

was everywhere. The facts of classification, of palæontology, of geographical distribution, of organogeny ceased to be intelligible. It was necessary to tread through the barrier of a limited time, and of the belief in the permanence of specific forms. *Alors parut Darwin.*"

The influence of Darwin was conspicuously shown in the remarkable book which De Candolle published in 1873, under the title of "Histoire des Savants." He lays botany aside, and going back to the studies of his academic life, starts afresh under the inspiration of the new ideas. But he does this with the same reserve and almost sceptical spirit which characterises all his writings. The facts must evolve their own consequences. He is reported to have said that "he was a botanist by inheritance and a statistician by birth." But he applies to the treatment of his data a statistical method which is positively fascinating in the skill with which it is employed, and the interest of the results to which it leads. I must content myself with a single conclusion, the undoubted validity of which, it seems to me, is often overlooked.

"Heredity neither gives scientific men special nor extraordinary powers; but only that combination of moral and intellectual qualities which may be directed according to circumstances and the choice of the individual to scientific study or to any other serious or definite object." If we slightly enlarge this conclusion by regarding extraordinary aptitude for particular branches of scientific discovery (or any other field of intellectual or artistic activity), as a sort of exceptional sport from an already specialised race, it appears to me that we have the whole root of the matter. A very distinguished man of science has been known to hazard the opinion that if he had turned his attention to law, he would probably have become Lord Chancellor. I think that he only erred on the side of modesty, and that he would equally likely have been Prime Minister.

But I must pass on. In 1880 De Candolle published his *Phytographie*. This is a useful book, indispensable to the taxonomic workshop. It elaborates and enforces the admirable principles of plant descriptive work laid down by Linnæus, which make the study one of no small value as an educational discipline. The book will always have its value as keeping alive an admirable tradition. Would that its example and precepts were more taken to heart by many modern botanists who fail to see that a description is one thing, a luminous and logical diagnosis a totally different one!

Finally, in 1883, De Candolle published his "Origine des Plantes Cultivées." This sprang from his preface studies for the *Géographie*. It is an altogether admirable book: not perfect certainly, or complete, and faulty perhaps more especially in the difficult matter of handling the philological evidence. Yet I know of no one who could have put together the material in a more masterly way, or who could have presented the conclusions derivable from it in a form more likely to carry conviction.

Here I must close. As I began by saying, a great figure has passed away. Distinguished in appearance, his manners though reserved, were always exquisitely urbane. If he lacked enthusiasm of a demonstrative sort he made up for it by extreme sobriety of judgment and inexorable persistence. He was singularly kind to all who were disposed to engage in botanical work; and would spare no pains to help and even aid, with his own accumulated materials, those who were willing to undertake a research. He died beloved by his family, revered by his countrymen, and loaded with distinctions. He was a Foreign Member of the Royal Society, a Gold Medallist of the Linnean Society, a D.C.L. of Oxford, and an LL.D. of Cambridge; and the possessor of the order which perhaps confers the greatest distinction on a scientific man, the "pour le mérite" of Prussia.

W. T. THISELTON-DYER.

CARL SEMPER.

A GREAT investigator has left us, and one more vacant tablet of the Hall of Fame has received its inscription.

Carl Semper, born July 6, 1832, at Altona, near Hamburg, a son of the celebrated architect, Gottfried Semper, at first destined for the Royal Navy, but afterwards student, graduate, Privat-Docent, and for twenty-five years Professor of the University of Würzburg, has merited eminence as a traveller, a zoologist, a teacher, and an investigator.

The range of his "Thun und Schaffen"—his doing and making—is so wide that but scant justice can be paid to his labours within the short space of this article. As that of a travelled naturalist and the writer of important works of travel his name is honourably known to the geographer, while his investigations in pure zoology are among the most brilliant and weighty of the past thirty years.

Even in this field of science there was a many-sidedness about the observer, impelling him to work for the increase of knowledge in systematic zoology, comparative anatomy, embryology, comparative histology, and physiology.

His travels in the Philippine and Palau or Pelew Islands, for which he expended nearly the half of the large fortune inherited from his father, resulted in many valuable memoirs on various groups of invertebrata, the joint work of himself and others. Semper's "Holothuria," and his special studies of mollusca—a group in which he was a leading authority—may only be mentioned. His book on the "Palau-Inseln im Stillen Ocean" is unfortunately less known—at least, in this country—but in the opinion of good authorities there are few more delightful works of travel, and fewer still in which the observational powers of the naturalist find as full play.

Of Semper's molluscan work only a specialist can speak as it merits. I know not if he completed all that he intended to do, but I have a lively remembrance of the immense stores of material and drawings which he possessed ten years ago.

To experimental physiology he made many contributions in the *Existenzbedingungen der Tiere* and elsewhere.

But the works of all others which established his reputation as a university professor were undoubtedly those on comparative embryology.

Among these, "Das Uro-genitalsystem der Plagiostomen" is preeminent. In this and other priceless memoirs was laid the solid foundation on which the ten volumes of the *Arbeiten aus dem Zoologisch-zoatomischen Institut zu Würzburg* were gradually built up. The intensity and ardour with which he devoted himself to the problems of embryology also laid the beginnings of the long years of ill-health which have just closed with his death.

Though his work cannot be described as having escaped unscathed from the fierce embryological battles of recent years, most of it still stands intact, and is destined to remain, associated with the name of Semper, as part of the classic literature of vertebrate morphology.

With recapitulation embryology he had no sort of sympathy, and his polemics against Haeckel clearly defined his position as an opponent of the so-called "Law of Ontogeny." He was of those whose embryological work is based rather on the idea that organs, not organisms, repeat parts of their ancestral history in their development.

Of the departed master—"Der Chef," as his students affectionately termed him—a pupil cannot write without feeling. Long before his death the great number of his pupils, who had become occupants of University chairs,

testified to the success of his training. Profs. Ludwig (Bonn), Braun (Königsberg), Spengel (Giessen), Kennel (Dorpat), Kossmann (Heidelberg), Carrière (Strassburg), and Fraisse (Leipsic), and the Privat-Dozenten Ludwig Will, Biehringer, Voigt, Schubert, and others, still represent the old Würzburg Institute in more than half of the Universities of Germany. Pupils came to him from all parts of the world. Of his contemporaries only two, Albert von Kölliker and Rudolf Leuckart, can claim a longer array of scholars, and none have trained more successful investigators. Among those who pride themselves on their studies in the quaint old rooms overlooking the Neubaustasse are R. S. Bergh, C. S. Minot, H. Jungersen, Sharp, Strubell, Goronowitch, Grassi, and the cousins Sarasin. From Great Britain came but two, the late Philip Carpenter and the writer.

The peculiarity of Semper's training consisted in this:—The budding zoologist was first thoroughly grounded in comparative anatomy and histology, and then only, after a preliminary trial on some well-worked theme, might he commence independent investigation. The work once begun, the student received abundant criticism but no help, and thus while Semper guided the worker, he never performed the task himself. In this way the memoirs of his pupils came to be not the work of a school in which the master alone was in evidence, but a series of papers dealing with widely divergent questions, and having only this in common that they were built on the same solid basis of elementary knowledge.

Semper was above all the close friend of his pupils, and with them he formed a small "Verein," in which he took considerable pride. The evenings—which usually became early mornings—spent in the little "Alt-deutsche Stube" of the "Zoological Garden" down the Main will not readily fade from recollection. Then it was that the conversation—French, German, and English—more frequently turned to zoological travel, and discussions on current zoology gave place to little lectures on the Philippines and Palau Islands, on Heligoland and the Riviera, on tropical animals and plants. The educational importance of travel to the young zoologist was an ever-recurring topic with Semper. The advice usually had good effect, for most of his pupils have at one time or another made zoological journeys to distant parts of the world—to Ceylon, to Trinidad, to Greenland, the Celebes, and other places.

One of Semper's ideals was a new laboratory with a tropical house for animals. After long treaty with the Government he was happy in obtaining the completion of his wishes—the new Zoological Institute, a building worthy of the architect-zoologist. Three short years ago we who were his old pupils rejoiced with him on the opening of the new abode. Now, as he would bid the fleeting moment stay, he is taken from us. The director's room is vacant, our chief and our "Studentenzeit" are alike memories, on both of which we can only dwell with fondness and affection.

J. BEARD.

NOTES.

WE regret to record that M. Marié Davy died on July 16, at Clamecy, Nièvre, at the age of seventy-seven. M. Davy was at one time at the head of the physical-astronomy service of the Paris Observatory, and took a leading part in the protest against Le Verrier's administration in 1870. He published a large number of papers on electrical and astronomical subjects.

PROF. S. P. LANGLEY, Secretary of the Smithsonian Institution, announces that the Institution has secured a table at the Naples Zoological Station for the use of American investigators. The table will be known as the Smithsonian table. Publications resulting from its use will bear the name of

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the Smithsonian Institution, and such of them as are of sufficient importance will be printed in the "Smithsonian Contributions to Knowledge."

THE munificent gifts of the legatees of Sir Joseph Whitworth to Manchester are to be increased by a sum of £50,000. The amount previously given by them to carry out the scheme of the Whitworth Institute was £105,000. The legatees consider, however, that even their additional donation will need supplementing by the public if the institute is to attain its due importance.

THE International Maritime Congress commenced its second meeting on July 18 at the Institution of Civil Engineers, under the presidency of Lord Brassey. A large number of British and foreign representatives of maritime interests were present, and the outcome of the week's conference will doubtless be of considerable importance. Lord Brassey took for the text of his presidential address the construction and use of breakwaters, and the works that have been undertaken for the improvement of the entrances to ports. Mr. Mundella, M.P., followed with a description of the growth of the mercantile marine service of Great Britain. The Congress then divided into sections for the reading and discussion of papers. Lord Swansea presided over the section dealing with questions relating to the construction of harbours, breakwaters, and general sea-works; and Admiral Colomb is the president of the section devoted to signals, lights, and buoys. The papers read before these two sections were chiefly of a technical character.

AT the recent Congress of Archæological Societies a subject that elicited an interesting discussion was the "Continuation of the Archæological Survey of England." It was announced that the archæological maps of Essex, Lancashire, Cheshire, Surrey, Sussex, and Derbyshire had been considerably advanced since the meeting of last year. Maps are being prepared by societies in Herefordshire, Cumberland, and Westmoreland, on which all interesting antiquities are indicated. A series of symbols has been devised by the Standing Committee for the diagrammatic representation of antique objects and sites, and a resolution was passed expressing a hope that all societies participating in the survey will adopt these symbols and so ensure uniformity. Mr. H. S. Pearson, of the Birmingham and Midland Institute Archæological Society, gave a detailed description of a photographic survey of the county of Warwick. Each photographer who took part in the work was assigned a district of about six square miles, and their pictures were subjected to the criticism of a committee, in order to determine whether they were "worthy of acceptance." Up to now about 1,700 excellent photographs have been taken, and permanent prints of them have been well mounted and presented to the Birmingham Free Library, so that they could be referred to at any time. Mr. Pearson's paper was cordially received, Sir John Evans expressing his warm approval, and bidding all archæological societies throughout the country to "Go and do likewise." The Archæological Institute also held its annual meeting last week. There was a reception at the Guildhall, several excellent luncheons, with pleasurable and doubtless profitable excursions, and a *conversazione* at the Mansion House, so the meeting was a decided success, though no papers were read or discussion raised of scientific moment.

AT the annual meeting of the Wilts Archæological Society, to be held at Warminster on July 25 and two following days, the President, General Pitt-Rivers, F.R.S., will give an account of some excavations he has been recently making in an early camp in Cranborne Chase, near Rushmore, Salisbury, and adjacent to the group of tumuli of the Bronze Age, which were investigated by him in 1880 in conjunction with the late Prof.