points, vapor pressures, osmotic pressure, diffusion, speed of chemical reaction and to the phase rule.

ROBT. B. WARDER.

Observation on the Coloration of Insects. By BRUNNER VON WATTENWYL. Translated by EDWARD J. BLES, B.Sc., King's College, Cambridge. Leipsic, Engelmann. Fol. Pp. viii + 16. 9 plates.

In 1873, and again ten years later, Brunner published essays on 'hypertely,' or extravagance in nature, which are practically the foundation of the present work, in which an attempt is made to classify the fundamental phenomena of coloration in insects. These are treated of under the headings of uniform coloration, stripes and spots, the line of orientation ('indicating the position assumed by the insect in receiving its coloration'), strokes and dots, eyespots, spirals, splash marks, cloudings, stencil patterns, erosion, changes in pattern, enlargement or diminution of spots and bands, discoloration, diminution of patterns, changes due to adaptation, staining of contiguous parts, fading in covered parts, coloring in relation to position, and finally, as the summation of the whole, the arbitrariness of coloration. One quotation from the section on stencil patterns may be given as a good sample of his illustrations:

"In *Pseudocreobotra ocellata* Serv. one sees on the transparent, somewhat yellowish ground of the fore wings, firstly, a green patch, laid on as with a stencil. Then, in the middle of the green portion, opaque, citron yellow is laid on in the form of a spiral. The spiral is bordered with a heavy black line and in the center of the spiral there is a round spot of the same color.

"The black line obviously is meant to serve as a setting of the yellow spiral, yet careful examination reveals that the black marking is bodily shifted slightly inwards towards the insertion of the wing. For on this side, between the yellow spiral and the black line, a narrow strip of the green ground shows, while on the outer side the black border plainly encroaches upon the yellow ring. The shifting of the black marking is still more plainly shown by the small central spot not lying where it obviously should lie, but likewise shifted inwards.

"We have, consequently, three colors stencilled on the glassy wings: first green, then lemon yellow, and to complete the picture, a black body color; the latter is somewhat misfitted, as it may also be at times in our colored prints.

"I wish to lay stress on the agreement in this arrangement amongst all the many specimens which have passed through my hands. The idea can, therefore, not be entertained that the negligence described is a mere chance occurrence in one individual. The species was ornamented *once for all*, and just as it emerged from this operation, so has it been transmitted by inheritance."

He further mentions, in his final division, the case of an Acridian of the genus *Mastax*, in which a yellow stripe on the sides of the body includes the lower third of the facetted eyes, "and, as the stripe is formed by a body pigment, there is no doubt that the power of vision is destroyed in the part affected."

The author concludes that "the careless splashings, the defective stencil patterns or the impairment of vision by a band laid over the eyes and many other facts met with in the study of coloration cannot be brought into relation with any purposeful tendency. If one, therefore, calls modification through natural selection, Darwinism, a new name [Brunnerism?] must be introduced for the undoubtedly demonstrable occurrence of phenomena in the whole living world which have no relation to their owners or are occasionally harmful to them and hence are certainly not the result of selection."

Brunner combats the possibility of any gradual assumption of the more striking features, including the phenomena of mimicry, and, therefore, contends that they cannot be the result of natural selection; but he formulates no new law or process by which they can be presumed to have come into being, and so is forced to conclude that in the coloration of insects "we meet with an *arbitrariness* striving to produce attributes without regard for their possessors, and, therefore, obviously to be looked

upon as the emanation of a Will existing above the universe." This can hardly be looked upon as a compliment to the Deity.

The work is published in two editions (German and English), and is accompanied by nine exquisite plates, with 144 colored figures.

It is not a little curious that throughout the work the English translator uniformly uses 'colour' and 'coloured,' but 'coloration.' Is this to meet Americans half-way?

SOCIETIES AND ACADEMIES.

MEETING OF THE OHIO STATE ACADEMY OF SCIENCE.

THE seventh annual meeting of the Ohio State Academy of Science was held at the Ohio State University, Columbus, Ohio, on December 28 and 29, 1897, Dr. W. A. Kellerman, of Columbus, presiding. The meeting was well attended and much interest was manifested. The Society now numbers about two hundred, twenty names being presented for membership at this meeting.

The first paper, by R. J. Webb, was on 'The Fertilization of the Closed Gentian.'

Dr. D. S. Kellicott reported on Additions to the Odonato of Ohio. The list of dragon-flies for the State now numbers ninety-seven.

E. W. Vickers gave three short papers on 'The Pileated Woodpecker in Mahoning County,' 'Pickering's Hylodes in Ohio' and 'The Least Weasel in Ohio.'

Edo Claassen reported briefly on the following subjects: 'Occurrence of the Long-leaved Willow,' 'Abnormalities in Plants,' 'List of Liverworts of Cuyahoga and other Counties of Northern Ohio,' 'List of Plants New to the Flora of Ohio' and 'Erratic Boulders in the Valley of Rocky River.'

Dr. W. A. Kellerman gave the President's address on the subject: 'Does Modern Science furnish an Adequate Philosophy of Human Life?' and besides reported on the 'Distribution of the Green Ash in Ohio,' '*Ustilago reiliana*, Spermatophyta rare or new to the Ohio Flora' and 'Revision of the Catalogue of Ohio Plants.'

Professor F. M. Webster spoke on Some additions to the known insect fauna of Ohio.

R. C. Osburn and E. B. Williamson gave a description of a new species of fish, *Etheostama sciotense Osburn* and *Williamson*, a full description of which will appear in the Proceedings of the Society. They also gave a list of 69 species of fish for Franklin county, Ohio, and a list of the Crayfish of Ohio.

J. H. Shaffner read papers on 'Atavism in *Citrullus vulgaris*,' 'Notes on the Salt Marsh Plants of Northern Kansas' and 'Observations on the nutation of *Helianthus annuus*.'

Other papers were:

Notes on the Pleistocene geology in the vicinity of Devil's Lake, Wis., and dynamical modifications of quartzite: J. A. BOWNOCKER.

Science for the first year of the high school course, and Additions to the list of Ohio Fungi: F. L. STEVENS.

Science in the country school: E. E. MASTERMAN.

Cell-division in the Pine: E. L. FULLMER.

Embryology of a dicotyl: MISS L. C. RIDDLE.

Dissection of a double Trillium: MRS. W. A. KELLERMAN.

Additions to the list of plants of Ohio; Reversion of leaves to laments in tick-trefoil, and Evidence as to the origin of the islands of Lake Erie: E. L. MOSELEY.

The junction of the blue and yellow clays in the drift of northern Ohio, and recent beaches at Sandusky Bay and Sodus Bay: A. A. WRIGHT.

A list of the butterflies of Ohio (ninety-seven in number): J. S. HINE.

The Jonathan Creek drainage basin: H. J. DAVIS.

The preglacial drainage of Knox county: W. G. TIGHT.

Preglacial drainage in the vicinity of Cincinnati; The Ohio River a result of glacial conditions, and No evidence of an ice dam at Cincinnati: GERARD FOWKE.

Some new points on fin attachment of Dinichthys and Cladodus: WM. CLARK.

Four critical points in the valley of the Cuyahoga River: E. W. CLAYPOLE.

The following officers were elected for the ensuing year:

President—W. G. Tight, Granville.

Vice-Presidents—Josua Lindahl, Cincinnati; J. H. Todd, Wooster.

Secretary—E. L. Moseley, Sandusky.

Treasurer—D. S. Kellicott, Columbus.

Executive Committee—Mary E. Hart, Oxford; E. W. Vickers, Ellsworth.