

While awaiting the discovery of new evidence tending to establish a glacial man in America, I have undertaken to analyze the old testimony as embodied in the writings of investigators of the American questions, and short papers covering part of this ground will soon appear. I had not anticipated this present diversion, however, as I had thought of Mr. Haynes only as a convenient verifier of that large class of unfortunate "paleoliths" whose pedigree happens to be shaky. My work was intended to bear only upon that of real investigators, such as Abbott and Cresson and Metz, who have for years sought earnestly, if not always effectively, for the evidence that is to make symmetric the culture development of two hemispheres. Those writers who undertake to use, and defend the evidence collected by, these students, will do well to remember that they shine by borrowed light, and should for much-vaunted modesty's sake, if not for science sake, keep well within reach of its limited ray.

If my "rash" assertions, hitherto made, respecting the nature of the testimony relied upon to establish a glacial, paleolithic man in America, lead finally to a just estimate of the real evidence and to the establishment of a firm basis for future operations in this great field, I shall feel amply repaid, notwithstanding the storms of sharp words and the streamlets of doggerel the publication of these views seems destined to call forth.

W. H. HOLMES.

Washington, D.C.

The Neanderthal Skull.

In reference to Professor Haynes's observation in *Science*, Feb. 24, p. 107, that, not having seen the report of Professor Virchow's address, he could not judge "how far Dr. Brinton may have been misled by his authorities," I beg permission to furnish both him and other readers of *Science* the opportunity of judging, by quoting Virchow's precise words about the place and surroundings of the Neanderthal skull. They are as follows:—

"Für die Beurtheilung dieser Gebeine ist es von Wichtigkeit zu erwähnen dass dieselben aus keiner Höhle herstammen; auch hat man sie nicht an ihrer Lagerstätte aufgefunden, niemand hat sie ausgegraben, sie sind in Bezug auf die geologischen Verhältnisse, unter denen sie sich befanden, nicht Gegenstand der Beobachtung gewesen. Sie wurden gefunden in einer Schlucht, die zunächst eines Bergabhanges sich gebildet hatte; durch diese Schlucht waren Wasser herabgekommen und hatten allerlei herausgespült; wo die einzelnen Stücke früher gelegen hatten, wusste niemand. Darunter befanden sich auch das Bruchstück des Schädels."

Professor Haynes refers to the finder, "Dr. Fuhlrott" (evidently meaning Fullroth). This person's statements are seriously questioned by Professor Virchow, apparently from information derived from Mrs. Fullroth, who imparted it in unsuspecting innocence of the grave decisions involved; as the Professor gleefully narrates. Virchow's earlier report will be found in the *Verhand. der Berliner Anthropol. Gesell.* for 1872.

D. G. BRINTON.

Philadelphia, March 1.

Aerial Bubbles.

THE account of "snow-rollers" in your recent issue recalls an atmospheric phenomenon which was beheld here by two witnesses of unimpeachable character several years ago, of which no account has ever been published. Towards sunset, late in April, 1886, on a warm, thawing day, the snow rapidly disappearing, two men, Capt. John E. Hetherington and Mr. Marcus Sternberg, as they rode down the long hill towards this village from the east, saw what appeared to be innumerable spherical bodies floating in the air like soap-bubbles. Both men saw and wondered at the appearance for some moments before either spoke. Capt. H. then said, "I wonder whether I am dreaming?" The other rubbed his eyes and echoed the sentiment. "Well," said the captain, "I wonder if you see what I see; what do you see?" They questioned each other, and both agreed as to their impressions. An orchard lay along the lower and northwesterly side of the road, and all in among the apple-trees were thick, gently-de-

scending multitudes of these bubbles, pretty uniform in size, say, 8 or 9 inches in diameter, apparently; none less than six; no small ones being observed.

The two observers state that they carefully fixed their attention on particular bubbles, in order to compare notes, and saw them seem to rest on the bough of a tree, or the top board of the fence, and then gently roll off and disappear or go out of sight. The sun was sinking and dropped below the opposite hills as they reached the foot of the long descent and entered the village, and the appearance came to an end. But up to this time the air seemed to be filled with these transparent floating spheres. The position of the observers with regard to the light seems to have made some difference as to seeing well this or that large aggregation or swarm that one or the other pointed out. The bubbles were highly colored, iridescent, gave the same sort of reflections as soap-bubbles, and apparently vanished individually in much the same way. All these points I have ascertained by repeated conversations.

Captain Hetherington (Lieutenant Colonel by merit) is widely known for his extensive apiaries, the largest in the country, and is an exceptionally good observer. Mr. Sternberg also is a gentleman of intelligence and careful observant character.

The only theory I have been able to form to account for such a phenomenon is, that if a certain kind of dust floated off in the air, each particle composed of some sort of saponaceous envelope, enclosing a highly expansible centre or core, like ammonia,—particles of this character expanded by the warm air, and at the same time moistened, might, under very nice conditions, produce such an effect.

I will add, *apropos* of snow-rollers, that Mr. Sternberg states that, years ago, he once saw, in Schoharie County, what he called "auger borings" of snow; which he described as spiral rolls, about two inches in diameter, and broken into fragments of various sizes, like the borings turned out by an auger.

HENRY U. SWINNERTON, Ph.D.

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Hardy Towhee Buntings.

HAVING noticed the effect of the recent severe weather on the crows near Washington, which Dr. Ridgway gives an account of in *Science* of Feb. 10, I was greatly surprised to find the towhee bunting (*P. erythroptalmus*) evidently wintering here. During the second week in January last, I observed two individuals and heard the notes of others. As the towhee seems to get most of its food upon the ground, its presence during deep snows and severe cold rather surprised me. The authors of the U. S. National Museum Bulletin, No. 26 (*Avi Fauna Columbiana*), say of the towhee: "Chiefly a spring and autumn migrant. A few breed with us, but none remain during the winter." It usually makes its appearance here in the first warm weather in March, and I have found it to breed quite abundantly in suitable localities. During the same cold snap I picked up numbers of dead goldfinches, juncos, and native sparrows, evidently victims of the weather. The turkey vultures (*C. aura*) also suffer from the cold and are sometimes found unable to fly, their plumage being coated with snow and ice. In order to prevent the extermination of the bob-white during the past winter, a Virginia sportsman's club furnished quantities of wheat-screenings to any persons who would place the same in localities frequented by the birds.

ALBERT B. FARNHAM.

Bennings, D.C.

The Speech of Children.

THE paper in *Science* of March 3, having the above title, by Mr. A. Stevenson, has much interested me. In the fifth paragraph, on page 120, the author says: "The child apparently regarded himself only as object and not at all as subject." This conclusion is reached by the child's use of the third person in speaking of himself. It seems to me inconceivable that a conscious being should regard himself other than as subject. The peculiarity of expression—a common enough one in children—I believe to exist, first, because the child hears himself constantly referred to

as the object, and, second, because of the wrong and foolish method of conversation employed — not necessarily by the child's parents — when talking to him. Such examples as "Baby kiss mamma," "Does Freddie love his auntie?" "Is little Mary cold?" etc., can hardly lead to an early conception of correct verbal expression.

HOWARD LILIENTHAL, M.D.

New York, 43 East 29th Street, March 6.

Solidungulate Pigs.

THE "mule footed hogs" inquired about by Mr. Jno. H. Frick, in *Science* of Feb. 24, p. 107, are described and figured in my article entitled "On a Breed of Solid-Hoofed Pigs Apparently Established in Texas," *Bull. U. S. Geol. and Geogr. Surv. Terr.*, Vol. IV., No. 1, Feb. 5, 1878, p. 295.

ELLIOTT COUES.

Smithsonian Institution, Washington, D. C., March 1.

BOOK-REVIEWS.

Original Papers on Dynamo Machinery and Allied Subjects. By JOHN HOPKINSON, M.A., D.Sc., F.R.S. New York, W. J. Johnston Company.

THIS volume is a collection of the papers on electro-technical subjects which Dr. Hopkinson has published at various times during the last fourteen years.

It will be unnecessary to speak of the great value of these papers, for a number of them have passed into the text-books and form a part of the education of every technical student, and there is probably not an electrician in the country who has not found himself obliged to obtain the greater part of the remainder in some form or other. But a book of clippings from engineering journals is never so satisfactory as a bound volume, and the electrical profession will accord a warm welcome to this little book, the more so as it contains several papers which have hitherto been difficult to obtain. Of the eleven papers here collected, five are on electric lighting and dynamo-electric machinery, two on transformers and transformer tests, two on theory of alternating currents, one on an electrostatic effect in conductors carrying alternating currents, and one on electric light-houses. The first five contain the "epoch making" work on characteristic curves, and on efficiency tests of dynamos. (In passing, it may be noted that the paragraph on page 36, on the use of the characteristic to find the lowest speed at which a machine can be run and yet produce an arc, is given wrongly in Professor S. P. Thompson's "Dynamo-Electric Machinery," page 273.) But to technical readers the most interesting portion will be the papers on alternate currents and transformers, included in which is an account of the recent tests on the Westinghouse transformer, of importance as showing that the old accusation of poor all-day efficiency can no longer be made against the commercial transformer. These treat of the parallel and series running of alternators, the design of transformers, the effect of capacity in transformers, the power consumed in alternating current arcs, etc.

The advantage that this book has over the papers as originally printed is the fact that most of the errors and misprints have been corrected. A few yet remain, however. On page 155, 2μ should read 2π ; $\sin 2\pi/T(t+\tau)$ should read $\sin 2\pi/T(t-\tau)$; the sign of the solution of the differential equation for H should be — instead of +. On page 157, $e\gamma$ should read 2γ ; through the whole of this part of the book H' is printed instead of \bar{H} . This would be objectionable if intentional, but it seems to be an accident, as on page 179 the dot is used instead of the stroke, but placed wrongly.

Electricity and Magnetism: Being a Series of Advanced Primers of Electricity. By EDWIN J. HOUSTON, A.M., Professor of Natural Philosophy and Physical Geography in the Central High School of Philadelphia. New York, W. J. Johnston Co.

FROM the preface we learn that this book is meant for the "general public" and the increased "number of those to whom a knowledge of the laws of electricity has become a necessity of every-day business life." While it is proverbially hard for a specialist to decide what the public want, it may be doubted if

they will see much to choose between this and the scores of similar books which have been published. It is possible, however, that the name on the title-page may prove an attraction to many. On inspection the book is found to treat of the simpler theoretical principles, technical subjects, such as the dynamo, arc-lamp, etc., taking up about fifty lines out of the three hundred pages which comprise the book.

As in most books of the class, there are numerous inaccuracies; to mention a few: on page 23 a black surface is stated to be a worse radiator of light than a white one; whereas, of course, the reverse is the case; carbon is given as an exception to the rule that the conducting power of metals decreases with rise of temperature; the "conducting power of all alloys or mixtures of different metals" is stated to be "very much less than that of any one of the metals of which they are composed," in forgetfulness apparently of the fact that Matthiessen gives a long list of alloys whose conductivity is the mean of their constituents, etc.

The idea of giving references and extracts from books which should be read by those desiring a fuller knowledge of electricity than can be gained from the primers, can be considered a good one. It may, however, be questioned if the quotation from Professor Ayrton's book, "Practical Electricity," would give a reader the impression that it is a book on electrical laboratory work, and whether there is any necessity of quoting the author's "Electrical Dictionary" and "Physical Geography" so often among the selections from standard works, especially where, as on page 161, under "Extracts from Standard Works," the author quotes his dictionary as quoting Fleming, where the extract could, with no loss, have been made directly from the original. The chapter on Electrical Work is one of the best in the book, and the unscientific reader can hardly fail to understand the ideas treated of completely.

R. A. F.

Contributions from the Botanical Laboratory of the University of Pennsylvania. Vol. I., No. 1.

Bulletin of the Scientific Laboratories of Denison University, Granville, Ohio. Vol. VII.

IN these days of enormous multiplication of books, magazines, journals, proceedings of societies, etc., there should always be reason for the establishment of a new serial. The avenues of publication are already so numerous that it is almost impossible to keep track of all. The agricultural experiment stations have vastly increased the amount of literature dealing with scientific results, and the comparatively new departure of universities, in issuing periodical publications, is one rather to be deprecated than encouraged. It would seem far better, for example, to do as Columbia College in New York, and Harvard University in Cambridge do, that is, to publish articles in established periodicals or scientific serials, rather than to originate new ones. Columbia College publishes the "Contributions from the Herbarium" in the Transactions of the New York Academy of Science, while Harvard University prints "Contributions from the Chemical Laboratory" in the Proceedings of the American Academy of Arts and Sciences.

These remarks are induced partly by the recent appearance of No. 1 of Vol. I. of "Contributions from the Botanical Laboratory of the University of Pennsylvania" and Vol. VII. of the "Bulletin of the Scientific Laboratory of Denison University." Both of these are creditable publications. The former contains some valuable papers upon *Dionaea* and other subjects, and the latter is a catalogue of the flowering plants and ferns of Licking County, Ohio. With the Philadelphia Academy, the Franklin Institute, and the American Philosophical Society, all issuing serials in Philadelphia, the *raison d'être* for a new serial there does not appear. The case of the Denison University is not quite parallel, but most probably there would be little difficulty in arranging for the publication of such papers in other places.

In the University of Pennsylvania contributions we have the following papers: "A Monstrous Specimen of *Rudbeckia hirta*," by J. T. Rothrock; "Contributions to the History of *Dionaea muscipula*," by J. M. McFarlane; "An Abnormal Development of the Inflorescence of *Dionaea*," by John W. Harshberger; "Mangrove Tannin," by H. Trimble; "Observations on *Epigaea re-*