

OBITUARY NOTICES OF FELLOWS DECEASED.

KARL ERNST VON BAER, one of the ten children of Magnus von Baer, was born at the family estate of Piep, in Esthonia, on the 28th of February, 1792. The first seven years of his life were spent in the house of his childless uncle, Karl von Baer, who seems to have had a wholesome dread of premature teaching, for when the young nephew returned in his eighth year to his father's house in order to be educated with his sisters, he did not so much as know his letters, though he had so far grown in mind as to be heartily ashamed of his backwardness. He speedily, however, made up for lost time, and in 1807 was entered at the High School of Reval, which he left in 1810 to join the University of Dorpat. Already drawn towards natural history, and especially towards botany, he became a student of medicine, and on the 29th of August, 1814, took his degree of doctor. The medical teaching at Dorpat was at that time far from satisfactory; from none of his masters save from Burdach, the physiologist, can Baer be said to have learnt anything, and when he became doctor he felt that his medical training had yet to begin. He accordingly moved to Vienna; but the more he tried to throw himself into purely medical studies, the more he felt that fate had not destined him for an active professional life. In the spring of 1815, happening to make with a friend a visit to the neighbouring Schneeberg, the Alpine flora he there found so powerfully revived his repressed love of botanical studies, that he determined at all risks to devote himself as far as possible to science. An accidental interview with von Martius determined him to place himself in the same summer under Döllinger, at Wurzburg, and the merit of having made von Baer an anatomist must be reckoned to the credit of that worthy teacher. Thither also came Baer's friend and countryman, Pander, to begin under Döllinger those studies on the development of the chick in which Baer was destined afterwards to take so great a part. At Wurzburg, however, Baer showed nothing more than a friendly interest in these investigations, and when in 1817 he moved to Königsberg to become prosecutor to Burdach, who had in 1814 been transferred thither from Dorpat, he threw himself with zeal into the ordinary anatomical and zoological studies. He had spent the previous winter in Berlin in order to fit himself more fully for his new post. His activity soon made itself felt; besides his purely anatomical lectures and demonstrations he found time to deliver an anthropological course, thus early indicating the tendencies to which he gave up so many of his later years, and in 1819 to establish a new

VOL. XXVII.

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zoological museum. In the same year he was made Professor Extraordinarius, and, looking upon himself as now settled at Königsberg, married Fräulein von Medem. In 1822 he became Professor Ordinarius, and in 1826 succeeded Burdach as Professor of Anatomy and Director of the Anatomical Institute.

Ever since his arrival at Königsberg he had devoted himself with great energy to zootomy, and published several zoological and anatomical papers, notable among which is one containing the first exposition of his views on animal types. In 1818, however, he received from his friend Pander a copy of the monograph on the development of the chick, the study of which led him in the spring of 1819 to commence those embryological investigations with which his name will ever be connected. These were carried on with unwearied diligence for seven years, and it was not until 1827 that he made his results known in the form of a contribution to Burdach's Physiology. In his capacity as editor, however, Burdach saw fit to make so many changes and omissions as greatly to dissatisfy Baer, who determined to publish his researches in an independent form. This he did in 1828 under the title of "*Ueber Entwicklungsgeschichte der Thiere, Beobachtung und Reflexion.*" Meanwhile, in the spring of 1827, he had made the important discovery of the existence of the mammalian ovary in the ovum.

The "*Entwicklungsgeschichte*" consists, in the first place, of a detailed chronological description of the development of the chick in the egg; and, in the second place, of general deductions and reflexions in the form of scholia and corollaries. Almost immediately afterwards Baer began a more general and systematic account of development under the title of "*Vorlesungen über Zeugung und Entwicklung der organischen Körper.*" The first sheets of this were printed in 1829, but the work was then interrupted for several years, and was finally published without the author's permission in 1834 as the second part of the "*Entwicklungsgeschichte.*"

In 1827 Baer received an invitation to become a member of the Academy of Sciences at St. Petersburg. This he did not immediately accept; but in 1829, without resigning his professorship at Königsberg, made a journey to St. Petersburg to see whether it would be possible for him to carry on his investigations in that city. He found, however, the hindrances to work so many and great, that he declined the call and returned to his old post, throwing himself with renewed vigour into his studies. A few years later these incessant labours began to tell upon his health. He grew enfeebled, his nights became sleepless, and he began to fear that his work was ended. Just at this juncture his elder brother, who was in possession of the family estate, died, and his sisters strongly pressed him to undertake the charge of the property which would eventually pass to his own son. These

seignorial duties would be perfectly compatible with a residence at St. Petersburg, and accordingly in the summer of 1834 he bade good-bye to the scene of his labours and triumphs, and at the end of the year entered upon his new duties at St. Petersburg as zoological member of the Academy of Sciences. He soon afterwards became one of the librarians of the Academy's library, and in 1841 was appointed Professor of Comparative Anatomy and Physiology in the Medico-Chirurgical Academy; this latter post, however, he resigned after a few years.

With his departure from Königsberg Baer's labours as an embryologist may be said to have closed; the rest of his life he devoted to anthropology, using that word in its widest sense. He took advantage of his position in the Academy to employ the resources of the Russian Empire in collecting materials for the study of the natural history of man. "*Das Studium der Bildungsgeschichte des menschlichen Geschlechtes, die höchste aller Wissenschaften.*" Not content with setting out others on travels of inquiry, with drawing up instructions as to what they should observe and collect, with directing and superintending the publication of their results, he must needs himself undertake long voyages; and these were at intervals continued until he had reached an advanced age. In 1837 he journeyed, not without dangers and hardships, to Nova Zembla, and again in 1840 to the North Cape. In 1851 he began with the assistance of the Imperial Government a series of voyages in order to investigate the conditions of the fisheries of the Russian Empire. Besides shorter visits to the northern seas he spent nearly the whole of four years, from 1853 to 1857, in the neighbourhood of the Caspian Sea, returning to St. Petersburg twice only during the interval. And in 1860 he again journeyed south, this time to the Sea of Azov. In all these wanderings he had in view the solution of problems not only of national economy but of the distribution and conditions of life of animals, plants, and man, of natural history, in fact, in its widest sense. It was chiefly in the interests of anthropology that in 1858-61 he visited the museums of the Continent and of London.

In 1864 he celebrated the jubilee of his doctorate, on which occasion was published, in a handsome volume, an account of his life, written by himself, at the request of the Ritterschaft of his native province. The same year, however, brought sorrow as well as joy, for it took from him his wife; and feeling himself now weighted with the burden of years, he resigned his post as ordinary member of the Academy, becoming an honorary member instead, and in 1866 removed to Dorpat, where he could live more quietly than in the imperial city, and where he was nearer to the family estate. But not even here did he altogether rest, devoting much time in these later years to an exposition of his general views, and especially to a criticism of

Darwinism, of which he remained to the end an opponent. His activity was at last broken by the increasing infirmities of old age, and on the 28th November, 1876, at five in the afternoon, he passed away. Only ten days before his death had he prepared for publication a communication to the "Archiv. für Anthropologie."

In 1854 he was elected a foreign member of the Society, and in 1867 he received the Copley medal.

Thus, as with so many other great men, Baer's intellectual life passed through two phases: an embryological phase to which the strength of his manhood was devoted, and an anthropological phase which absorbed the energy of his later years. And, as with other great men, it is by virtue of the earlier phase that his name is destined never to be forgotten. It is no disrespect to his later labours to say that they cannot, in importance, be for one moment compared to the work of those seven years which produced the "Entwicklungsgeschichte." When, in 1819, Baer put his hand to the plough, sixty years had passed since Wolff published his "Theoria Generationis," and during the whole of that long interval there had been no worthy embryological work, save Pander's tract, which, though admirable, was but a fragment; the skeleton which Wolff had put together had as yet to be clothed, and the views to which Wolff's genius had by instinct led him, needed still to be made sure by detailed proofs. When in 1828 Baer sent his sheets to the press, the story of the growth of the chick was in its main features complete. The varied manifold labours of embryologists since that day have filled up gaps and rounded off angles in Baer's edifice, but they have hardly touched the structure itself.

But it is almost the least of Baer's merits to have made known a mass of new facts touching the formation of the bird and other animals. Facts were to him useless, save as bricks wherewith to build up true views of nature. All through his slow toilsome study of the folds and twists, the thickenings and thinings of the growing chick, he was supported by the sure hope that in the flitting shadows of embryonic forms was to be found the key to the laws of animal organisation. He wrote to Pander, "Gleich einem leuchtenden Strahle schoss es mir durch die Seele, dass der Typus im Bau der Wirbelthiere sich allmählig im Embryo ausbildet." It is not on account of the extent and accuracy of his work, for others, such as Rathke, have been as laborious and accurate, that Baer's inquiries mark an epoch. It is because he was the first, if not actually to see (for Merkel had some twenty years before laid hold of the same truth), at least clearly to enunciate, and indeed to demonstrate, the important law that the embryonic phases of the individual are tokens of the relations of kind and race.

Working as we do now in the light of the doctrine of natural selec-

tion, we can see that Baer stopped short when he ought to have gone on. He was satisfied when he had applied his law of "progress from the general to the special," so far as to make it clear that the manifold forms of animal life were educts of a few general types. He did not see, and to the end refused to admit, that these types were themselves the educts of an evolution. And the antagonism which in his later years he manifested towards modern views of evolution and recent embryology was based on the feeling that the new doctrine swept away the necessity for ultimate abstract types. Like the theory of epicycles in the old astronomy, Baer's views have succumbed before a simpler conception, of the truth of which the results of his own labours afford some of the strongest supports. Like the epicyclists, Baer largely prepared the way for the wider doctrine which has swallowed up his own.