found in the region of Converse County, Wyoming, made famous by the explorations of Hatcher for remains of the great horned dinosaurs or Ceratopsia. The entire animal lay in a normal position on its back. The left fore limb was outstretched at right angles to the body, while the right fore limb lay stretched over the under surface of the head. The hind limbs were drawn up and doubled on themselves. The hinder portion of the pelvis and the entire tail had been removed by erosion. The epidermal impressions are best shown on the throat and anterior part of the neck, on the arms and fore limbs, the entire right side of the body, including the axillary region, and especially over the abdomen. The skin is inflected like a curtain over the entire abdominal region without a single break, with brilliant impressions of the scale pattern. This abdominal infolding, the close appression of the skin to the surface of the bones, and the sharp transverse folds all indicate that after death the body was exposed for a long time to the sun, and the muscles and viscera became completely dehydrated; in other words, the body became thoroughly dried and mummified, while the epidermis became hardened and leathery under the action of the sun. In this condition the dinosaur mummy was caught in a freshet, and rapidly buried in fine river sand, which took a perfect cast of the epidermal markings before the tissues disintegrated under the solvent action of the water.

There is no evidence in any part of the epidermis either of coarse tubercles or of overlapping scales; on the contrary, the epidermis is extremely thin, and the markings are very fine for an animal of such large dimensions. In all parts of the body observed, the epidermis is covered with scales of two kinds—namely, smaller tubercular scales and larger pavement or non-imbricating scales. The latter are perfectly smooth, and, as grouped in clusters or rosettes, assume a rounded or irregularly polygonal form. Over the throat, neck, sides, and ventral surface these clusters are regularly disposed in different patterns, separated by rows of finer tubercular scales, but in the tail, as indicated in the specimen of *Trachodon mirabilis* (Fig. 2), it is probable that the cluster arrangement disappears, and that the entire tail is covered with the tesselated or pavement scales. The vigorous use of the tail among Iguanodontia as a balancing, and perhaps partly as a swimming, organ would lead us to expect this strong development of the scales in the tail region. This disposition of the scales into larger pavement groups and smaller tubercular rows is unlike that observed by the writer in any Lacertilia; it appears to be unique. H. F. O.

A Marten moving along a Bough. Photo. by Mr. Douglas English. From "The Nature Book."

NATURE STUDIES IN NEW ZEALAND AND AT HOME.[1]

(1) MR. THOMSON is well known among zoologists by his discovery of Anaspides, a very interesting genus of Crustacea, on Mount Wellington, Tasmania. In this volume he has collected observations made in the neighbourhood of Dunedin during the last thirty years. The articles appeared originally in the New Zealand Press, and were obviously written without any intention of subsequent issue in volume form. They are necessarily somewhat slight, and touch upon a great variety of topics without systematic treatment. Yet they possess a value which often attaches to first-hand observation written down at the time, for the animals and plants of the island are undergoing a rapid change. Destruction of the bush and the importation of a European element has transformed the neighbourhood, not only of Dunedin, but of other parts of New Zealand. The indigenous plants, insects, and birds are, in many places, becoming scarce, or have disappeared, and only a few more tenacious or more resistent have survived the process of change which has accompanied the development of the South Island. Hence these notes of garden and field life will be of interest to all who are anxious to preserve records of older societies, whether of animals or plants. It would be of the greatest interest to discover how rapidly and completely the introduced flora and fauna acquire the new periodicity of the seasons in New Zealand, and Mr. Thomson's notes may give the requisite stimulus to observers for further investigation on the indigenous and alien organisms of that country.

(2) This work has already appeared in serial form, and will prove a welcome gift-book to many a budding naturalist. The illustrations are excellent, and bring

[1] (1) "A New Zealand Naturalist's Calendar." Notes by the Wayside. By Geo. M. Thomson. Pp. 224. (Dunedin: R. J. Stark and Co., 1909.)
(2) "The Nature Book." A Popular Description by Pen and Camera of the Delights and Beauties of the Open Air. Vol. ii. Pp. iv+373-752. (London: Cassell and Co., Ltd., 1909.) Price 12s. net.
(3) "The Book of Nature Study." Vol. iii. Edited by Prof. J. Bretland Farmer. Pp. 228. (London: Caxton Publishing Co., n.d.) Price 7s. 6d.

out the characteristic features of the subject with the utmost faithfulness; the topics range from thunderstorms to valley formations, and through a great variety of field and garden forms of life. Amongst such a feast of good things it is invidious to select, but we may mention the articles on British carnivores and rodents, on the grasses and sedges, on the "cryptozoic" fauna, and on certain British trees, as among the most attractive. The physiographical papers by Dr. Lockyer, Mr. M. Duncan, and the late Mr. Lomas are of great interest. No more fascinating work could be easily suggested that would appeal to the eye with such success as this volume does, and though the text is of unequal merit, it has throughout the advantage of being the work of trained observers in the field.

(3) By this new volume of Prof. Farmer's "Book of Nature Study" the student is introduced to plant life. The headings of the first four chapters seem to us remarkably chosen. They may be summarised thus:—Seeds and seedlings, the bud and its growth, vegetative methods of reproduction, the importance of hairs. Surely this is a very inadequate and unequal manner of treating the subject. Miss Laurie has, however, described the objects under discussion well, and the illustrations are good. May we point out that two of the experiments could not be got to work as described and figured? An incompletely described experiment is worse than useless in an elementary book. On p. 40 (Fig. 29) carbon dioxide would enter by the lower edge of the bell-jar, and thus vitiate the experiment. One inch of water is, of course, needed. Fig. 30 (p. 50) represents an experiment which even the author would find physically impossible to set up in the manner described. Sufficient stress, furthermore, is not laid on the fact that all parts of the plant breathe. On p. 56 the storing function of the stem is not referred to. We must, in fact, state that the four chapters give one an inadequate idea of plant life. Prof. Lang's chapters on some flowering plants require no comment. We have here a few flowers, or, rather, complete plants carefully described. The types chosen are readily obtained, and thus every student can have a living plant by his side when working through the descriptions in the book.

RESEARCHES AT THE NATIONAL PHYSICAL LABORATORY.

VOL V. of the Collected Researches of the National Physical Laboratory, which has recently appeared, consists of reprints of thirteen memoirs emanating from the laboratory, and extends to 266 pages. Engineering subjects are answerable for about eighty of these pages, while the rest are about equally divided between electricity, metallurgy, and cosmical physics.

Of the engineering memoirs that dealing with wind pressures is of great importance. By experiments on plates and on lattice-work structures, both in natural winds and in pipes within which a uniform flow of air was maintained, it is shown that the pressure is proportional to the square of the velocity, and further, that the actual pressure on a lattice-work structure when exposed to the wind may be found by observations taken on a small model placed in a pipe through which a uniform current of air is flowing.

A second memoir of interest to engineers is that on a new fatigue test for metals. The material tested is in the form of a ring, which is kept rotating about its own axis under pressure by means of three rollers which bear on its outer surface. Under a test of this kind the superiority of nickel steel rails for railway work is well brought out.

In the electrical section, one of the most important memoirs deals with the history of the standards of electrical resistance kept at the laboratory. The ultimate standards are of mercury in glass, and were first set up in 1902. They show no change in the interval, but many of the secondary standards have increased in resistance by a few parts in 10,000 since they were constructed, some ten, others twenty, years ago. Some of the secondary standards have, however, proved more satisfactory, those of platinum, some of those of platinum-silver, and some of the manganin ones, appearing to be unchanged.

As the result of a comparison of the new electric current balance of the laboratory with the standard ampere balance of the Board of Trade set up fourteen years ago, it appears that the two agree to within 1/100th part of 1 per cent.

In the metallurgical department the alloys of lead and tin have been investigated in considerable detail, both thermally and microscopically, and the eutectic found to be 37 per cent. lead, 63 per cent. tin. A new method of determining the phosphorus in phosphor tin has been also worked out, and promises to be both shorter and much more convenient than the older methods.

Only a portion of the work of the department which deals with cosmical physics is recorded in this volume. This portion consists of a discussion of the magnetic declination as recorded at Kew during the years 1890–1900 in the light of, or, rather, the obscurity provided by, the multitude of theories of terrestrial magnetism now in the field. It is shown that the records are incompatible with any theory which regards magnetic disturbances as directly dependent on the area of the sunspots visible at the time. From the report of this department we note that at Kew the mean declination during 1908 was 16° 16′ W., the mean dip 67° 1′ N., and the mean horizontal force 0·1852 c.g.s. units. By the end of the present year it is hoped that the new observatory at Eskdalemuir will be in full working order, many of the recording instruments being already installed.

From this short summary it will be seen that vol. v. is well worthy to rank with its predecessors, as a contribution to science of which the nation may feel proud. C. H. L.

JOHN REID, 1809–1849.

UNDOUBTEDLY 1809 was an *annus mirabilis*. Nineteen hundred and nine is, therefore, the hundredth anniversary of the birth of certain great ones in letters, in politics, and in science. Several epoch-makers have their statues in the intellectual Valhalla of the nation, but it would not be well if we allowed the statues on their pedestals to make us overlook the busts in the smaller niches. One of the busts in the Hall of Shades is that of the Scotsman, John Reid, born April 9, 1809, the son of a cattle-dealer, dying July 30, 1849, Chandos professor of anatomy and medicine in the United College of St. Salvator and St. Leonard in the University of St. Andrews. Forty-nine years only intervened—they were filled with the activities of a strenuous Scottish character.

John Reid, the sixth child of Henry Reid and Jean Orr, his wife, was born in the little town of Bathgate in Linlithgowshire, the same in which two years later James Young Simpson, the epoch-maker, first saw the light.

From his native parish school, Reid passed, at