the grasshopper's head, and the singular state to which the grasshopper was reduced, all seemed to me worthy of notice.

Evidently the grasshopper was carried off to serve for the food of the young larva, instead of the caterpillar usually provided. Had the grasshopper been paralyzed by a sting or bite? Was it mesmerized or hypnotized by its vigorous little enemy? Whatever had been done to it, it was absolutely quiescent and making no manner of fight for itself. JULIA MCNAIR WRIGHT.

Fulton, Missouri.

Auroras versus Thunder-Storms.

DURING September just past sun-spots were very numerous and large. Nevertheless, auroras during the month were without exception comparatively inconspicuous. In this case certainly large sun-spots have not been attended by bright auroras, as some have held to be the rule. The explanation of this anomaly, which appears to be justified by systematic records in my possession, is that thunder storms took the place of auroras. It has been found that not unfrequently thunder-storms become widely prevalent upon dates upon which auroras should fall in accordance with their periodicity corresponding to the time of a synodic revolution of the sun. When this happens, it robs them of their brightness, wholly or in part. The relation between these two classes of phenomena appears to be reciprocal or substitutive, the one taking the place of the other under conditions which are only just beginning to be understood, and which are in process of investigation. M. A. VEEDER.

Lyons, N.Y., Oct. 8.

European Origin of the Aryans.

IN reference to Dr. Brinton's note in *Science*, Sept. 16, I certainly have not read all D'Halloy's writings, which seem to me to have no present scientific value, possessing merely a faint historical interest. I only professed to have read those passages which Dr. Brinton cited in his lectures.

The extract which Dr. Brinton now gives from the article of 1848 only confirms me in my conclusions. D'Halloy's mention of an Himalayan origin, and his allusion to the hypothesis that the Indo-Germanic languages were derived from Sanscrit, point rather to an acquaintance with Adelung's Cashmere theory of 1806 than to any adequate knowledge of the Central-Asian hypothesis of Pott, Lassen, and Grimm, which dates from 1847–48. At the time when D'Halloy, in his "Éléments d'Ethnographie," appended a note to this article, he must have heard of the Central-Asian theory; but the "Éléments d'Ethnographie" I had not looked at, as it was not one of the works cited by Dr. Brinton.

However, the matter is so unimportant that if Dr. Brinton still wishes to maintain his view, we may agree to differ.

ISAAC TAYLOR.

Settrington, York, England, Sept. 29.

Change of Diet in Birds.

EVERYONE who has a garden must have noticed the manner in which the common sparrow destroys the flowers of the yellow crocus. The earliest mention of this which I can find is in *Science Gossip* for 1865. The question is, Was the bird previously in the habit of thus destroying crocus flowers,— I do not say eating,— or is it a new departure?

Since then I have observed that the common yellow primrose is similarly injured by sparrows. Seeing a crowd of sparrows busy among some primrose plants in my garden, I made a close examination of their work. Some of the flowers had been entirely plucked off; in others the entire cradle and some of the petals had been bitten off and dropped on the ground, but nothing appeared to have been eaten. I examined a number of the flowers carefully, first with the naked eye and then with lenses of different powers, but I could find no traces of insects which the sparrows might be supposed to have been seeking.

The main point is, then, What is the motive of the sparrows in thus singling out the crocus and the primrose for attack?

W. SLATER.

London, England, Sept. 29.

BOOK-REVIEWS.

The Speech of Monkeys. By R. L. GARNER. New York, Chas. L. Webster & Co. 8°. 233 p. $1.

The work of Mr. Garner upon the "Speech of Monkeys" is already well known through the public press, and all who have become interested in this extremely suggestive subject will be pleased that he has summarized in a neat little volume the important results of his work up to the present time. Nearly all of the facts published in this volume have already been given to the public through the pages of the *Cosmopolitan*, *The Forum*, *The North American Review*, and other publications; but in this volume he has brought together all of the important facts given in these various places. Mr. Garner has been at work upon the subject of monkey language for some eight years, and, although a number of interesting facts were seen earlier in his observations, it was the application of the modern phonograph to the study which for the first time put the subject upon a scientific basis.

The present work is divided into two parts. The first part gives an outline of the facts as he has observed them, and his methods of experiment. As one reads this part he receives two impressions. The first is as to the exceeding scantiness of the definite results. It is perhaps a little disappointing to find that the speech of monkeys as thus far made out by Mr. Garner seems to be confined to a few sounds, nearly every one of which has a variety of meanings, or rather does not seem to have any exact significance. This is, after all, not to be wondered at. Mr. Garner himself recognizes that he has only made a beginning in his researches, and it must be remembered that he has had absolutely no guidance from the previous work of others. Moreover, it is to be expected from their general grade of intelligence that the speech of monkeys will be confined to a few ideas, and those ideas of the widest general signification. The second impression that we receive as we read the book is, that Mr. Garner's work, so far as it has gone, is reliable and that he is dealing with facts rather than fancies. We cannot but feel that the few facts which Mr. Garner has made out are well authenticated. It is very striking when we learn that Mr. Garner has so far discovered the speech of monkeys as to have learned the password into their good graces, and we cannot but be interested in his ability to attract the attention of monkeys by saying to them, in their language, the word which means food. His ability to thus obtain their good-will by the use of a word of their own language; the fact that monkeys always use this word in connection with food; the very fact that the meaning of the word is vague, being used in connection with food or drink, or "any kindly office done them;" the fact that other actions of monkeys are also always accompanied by a perfectly definite sound, which Mr. Garner has in many cases been able to imitate; the fact that a repetition of these sounds in all cases will produce similar actions in other monkeys of the same species; the fact that monkeys of different species do not use the same sounds under the same conditions; the fact that occasionally one monkey learns a word used by another species of monkeys for certain purposes; the fact that monkeys do not use these words when alone but only when they have some one to talk to; and many other incidental occurrences combine to give us the feeling that, so far as Mr. Garner has gone, his belief that monkeys have speech is well substantiated.

As one reads this work, he is at some loss to know in his own mind whether to predict that Mr. Garner is going to be able to develop the speech of monkeys to a great extent, and is only on the threshold of important discoveries, or whether he has already nearly reached the limit of their speech. Their language, of course, cannot advance beyond their knowledge, and it may be that their speech will be confined to the vague expression of a few of their crude conceptions of nature. Mr. Garner believes, however, that there is very much to be still discovered, and that the speech of monkeys is of more importance to them in expressing their ideas than their gestures.

The second part of the work is of considerably less interest, being more in the line of speculation. It gives the theoretical deductions which Mr. Garner is inclined to draw from the facts he has already seen, and some few speculations as to the origin

and significance of language. In this part of the work we must find the chief interest in the fact that we have an attempt to theorize as to the origin of speech from the standpoint of its beginning in the lower animals, rather than from the standpoint of its more developed conditions in man. The study of language hitherto has been to reduce human language to its lowest and simplest form. Mr. Garner for the first time attempts to develop language from its simpler conditions in the lower animals, and if Mr. Garner's conclusions differ in some respects from the ideas that have hitherto been in vogue, it is not surprising.

On the whole, the work of Mr. Garner is extremely interesting and suggestive. As a piece of book-making it is open to criticism. It is sketchy; it is not very logically arranged, containing a miscellaneous mixture of observations on the intelligence, habits, gestures, affections, and general mental attributes of monkeys, some of which are new, but most of which are not especially new, and have little relation to the subject of monkey speech. The observations on the actual speech of monkeys, which is of course the really valuable part of the work, fills only a small portion of the book. We must look upon this volume and the work it describes simply as an outline sketch of the beginning of a series of results which may be carried to a successful issue in later years. The thanks of science are certainly due to Mr. Garner for opening to us a new line of research and a new realm of suggestive thought.

H. W. CONN.

Outlines of Zoölogy. By J. ARTHUR THOMSON. Edinburgh and London, Young J. Pentland, 1892. 655 p. Ill.

FOR some years now there has been no text-book of zoölogy in the English language at all adequately representing the present state of the science, and at the same time of moderate cost. The cost of Claus and Sedgwick is high; the translation of Lang must remain incomplete till the original shall be finished; Lankester's promised book still delays its appearance; Packard is out of date, as for that matter is Claus and Sedgwick; and the college teacher who wishes his students to have a good reference book in their possession hardly knows where to turn when the said students combine a comparative ignorance of German with thinly-lined pocket-books. Under these circumstances, the prospect afforded by the announcement of Mr. Thomson's book was distinctly attractive.

It may be said at the outset that the book to a large extent responds to favorable anticipations. Mr. Thomson, while not much known as an original investigator, has made a record for himself in the hardly, if at all, less useful *rôle* of abstractor and collator of the work of others, while his occasional essays and his work with Professor Geddes on the evolution of sex have shown him to possess an agreeable literary style. The "Outlines of Zoölogy" is an exceedingly readable book, and perhaps the only criticism that can be made upon its style is that it occasionally degenerates into flippancy. Professor Forbes was quite justified in making his joke about the "wink of derision" which *Luidia* gave him as it passed over the side of the boat after breaking off its arm; but it is hardly desirable to waste space in repeating the joke in a text-book. A good many examples of this kind might be quoted.

Mr. Thomson wisely, we think, follows the example of Claus, Boas, and other writers in devoting a considerable amount of space to general matters. The first ninety pages of the book are occupied with an account of the functions of animals, the meaning of organs, tissues, and cells, methods of reproduction, fertilization, segmentation, etc., palæontology, distribution, and the principles of evolution. Evidently these subjects must be treated in the briefest possible way; but the result is on the whole not unsatisfactory. The first chapter, however, which takes for granted a knowledge of the meaning of such words as "cells," for example, would be a pretty tough morsel for the average student beginning zoölogy without any biological training. Of the remaining 514 pages (excluding index), 343 are taken up with invertebrates, and 171 with vertebrates — an arrangement which, for a general text-book, surely gives too much space to the vertebrates.

Publications Received at Editor's Office.

BRIDGE, JOHN. From Tilbury to Torbay. London, Gilbert & Rivington. 16°. 154 p.

DE VARIGNY, HENRY. Experimental Evolution. London and New York, Macmillan & Co. 12°. 283 p. $1.50.

HOLM, THEO. Notes on the Flowers of Anthroxanthum Odoratum L. Washington Government. 8°. 5 p.

MAINE STATE BOARD OF HEALTH. Seventh Annual Report. Augusta, State Printers. 8°. paper. 44 p.

MUELLER, FERD. VON. Select Extra-Tropical Plants. 8th ed. Melbourne, Australia, Government. 8°. Paper. 602 p.

RAMSAY, ALEXANDER. The Scientific Roll, Nos. 1, 2, 3, Climate, Baric Condition. London, W. E. Bowers. 8°. Paper.

SMYTH, BERNARD. B. Check. List of the Plants of Kansas, Topeka. Bernard B. Smyth. 8°. Paper. 34 p.

TOMPKINS, C. R. The Woodworker's Manual, Dover, N. H. The John A. White Co. 8°. Paper. 60 p. Ill.

U. S. GEOL. SURVEY. Bulletin No. 79. Washington Government. 8°. paper. 39 p.

WRIGHT, G. FREDERICK. Man and the Glacial Period. New York, D. Appleton & Co. 12°. 401 p. $1.75.

Exchanges.

[Free of charge to all, if of satisfactory character. Address N. D. C. Hodges, 874 Broadway, New York.]

For Sale or Exchange.—The subscriber would like to receive cash offers, or an offer in exchange for the earlier volumes of Poggendorf's Annalen and the later volumes of Silliman's Journal, upon the following list: Chenn.—Manuel de Conchyliologie. 2 vols. Nearly 5,000 figures, some hand-colored Paper. Paris, 1859. Edwards.—Butterflies of N. A. 2 vols. Plates hand-colored. Vol. I., half calf Vol. II. in parts. Leyman, Agassiz, Hagen.—Ills. Cat. Mus. Comp. Zool. at Harvard. No. I. Ophiuridae. No. II., Acalephae. No. III., Astacidae. All bound in one volume. American Naturalist. Vols. I.–VII. Cloth. Silliman's Am. Jour. of Science and Arts. Third Series. Vols. I.–X. Cloth. Binney.—Terrestrial Mollusks of N. A. Colored plates. 4 vols. Stretch.—Zygaenidae and Bombycidae of N. A. Colored plates. Also a considerable library of monographs, reports, and scientific books, and a large number of duplicates of fossils, minerals and shells. E. A. STRONG, Ypsilanti, Mich., Sept., 1892.

Exchange.—I have the finest shells of Anodonta corpulenta, C'p'r, and Suborbiculata, Say, in the world. Will exchange for fresh water, land, and marine shells, in large or small quantities. Have also for exchange 50 varieties of fresh water and land shells from Spoon River, Ill. DR. W. S. STRODE, Lewistown, Ill.

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For Sale.—About 1087 volumes of the private library of Dr. Nicolas León, formerly director of the Museum at Morelia, embracing publications of special value for Mexicologists, like those of Bishop Zumárraga (16th century), of Siguenza y Gongora, of Aleman, etc., the Missal of Spinoza, all very scarce; manuscripts on the history of Michoacán and other Mexican States, on the Tarasco (the Indian language of Michoacán) and several works, of which the only copy known to exist is in this collection. Parties interested in the sale please address DR. NIC. LEÓN, Portal de Matamoras, Morelia, Mexico.

For Exchange—"The Birds of Kansas,"—Goss, for Gray's Anatomy, or Medical Dictionary. Must be in good condition. Address, J. H. SIMPSON, Buchtel College, Akron, Ohio.

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CHEMIST AND ENGINEER, graduate German Polytechnic, Organic and Analytical, desires a position in laboratory or chemical works. Address 213½ E. 7th Street, New York, care Levy.

A MAN, 36 years old, of extensive experience, having the degrees of A.M. and Ph.D., desires a first-class opening as a teacher of Zoölogy and kindred studies in a college or university. Can furnish numerous testimonials or references as to success and skill in most modern laboratory methods. Address E. W. D., Md. Agr. College, College Park, Md.

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