

much discussed in microscopic circles, has kindly made a number of rulings of $1/40,000$ inch fineness, which preliminary experiments indicated as feasible for the required purpose, on polished speculum-metal and platinum-iridium, which appear, particularly the former, perfectly satisfactory. The forty-thousandth of an inch being the wave-length of red hydrogen or cadmium light, the distance between two lines ruled at this interval corresponds to only two interference bands. With the $1/12$ inch dry objectives the lines, moreover, are as cleanly cut as spider-lines, and the thickness of a line is less than half a wave-length. Five such lines are ruled in succession, the central one being considered as the defining line. A strong finder-line is ruled on each side of the five, and two other strong ones at right angles in order to localise a central part of such a system. It appears perfectly feasible to carry out a stepping-off process for the counting of the total number of wave-lengths of cadmium red light in the British yard, in which such rulings would take the place of the glass plates of the Michelson or Fabry and Perot *étalons*, a base line of the thirty-second part of an inch being first actually counted in bands with the aid of the interferometer, between limits defined by two such systems of rulings. The final fraction of every stage in such a process could be absolutely checked by the interferometer in all cases where Michelson found it possible to do so, that is, so far as interference bands are still visible, about four inches; and, as it has already been proved that the accuracy with the rulings is almost as great as with interference bands, this checking ceases to be as imperative as when only the coarse existing defining lines are available. Hence, the future before these rulings appears likely to be both interesting and important.

A. E. H. TURTON.

SOME NEW NATURE BOOKS.¹

(1) IN this series of pleasantly written essays Mr. Larken gives an account of some of those features of English (and Scotch) country districts which usually appeal to nature-lovers. The author's habit of passing lightly from one topic to another but distantly connected with it produces a certain disjointedness of style and some needless repetitions, but, taken as a whole, his book is quite good to read, and his knack of interesting one in a disputed point and then abruptly leaving it unsettled is well calculated to stimulate personal observation on the part of his readers.

When attempting to draw conclusions himself, however, he is less happy, being prone to derive the inherited instincts and habits of an animal directly from the experience of its ancestors. Moreover, one has rather frequent cause to doubt the accuracy of his statements; for example, anyone familiar with the Caligidæ, and the tightness with which they can adhere, either in or out of the water, even to the smooth sides of a glass dish, will certainly question the remark on p. 219 that a salmon "leaps . . . into the air for the purpose of getting rid of the sea-lice which are attached to him." That "the Brimstone is a genuine child of spring" in contrast with the hibernating Vanessid butterflies (p. 244) is contrary to the experience of other entomologists; and "Humming-Birds of New Guinea" (p. 192) should presumably

¹ (1) "Leisure Hours with Nature." By E. P. Larken. Pp. xv+263. (London: T. Fisher Unwin, 1909.) Price 5s.

(2) "The Wood I Know"; "The Meadow I Know"; "The Stream I Know"; "The Common I Know." Edited by W. P. Westell and H. E. Turner. Pp. 77 each. (London: J. M. Dent and Co., 1909.) Price 8d.

(3) "The Ruskin Nature Reader." Intermediate Book. Selected and edited by G. R. Bennett. Pp. x+180. (London: J. M. Dent and Co., n.d.) Price 1s. 6d.

read "Sun Birds of New Guinea," for humming-birds are confined to western America and its islands.

The book is illustrated with a profusion of excellent plates, chiefly from photographs. As the greater part of it is concerned with ornithological matters, it is not surprising to find that the majority of the illustrations are of birds' nests. The plate of the comma butterfly, which we reproduce, is one of a short series of admirable insect studies.

(2) These four little volumes will be useful to those who wish to interest children in natural history. They treat of the varied aspects of their several subjects in a clear and interesting manner, and are well illustrated by plates (both coloured and from photographs) and by figures in the text. One hesitates to criticise such admirable books at such a low price, but the value of some of the plates would certainly be increased if they could be brought more closely into connection with the chapters which they illustrate; and where this is impossible reference should be made to them in the text. Some statement of the scale of



Comma Butterfly. From "Leisure Hours with Nature."

many of the figures would make these much more useful; in chapter ix. of "The Common I Know," where this is particularly needed, it could easily be made by the insertion beside each figure of a line indicating the length of the living specimen. On p. 30 of the same volume the association of two figures of plants drawn to different scales is apt to mislead. But even as they stand we are far from wishing to condemn the figures. Apart from size, they show clearly the salient characters of the objects described; the reproduction of the photographs has been beautifully executed, and the coloured plates are wonderful at the price. We can thoroughly recommend the books for (elementary) school use.

(3) This "collection of literary extracts to accompany a course of nature-study" includes prose and poetry, with a variety of subjects ranging from Ruskin's "Plants" and Thoreau's "Brute Neighbours" to fairy stories such as "The King of the Vipers" and Ruskin's "Visit from the South-West Wind." Several of the extracts are old favourites

which have long figured in school "readers," and the others, though less familiar in this rôle, are none the less fitted for it. The book is nicely illustrated, and concludes with a short glossary of the rarer words and phrases found in the extracts. It may be recommended for class purposes.

THE BOSTON MEETING OF THE AMERICAN ASSOCIATION.

THE sixty-first meeting of the American Association for the Advancement of Science and of its affiliated societies was held in Boston, Mass., December 27, 1909, to January 1, 1910, under the presidency of Dr. David Starr Jordan, of Leland-Stanford University, California. The meeting was a large one, nearly 1100 members of the association being registered, and the total number of men and women of science in attendance was not far from 2000. The number of affiliated societies was larger than usual, numbering thirty in all. The meetings were held in the buildings of the Massachusetts Institute of Technology, in certain of the buildings of Harvard University, Cambridge, and the new Harvard Medical School in Boston. These three groups of buildings are rather widely separated, and for this reason it was difficult to bring together the exact registration.

The opening session was held in Huntington Hall, Massachusetts Institute of Technology, on Monday morning, December 27. Addresses of welcome were given by President McLaurin, of the Institute of Technology, and by Dean W. C. Sabine, of the Graduate Scientific School of Harvard, representing the president of Harvard University. On Monday night the address of the retiring president, Prof. T. C. Chamberlin, of the University of Chicago, was delivered in Sanders Theatre, Harvard University. His subject was a geologic forecast of the future opportunities of our race. The address was preceded by an address of welcome at Harvard University by Prof. F. W. Putnam, a past-president of the association, and who, from 1873 to 1898, was its permanent secretary. After the address a reception was held by the corporation of Harvard University in Memorial Hall. During the week the addresses of the vice-presidents (or chairmen) of the sections were given on the different afternoons as follows:—

Vice-President Keyser, before the Section of Mathematics and Astronomy, the thesis of modern logic; Vice-President Guthe, before the Section of Physics, some reforms needed in the teaching of physics; Vice-President Kahlenberg, before the Section of Chemistry, the past and future of the study of solutions; Vice-President Swain, before the Section of Mechanical Science and Engineering, the profession of engineering and its relation to the American Association for the Advancement of Science; Vice-President Willis, before the Section of Geology and Geography, the principles of paleogeography; Vice-President Herrick, before the Section of Zoology, evolution of intelligence and its organs; Vice-President Richards, before the Section of Botany, the nature of response to chemical stimulation; Vice-President Woodworth, before the Section of Anthropology and Psychology, racial differences in mental traits; Vice-President Holt, before the Section of Social and Economic Science, the gold question; Vice-President Howell, before the Section of Physiology and Experimental Medicine, chemical regulation in the animal body by means of activators, kinases, and hormones; Vice-President Dewey, before the Section of Education, science as a method of thinking and science as information in education.

NO. 2099, VOL. 82]

The meeting was marked by a series of joint meetings between sections of the association and corresponding affiliated societies. By virtue of a resolution adopted by the council at its April meeting, sectional committees arranged in almost every case one or more sessions of general interest, conducted under the auspices of the sectional officers, while programmes of papers of a strictly technical character and of interest limited to specialists were read under the auspices of the affiliated societies. This arrangement was particularly happy in the cases of Section A and the American Mathematical Society; Section B and the American Physical Society; Section C and the American Chemical Society; Section E and the Geological Society of America; Section F and the American Society of Zoologists; Section G and the Botanical Society of America; and Section H and the American Anthropological Association. Under Section K an important symposium on the subject of internal secretion was held, at which the following papers were presented:—A general review of the chemical aspect of internal secretion, by R. H. Chittenden; the internal secretion of the pancreas, by W. G. McCallum; our present knowledge of the thyroid function, by S. P. Beebe; metabolism after parathyroidectomy, by J. V. Cook; and physiological consequences of total and of partial hypophysectomy, by H. Cushing.

On Tuesday evening, December 28, a public lecture complimentary to the citizens of Boston was given by Dr. C. W. Stiles, of the United States Public Health and Marine Hospital Service, on the subject of the hookworm problem in the United States in reference to public health. This lecture, the subject of which is brought prominently into the public eye at this time on account of Mr. Rockefeller's gift of 1,000,000 dollars to be devoted to an effort to stamp out the hookworm in the south, was attended by a large audience.

On Thursday evening, December 30, an interesting lecture was given by Dr. John B. Smith, on the subject of insects and entomologists, their relation to the community at large.

On Wednesday evening, December 29, the Society of American Naturalists and the biologists in attendance at the meeting held their annual dinner, at which the address of the retiring president of the naturalists, Prof. T. H. Morgan, was given. His subject was "Chance or Purpose in the Evolution of Adaptation." The American Chemical Society gave its annual dinner on the Thursday evening. Other dinners of special organisations were scattered through the week.

At the meeting of the general committee, Minneapolis was chosen as the place of the next meeting, beginning December 27, 1910. The following officers were elected:—

President:—Prof. A. A. Michelson, University of Chicago. Vice-Presidents (or presidents of sections):—Section A, Prof. E. H. Moore, University of Chicago; Section B, Dr. E. B. Rosa, Bureau of Standards, Washington; Section C, Prof. G. B. Frankforter, University of Minnesota; Section D, Prof. A. L. Rotch, Blue Hill Observatory, Boston, Mass.; Section E, Dr. J. M. Clarke, State Geologist, Albany, N.Y.; Section F, Prof. J. Reighard, University of Michigan; Section G, Prof. R. A. Harper, University of Wisconsin; Section H, Prof. R. B. Dixon, Harvard University; Section I, Dr. T. E. Burton, Cleveland, Ohio; Section K, Prof. F. G. Novy, University of Michigan; Section L, the Hon. A. Ross Hill, president, University of Missouri. Secretary, Section I, Fred C. Croxton, Washington, D.C.; permanent secretary, Dr. L. O. Howard, Smithsonian Insti-