

slowly-elaborating (F_5 , M_1 , for example), the female-differentiating reactions would be in efficient excess during the earlier stages of the period of sexual differentiation. Hence, if the differentiation of the gonads is not a matter of a moment but occupies a certain amount of time, the whole or a part of their differentiation would be pursued under the direction of the female-differentiating reactions and ovarian tissues would be laid down. Later, when the male-differentiating reactions had ultimately overtaken and replaced the female-differentiating, if differentiation is not complete, the rest of the differentiation of the gonads would be into testicular tissues, so that a condition of "glandular" hermaphroditism would result. Since the type of the differentiation of the rest of the sexual characterisation is modelled by the kind of gonadic tissue present, this could lead to a marked degree of harmonic intersexuality.

This conception can accommodate the now established fact of the assumption by a genotypic female of the sexual characterisation of a functional male and vice versa. The sex-chromosome constitution does not necessarily correspond with the sexual characterisation. It is not the sex-chromosomes that finally determine sex; it is the sex-determining gene-complex, and disharmony among the elements of this may be such

as must lead to the assumption of a totally inappropriate sexual characterisation. Further, the situation is created in which environic agencies provoking disharmony can lead to intersexuality and even to sex reversal, which is not the transformation of a female into a male or vice versa, but merely the assumption by an individual genotypically of one sex of the sexual phenotype usually associated with the opposite: genotypically the individual remains unchanged. If sex reversal overtakes an individual of the heterogametic sex, it will continue to elaborate two kinds of gametes even though it functions as an individual of the sex which usually is homogametic, and this fact will be evidenced by the sex-ratio among its offspring. The sexual characterisation of an individual can be classified as (a) *Primary genotypic characters* (the sex-determining factor complex, usually defined by the sex-chromosome constitution, XY or XX). (b) *Secondary genotypic characters* (the sexual phenotype). These include the *Primary gonadic characters* (ovarian or testicular organisation of the gonads). In the insect all the sexual characters are secondary genotypic. In the case of the bird and mammal some are (c) *Secondary gonadic characters* (depending for their expression and maintenance upon the activities of the functional gonads).

Obituary.

PROF. JAMES WARD.

BY the death of Dr. James Ward, Cambridge has lost one of its most distinguished teachers and British philosophy a man who by general acknowledgment was, along with the late Mr. F. H. Bradley, one of its leading figures. He passed peacefully away on March 4, at the advanced age of eighty-two years, universally beloved and respected, retaining to the end his intellectual vigour, and continuing his work in the University until the illness of his last few days compelled him to desist. The January numbers of *Mind* and the *Hibbert Journal* contain articles from his pen which show that he had lost none of his critical alertness, while two years ago he published an elaborate "Study of Kant," the result of long and sustained research. Until a few months before he died, he was contemplating writing a comprehensive volume on epistemology; as a matter of fact, he had written some chapters of it, a series of articles he contributed to *Mind* during the years 1919 and 1920 constituting one of them.

James Ward was born at Hull on January 27, 1843. The home of his parents was, however, in Liverpool. Here he spent his school-days, and, on their termination, he was articled to a firm of architects. But he soon abandoned the idea of following a business career, and entered Spring Hill College to prepare for the work of the Christian ministry. For a period of twelve months he actually was minister of the Congregational Church at Cambridge. Then he discovered that his theological views were out of accord with those of the members of his congregation, resigned his charge, and entered Trinity College, where he came under the inspiring influence of Henry Sidgwick. He was already a graduate and gold medallist of the University of

London, and was placed alone in the first class in the Moral Sciences Tripos of 1874, being elected a fellow of Trinity in the same year. In his fellowship dissertation on "The Relation of Physiology to Psychology" there can be traced the germs of many of the principles he afterwards worked out in detail.

Ward then proceeded to Germany, where he studied under Lotze at Göttingen and under Ludwig at Leipzig. Of both these teachers he always spoke in terms of the warmest admiration, and there is no doubt he was greatly influenced by Lotze in reaching his own philosophical position. He was appointed lecturer in moral science at Cambridge in 1881. For many years he devoted himself chiefly to psychology, and it was under his guidance that Cambridge gradually became a centre of psychological research. He was instrumental in starting a Psychological Laboratory almost about the same time that Wundt began experimental work in Leipzig. Bringing to the study of psychology a wide and thorough knowledge of biology and physiology, he was enabled to interpret the facts of mind with the aid of evolutionary conceptions in a way that had never before been attempted. Michael Foster used to tell him that he was a "physiologist spoilt"; but he certainly atoned for his desertion of one science by completely revolutionising another.

Croom Robertson was to have written the article on "Psychology" for the ninth edition of the "Encyclopædia Britannica," but was prevented from doing so through failing health. Ward undertook to provide the article; he began writing it in 1884, incorporating the substance of certain papers of his which had already appeared in periodicals, and it was completed in 1885. A supplementary article was prepared by him for the tenth edition of the Encyclopædia in 1885; and finally,

in 1908, these with omissions and additions were amalgamated into the new article of the present or eleventh edition. Probably no article in the "Encyclopædia Britannica" has ever occupied quite the position in the history of a science that this does in the history of psychology. Its original appearance marked the beginning of an altogether new departure in psychological investigation. Ward broke away entirely from the traditions of the associationist school then prevalent in Great Britain; and developed a conception of the mental life that has been immensely fruitful in later psychological work. He propounded a view of the conscious subject as a centre of selective activity that gradually differentiates presentations of the objective world and thus builds up its world of experience. On almost all the main problems of psychology new light was thrown; the treatment of attention, perception, imagination, feeling and conation was essentially fresh and original, and it has entirely superseded the older mechanical method of handling these subjects. It is indicative of the thoroughness with which the foundations were laid that, when a quarter of a century later the work was revised for publication in the form of an independent treatise, little was found of a fundamental nature to alter. The volume entitled "Psychological Principles," which appeared in 1918, contains much additional material, particularly the chapters which deal with the consciousness of self, but the general viewpoint remains unchanged.

In 1897 Dr. Ward was appointed to the chair of mental philosophy and logic at Cambridge. During the previous year he had begun the delivery of a course of Gifford Lectures at Aberdeen, which led to the publication in 1899 of his important work on "Naturalism and Agnosticism." These lectures contain a wonderfully lucid and penetrating analysis of the underlying principles of physical science and a remorseless exposure of the inconsistencies of Herbert Spencer's attempt to base a philosophy of evolution on the principle of the conservation of energy. In the second volume of the book the doctrine of psychophysical parallelism was examined, and it was maintained that the assumption of a dualism between mind and matter renders not only the connexion of body and mind an enigma for the naturalist, but also the problem of the perception of an external world equally intractable to the psychologist. If, then, materialism be abandoned and dualism be dismissed as untenable, there remains only, it was urged, a spiritualistic monism as the one secure philosophical position. The ground was thus prepared for a more constructive effort; and when, ten years later, Prof. Ward was invited to give a further course of Gifford Lectures at St. Andrews, he entered upon the task of trying to determine what we can know, or reasonably believe, concerning the constitution of the world, interpreted throughout and strictly in terms of mind.

The lectures were published in 1911, under the title of "The Realm of Ends, or Pluralism and Theism." The start was made from the consideration that the world immediately confronts us not as one mind, or even as the manifestation of one, but as an objective whole in which a multiplicity of minds are discerned in mutual interaction. From this pluralistic point of view our experience has in fact developed, and from it the ideas

are acquired that eventually lead beyond it. For, though empirically warranted, pluralism, it was argued, turns out to be metaphysically defective and unsatisfactory; it points to a theism which is indeed only an ideal, but an ideal that, as both theoretically and practically rational, may claim our faith though it transcend our knowledge. Ward worked out, in fact, a system of monadology resembling that of Leibniz, except that the doctrine of pre-established harmony was entirely discarded, and the monads were conceived as interacting.

Ward's position in the history of philosophical thought is, beyond a doubt, firmly established. But those who knew him as a friend will be chiefly mindful at this time of his strong and beautiful personality. His wide and accurate scientific knowledge, his love of Nature, and his interest in all that contributes to human good, made him a delightful companion. He could tell the name of every wild flower to be met with in a country walk, the habits of any bird or insect which he chanced to come across; and he would take one back to his home and show with boyish pride the rare collection of birds' eggs he had made in his youthful days. No scholar ever bore his weight of learning more lightly. He would converse, too, when the occasion offered, on the deeper problems of life with the sincerity of a man who was continually wrestling with them, and with a modesty that was engendered by real greatness. Of him his friends can truly feel that of all the men of their time he was of the small company of "the wisest and justest and best."

G. DAWES HICKS.

DR. HEINRICH OSCAR LENZ, the Austrian geographer, whose recent death at Vienna has been announced, was born in 1848. He first went to Africa in 1875 under the auspices of the German Africa Society to make a geological examination of the Lower Ogowe in the Gabun region. In 1879 the same body sent him to Morocco with the view of exploring the valleys of the Atlas. In the face of great difficulties he made a remarkable journey across the Sahara by way of Tarudant, Tenduf, and Arawan to Timbuktu and thence westward through Senegal to the coast. A great part of this journey was over new ground. It was described in his "Timbuktu: Reise durch Marokko" (1884). Lenz's later explorations, which were in the Congo basin, were of less importance. Sent in 1885 by the Vienna Geographical Society to obtain news of Emir Pasha, he ascended the Congo to Nyangwe, and striking eastward reached Lake Tanganyika and Ujiji. The traverse of Africa was completed by Lake Nyassa and the River Shire. For his African work Lenz received the gold medal of the Paris Geographical Society. For some years he was professor of geography at Prague.

WE regret to announce the following deaths:

Dr. André Broca, professor of medical physics in the faculty of medicine of the University of Paris, who was known for his work on physiological optics, on February 23, aged sixty-one.

Dr. William McInnes, formerly director of the Geological Survey of Canada and director of the Victoria Museum, Ottawa, on March 11, aged sixty-seven years.