biology, and to found a science of biological statistics. We know that if a large number of men be measured, and the number of men between equal differences of height, let us say to each inch, be counted, the result will be somewhat as follows: the largest number of men will be found in the inch of height containing the exact average height of all the men measured, and to either side this number will very rapidly decrease as we depart from the average. What the probability curve does is to predict this rate of decrease, and to tell us how many men will be found at each degree of variation from the mean result. The test has been applied to quite a number of physiological characteristics, and with success; the numbers actually recorded, and those which the mathematical formula requires, being in fair agreement. Wherever phenomena depend for their exact appearance upon a large number of minute causes, no one of which has a considerable effect, this law seems to dominate. "It reigns with serenity and in complete self-effacement amidst the wildest confusion. The larger the mob, and the greater the apparent anarchy, the more perfect is its sway. It is the supreme law of unreason."

A point of particular interest in this curve is the point above and below which there is an equal number of measurements. This point — known as the probable error, because, if instead of measurements we were classifying errors, it would be the error we as often exceed as fall short of — in a sense determines the entire curve, and the comparison of the probable errors of two homogeneous curves is all that is needed to show their complete similarity and difference. It is by such methods and comparisons that Mr. Galton reaches his results, and it is just because his results are founded on such careful and ingenious methods that they can be regarded as reliable and valuable.

The chief outcome of the inquiry is the establishment of the law of regression towards a mean. If we take the height of the father and the height of the mother multiplied by 1.08, — the ratio of male to female stature, — draw the mean between the two, and call this the height of the "mid-parent," then the height of the child will be nearer to the average of the race than the height of the mid-parent, and will be so in a constant ratio determined as one-third; that is, the child will, on the average, be one-third less exceptional than his mid-parent. It is found, too, that the difference between the heights of the father and mother is an unimportant factor; the children of parents differing much in height and those of parents very similar in height being the same, provided the average height of the parents be the same in the two cases. Upon this basis, Mr. Galton has constructed a device by which we set weights

at the points on a scale opposite the height of each parent, and read on another scale the most probable height of son and daughter, as well as the range of variation within and outside of which there is an even chance of his or her appearance.

At first sight, this law seems opposed to the current conceptions of heredity, by which like breeds like, and qualities gather strength as they are handed down from parent to child; but, while the tendencies of the two laws are opposed, this opposition is not a contradiction. There is still room for the appearance of qualities in families, because the exceptional father is still more likely than the mediocre one to have an exceptional son; only the chances are not in favor of having a son equally as exceptional as he himself is. This is true because the rate of regression towards the mean is a ratio, and affects all alike. However, owing to the far greater number of mediocre parents, it is more likely in a given case that an exceptional son is the exceptional child of "average" parents than the "average" of exceptional parents. The law tells heavily against the continued inheritance of particular traits, both beneficial and pernicious ones, and regards as typical the oft-observed decadence of eminent families.

The variations in eye-color, the presence or absence of the artistic temperament, — which is shown to be more prevalent in women than in men, — the tendency towards types of disease, are treated according to the same plan, and the assumption of the validity of the law is found to accord with the facts. Mr. Galton has even attempted an experimental verification. The seeds of sweet-peas differing in size were grown, and the numbers of resulting seeds of each size were obtained, with the result that the seeds were less exceptional in size than the parent-seeds, and also in about the ratio of one-third.

Besides this chief result, the volume contains a number of minor studies, all of which will be of interest to students in various scientific pursuits. The effect of marriage selection in continuing individual traits; the distinction between traits that blend, such as the mulatto issue of black and white, and those that do not blend but exist side by side; the possible shifting of the average result by a general amelioration of the race; the means of defining quantitatively nearness of kinship, — these form some of the minor points discussed.

In leaving the volume, one is impressed with the great value of method in statistical work, with the power of mathematical treatment to give clearness to results, with the enormous labor necessary to obtain results in this definite form, and with the great possibilities that this study holds out to our posterity as a means of racial and social improvement.

AMONG THE PUBLISHERS.

E. & F. N. SPON announce "A Practical Treatise on the Strength of Materials, including their Elasticity and Resistance to Impact," by Thomas Box; "Steam Boilers, their Management and Working on Land and Sea, Thirty Years' Experience," by James Peattie; and "The Voltaic Accumulator, an Elementary Treatise," by Emile Reynier, translated from the French by J. A. Berly, C.E