1892 to 1894 he held a professorship at Denison University. Here he continued his zoological studies, but in connection with his class work became interested in the Waverly limestones and shales of Ohio. He devoted himself to the study of these for several years with characteristic intensity, publishing most of his results and those of his students in the *Bulletin of the Scientific Laboratories of Denison University,* which he founded in 1885. From the first his teaching was extraordinarily successful, particularly in kindling enthusiasm and love of research. This was due partly to his attractive personality, partly to his fearless originality, but chiefly to his philosophic insight and his ability to open up his deepest thinking even to elementary pupils. And so a very large proportion of his students have themselves achieved success as original workers in science.

During his last ten years, spent in New Mexico on account of the breakdown in health which forced him to leave Ohio, he resumed his geological studies, publishing several important articles on the geology of that territory.

From 1889 to 1891 he was professor of zoology in the University of Cincinnati. Here his geological labors were interrupted and he entered with great energy into a series of neurological investigations which he had long before planned to undertake. He founded the *Journal of Comparative Neurology and Psychology,* which (now under the editorship of his brother, C. Judson Herrick) has made a permanent and important place for itself. Beginning his neurological work upon the brain of rodents, he accumulated a large mass of data which he found almost incapable of correlation. Believing that the key could be found only in lower primitive types he began to examine a large number of such in a very thorough manner. His results were published rapidly and with little attempt at correlation. These papers were illustrated by large numbers of beautiful plates which his rapid and skillful use of the pencil made possible. His plan was to secure a large amount of accurate data while his eyesight was still perfect, and later review the whole field of vertebrate neurology, using his own observations as a nucleus around which to build a unified system by further research at critical points. In 1892, after some months of study abroad, he returned to Denison and continued his neurological work with great energy, until in December 1893 failing health compelled him to go to New Mexico. He soon recovered sufficiently to resume work, but local conditions were such that his attention was again directed mainly to geological problems. The work of correlating his neurological studies was left somewhat incomplete, but it is probable that this may be accomplished through the labors of his brain-children.

For four years he did a useful work as president of the University of New Mexico, here as everywhere stimulating young men to undertake research by the influence of his own example. In these later years we see the successful struggle of a noble soul dominated by a great purpose over the discouragements of physical weakness and suffering.

A. D. COLE.

SCIENTIFIC BOOKS.

The Harriman Alaska Expedition. Vols. VIII. and IX., Insects. New York, Doubleday, Page & Co. 1904.

Volumes VIII. and IX. of the Harriman Alaska Expedition, published in cooperation with the Washington Academy of Sciences and dealing with the subject of insects, have just been issued, and represent the most notable contribution to the literature of entomology of the year, and will rank among the most important of the American contributions to this subject. The material discussed in these two volumes was substantially all of it col-

lected by the Entomologist of the Expedition, Professor Trevor Kincaid, of the chair of biology in the University of the State of Washington. Professor Kincaid is known as an expert student and collector of insects, and his work on this expedition demonstrates his ability in this field. More than 8,000 insects were collected, representing a thousand and one species, 344 of which are new to science, and including at least half a dozen new genera. Upon the return of the expedition the collections were carefully labeled and sorted into groups by Professor Kincaid and transmitted to Dr. L. O. Howard, chief of the Bureau of Entomology, U. S. Department of Agriculture, and honorary curator of insects in the National Museum, for distribution to specialists for study and report. The results are given in eighteen important papers. In most instances these contributions deal only with the material collected in Alaska by Professor Kincaid. In the Myriapoda, however, all the available data relating to northwestern North America is brought together, this paper, therefore, representing the present knowledge in this group for the region designated. In some other cases, as in the Hymenoptera, the previously known records from Alaska are added. A number of the papers were published in the 'Proceedings of the Washington Academy of Sciences,' but are here reprinted from the same electrotype plates, an explanatory page accompanying each of these last mentioned papers.

Insecta.	Described Species.	New Species.	Total.
Apterygota	8	6	14
Neuropteroids	25	9	34
Odonata	8	0	8
Orthoptera	1	0	1
Hemiptera { Heteroptera	18	0	18
Hemiptera { Homoptera	14	10	24
Coleoptera	154	1	155
Diptera	213	63	276
Lepidoptera	66	9	75
Hymenoptera	98	237	335
Myriapoda	6	3	9
Arachnida	46	6	52
Total	657	344	1,001

The results of this expedition are indicated in the table given above, in which are listed the previously described, the new species and the total number of species collected, arranged by orders.

The itinerary of the trip given in the introduction is very interesting reading. It describes the localities visited from day to day, indicating the predominating vegetation and the more important insects found, and is a most valuable supplement to the more technical succeeding papers.

The original idea was to publish a single volume of insects, but when the papers were assembled it was found necessary to publish the insect portion in two volumes. The largest number of species were found in the orders Diptera and Hymenoptera, and the two more important papers are those dealing especially with these two groups, namely, the paper on Diptera, by Mr. Coquillett, and on Hymenoptera, by Mr. Ashmead, the former considering 276 species, and the latter 335 species. Mr. Ashmead has included in his paper all the known Hymenoptera previously reported from Alaska, and also certain unstudied Alaskan material represented in the National Museum collections. The extent of the additions in this order will be understood from the statement that previous to the publication of this paper but 30 species of Hymenoptera were known from Alaska. Two hundred and one of the 335 species listed by Mr. Ashmead are described as new.

A complete list of the subjects and authors follows: 'Introduction,' by Trevor Kincaid; 'Arachnida,' by Nathan Banks; 'Myriapoda,' by O. F. Cook; 'Apterygota,' by Justus Watson Folsom; 'Orthoptera,' by A. N. Caudell; 'Aphididæ,' by Theo. Pergande; 'Homoptera,' by William H. Ashmead; 'Heteroptera,' by O. Heidemann; 'Odonata,' by Rolla P. Currie; 'Neuropteroid Insects,' by Nathan Banks; 'Coleoptera,' by E. A. Schwarz; 'Metamorphoses of Alaska Coleoptera,' by Trevor Kincaid; 'Lepidoptera,' by Harrison G. Dyar; 'Diptera,' by D. W. Coquillett; 'Tenthredinoidea,' by Trevor Kincaid; 'Sphegoidea and Vespoidea,' by Trevor Kincaid; 'Formicidæ,' by Theo. Pergande; 'Hymenoptera,' by William H. Ashmead.

Each volume is separately indexed, and

many of the papers are illustrated with lithographic plates. All have appropriate head figures, and there are occasional text figures. Part I., Vol. VIII., has a handsome colored plate in which representative insects of different orders are figured, and Part II., Vol. IX., has, as a frontispiece, a heliotype print of Popof Island. The style of printing, binding and illustration is a testimony to the experience and interest of the editor, Dr. C. Hart Merriam, and of the publishers, Doubleday, Page & Co.

C. L. MARLATT.
U. S. DEPARTMENT OF AGRICULTURE.

Lehrbuch der vergleichenden Anatomie. By B. HALLER. Zweite Lieferung. Jena, Gustav Fischer. 1904.

A little more than a year ago a review of the first part of Haller's 'Lehrbuch der vergleichenden Anatomie' was published in this journal (SCIENCE, September 13, 1903) and we have now before us the second part, dealing with the chordata, a volume of some 579 large octavo pages and containing 465 figures.

As is but natural, the standpoint of the author is that of the Heidelberg school and his treatment of the subject is essentially the same as that presented by Gegenbaur in his 'Vergleichenden Anatomie der Wirbelthiere,' so much so, indeed, that the present volume may be regarded as very largely an abridgment of the more extensive work. As such it will undoubtedly prove useful, especially as the author's style is generally clear, the reading pleasant and the figures numerous, excellently reproduced and pertinent.

To speak of the volume as an efficient abridgment of Gegenbaur's 'Vergleichenden Anatomie' is no inconsiderable praise, but it also implies that a perusal of the book gives one the impression that little has been added to our knowledge of the comparative anatomy of the vertebrates since Gegenbaur's volumes appeared. It is unfortunate, also, that the author has chosen to express dogmatically certain hypotheses which, to say the least, are still *sub judice*. Thus, for example, the dogmatic reference (p. 465) of all cases of polymastia in the human species of atavism is certainly ill-advised, as is also the apparently unconditional acceptance of the explanation of the double articulations of the ribs as a relic of a primary double-ribbed condition, a theory which lacks at present any embryological confirmation. So too the emphasized homology (p. 512) of the præchordal portion of the head with the præoral lobe of annelids is decidedly open to adverse criticism and places the author, it may be noted, on a very different standpoint from that adopted by Gegenbaur, for whom the præchordal portion of the cranium was a secondary structure developed from the primitive chordal cranium in adaptation to the development of the brain and sense-organs.

An efficient treatment of the vertebrate nervous system is to be expected from Professor Haller, and in some respects, notably in that some attention is paid to the tracts of the central system, the section shows an improvement over what is usually furnished by text-books of the grade of the present one. A little too much is attempted, unfortunately, within the limits set for the section, the result being an occasional obscurity, but a far more serious defect is the failure to discuss the cranial nerves on the basis of their components. Nothing that has been added to our knowledge of the nervous system within recent years equals in morphological significance the recognition of the cranial nerve components, and any discussion of the cranial nerves on the basis of the old two-root hypothesis must be futile so far as a proper understanding of their general morphology is concerned. And yet not a word is to be found in the volume under review concerning nerve components, but merely one of the variants of the oft-repeated two-root theory, which for many years has but served to retard progress towards the solution of the problem of vertebrate cephalogenesis.

More excusable is the insufficient treatment afforded the sympathetic system, for in it the author is but following the examples of his predecessors, no adequate account of that physiologically important system being as yet incorporated in any text-book of vertebrate anatomy. But scant consideration is given