

ing the value and utility of Hertwig's great "hand-book."

Hertwig, a laboratory worker rather than a field naturalist, had no belief in "das schon morsch gewordene Lehrgebäude des Darwinismus," and to this fact we owe the last of his larger text-books—the useful and interesting, if not wholly convincing, "Das Werden der Organismen," first published in 1916 and now in its third edition.

Oscar Hertwig's really great, indeed epoch-making, contributions to the development of biological science are to be found, however, not in his text-books, but in a comparatively small group of original investigations, some of them carried out in co-operation with his brother Richard, which are of the most fundamental importance. It was in 1875 that Hertwig, forestalling van Beneden by a few months, showed for the first time, by his studies upon sea-urchin eggs, what was the real nature of the fertilisation of the animal egg—that the process consisted essentially of the fusion between the nucleus of the egg and the nucleus of one single spermatozoon. In 1878 there appeared the monograph by the brothers Hertwig upon the sense organs and nervous system of the medusæ—a work published before its time and perhaps destined to fill its rôle more completely in the future with a fuller recognition of the fact that the most fundamental function of the nervous system is to preserve intact the organic continuity in the animal body throughout its evolutionary increase in bulk.

In the early eighties of last century, Oscar and Richard Hertwig, stimulated by the work of English morphologists—Huxley, Lankester, and Balfour—turned themselves to the investigation of the foundations of the germ-layer theory, clearing up the muddle which had resulted from the non-recognition of what we now know by Hertwig's name, mesenchyme, and corroborating and amplifying Lankester's conception of the enterocœlic nature of the cœlom.

In 1890 Oscar Hertwig published his comparison of "Egg- and Sperm-formation in *Ascaris*," in which he worked out in minute detail the parallelism in gametogenesis in the two sexes, and cleared up the mystery of the "polar bodies," long known as characteristic of the unfertilised animal egg. Hertwig showed that male and female gametes are alike formed in sets of four, but that in the female sex three of each four degenerate, the three degenerate eggs being the polar bodies.

The last of Hertwig's works that demands mention is his study of those extraordinary malformations of vertebrate embryos to which he applied the name "spina bifida." In these the body of the embryo is divided into two halves by a longitudinal cleft traversing the notochord and the greater part of the central nervous system, and yet this seemingly irreparable injury proves no insuperable barrier to continued development. In many cases the cleft closes, the two halves unite and a perfectly normal individual results. Hertwig correlated these monstrosities with a hypothetical evolutionary stage in which the neural surface of the ancestral vertebrate was traversed by a slit-like primitive mouth, and to-day this is still the only working hypothesis at our disposal to explain a very extraordinary phenomenon.

It must not be imagined that Hertwig's activities were limited to such fields as are indicated by the various works to which allusion has been made. He interested himself in the social questions of the day, and the very last of his publications that has come into the writer's hands is "Der Staat als Organismus" (1922), with a trenchant criticism of some of those forms of extremism that are so rife at the present time.

#### MR. A. TREVOR-BATTYE.

MR. A. TREVOR-BATTYE, who died at Las Palmas on December 20, was an accomplished naturalist and Arctic traveller. The second son of the Rev. W. Wilberforce Battye, he was born in 1855 and adopted in 1890 the additional surname of Trevor on succeeding to certain estates that had fallen to his father. After leaving Oxford, Mr. Trevor-Battye indulged his taste for natural history in extensive travels in North America, Africa, the Himalayas, and Arctic Europe. In 1894, in the yacht *Saxon*, he visited the little known island of Kolguev, in the Barents Sea, with the object of devoting the summer to the study of its bird life. The *Saxon*, on returning from a cruise to Novaya Zemlya, missed Mr. Trevor-Battye through inability to reach the east coast, and returned to England without him or his companion, Mr. Hyland. The two Englishmen joined a party of wandering Samoyedes and made good their retreat to the mainland by sledge and boat. This was a fruitful expedition and completed the exploration of Kolguev.

In 1896 Mr. Trevor-Battye returned to the Arctic regions, accompanying Sir Martin Conway as naturalist on his expedition to Spitsbergen. Mr. Trevor-Battye made explorations around Dickson Bay and, with Prof. Garwood, climbed Hornsunds Tind. A few years later he visited Crete and made valuable contributions to the knowledge of its natural history.

Mr. Trevor-Battye was editor of natural history in the "Victoria History of the Counties of England," and of Lord Lilford's book on British birds. His own works included "Icebound on Kolguev" (1895); "A Northern Highway of the Tsar" (1897); and "Camping in Crete" (1913). "Crete: its scenery and natural features" was a recent contribution to the *Geographical Journal* (September 1919).

#### DR. FRIDOLIN KRASSER.

A FEW weeks ago Dr. Fridolin Krasser was found dead in his laboratory at the Deutsche Technische Hochschule at Prague, where for several years he had occupied the chair of botany. He was widely known as a palæobotanist who had devoted himself to the investigation of Mesozoic floras, more especially to the study of the large collections of Upper Triassic plants from the well-known Lunz beds in the Hof Museum of Vienna. In 1887, Dr. Krasser published a note on heterophylly inspired by the work of Baron Ettingshausen, with whom he was closely associated. In 1891 he wrote on the Rhætic floras of Persia; a few years later he turned his attention to the Cretaceous plants of Moravia, and in 1900 and 1905 made some interesting contributions to our knowledge of Palæozoic and Mesozoic floras of the Far East.