issued. This aroused the ire of Professor Thompson, who, not being able to find any fault with Mr. Mottelay, wrote a number of rather bitter letters to the various technical papers, in which he spoke very disparagingly of Messrs. Wiley & Sons, and their conduct in publishing a book he had intended to publish himself. He was so evidently in the wrong, however, that most of the papers refused to allow him space on the subject, and united in defence of the publishers of the book, and Professor Thompson himself has probably by this time seen his mistake.

Of the book itself there is nothing but praise to be said. Mr. Mottelay is a worker of no mean reputation in this line of work, and his notes are always interesting and instructive. The translation seems to have been well done, so far as can be judged by comparing a few passages of the original which have appeared with the book. Mr. Mottelay's acquaintance with the vocabulary of the Schoolmen is of great use to him in the work, not that Gilbert was a schoolman, very far from it, but the language of philosophy had only begun to get rid of their marks (if indeed it is entirely free to this day).

On reading the book, we are struck with the sturdy self-confidence of the man, Gilbert of Colchester. He was right, and he knew it. A little bit of this is due possibly to the age he wrote in, but even more, it seems, to the man. Fearless he is in drawing conclusions, and he does not hesitate to dispute the evidence of others when it does not agree with his theory. Yet in one instance only does he appear to have been mistaken, i.e., in his proposed method of finding longitude by the inclination of the compass, which he proposed under the idea that the inclination was constant.

A few extracts from the work will give a good idea of the man and his work.

Before doing so, we may mention the fact that Lord Bacon thought that Gilbert had carried his theory a little too far, and had said that Gilbert had "endeavored to build a ship out of materials not sufficient to form the rowing-pins of a boat."

Page 2. "But lest the story of the loadstone should be jejune, and too brief, to this one sole property then known were appended certain figments and falsehoods, which in early times no less than nowadays were by precocious sciolists and copyists dealt out to mankind to be swallowed. For example, they asserted that a loadstone rubbed with garlick does not attract iron nor when it is in presence of a diamond. The like of this is found in Pliny and in Ptolemy's "Quadripartitum," and errors have steadily been spread abroad and been accepted — even as evil and noxious plants ever have the most noxious growth — down to our day, being propagated in the writings of many authors, who, to the end that their volumes might grow to the desired bulk, do write and copy all sorts about ever so many things about which they know naught in the light of experience. Such fables about the loadstone even Georgius Agricola, a man that has deserved well indeed of letters, has inserted as truthful history in his books, 'De Natura Fossilium,' putting his trust in others' writings."

Page 102. "In Baptista Porta's opinion there seems to be a mixture of stone and iron, i.e., ferruginous stone, or stony iron. 'The stone,' he says, 'is not changed into iron so as to lose its own nature, nor is the iron merged in the stone, but that it retains its own essence; and while each strives to overcome each, from the struggle results the attraction of the iron. In the mass of the loadstone there is more stone than iron; therefore the iron, lest it should be dependent on (subdued by) the stone, craves the strength and company of iron, to the end that what it cannot procure of itself it may obtain by the help of the other. The loadstone does not attract stones, because it has no need of them; and if one loadstone attracts another, it is not for the sake of the stone, but of the iron shut up in the stone.' As though the iron in a loadstone were a distinct body, and not blended with one another like all other metals in their ores. And it is a height of absurdity to speak of these substances thus confounded together as warring with each other, and quarreling, and calling out from the battle for forces to come to their aid. Now iron itself when

CALENDAR OF SOCIETIES.

Agassiz Scientific Society, Corvallis, Ore.

May 10.— Professor Dumont Lotz, Food Adulterants.

Biological Society, Washington.

May 20.— V. A. Moore, the Distribution of Pathogenic Bacteria in the Upper Air Passages of Domesticated Animals; C. V. Riley, Some Further Notes on Yucca Pollination; B. W. Evermann, The Ichthyologic Features of the Black Hills; W. H. Dall, New Forms of Fossils from the Old Miocene of the Gulf States; C. Hart Merriam, Biology in our Colleges; C. Hart Merriam, Facts of General Biological Interest Resulting from a Study of the Kangaroo Rats.

Geological Society, Washington.

May 24.— Whitman Cross, On the Occurrence and Characteristics of Laccolitic Rocks; Walter H. Weed, The Northern Peaks of the Crazy Mountains, Montana.

INDEX
TO VOLUME XVIII OF
SCIENCE
is in preparation, and will be issued at an early date.

touched with loadstone seizes iron with not less force than loadstone itself. These fights, seditions, conspiracies, in a stone, as though it were nursing quarrels as an occasion for calling in auxiliary forces, are the maunderings of a babbling hag, rather than the devices of an accomplished prestigiator."

So much for his attacks on the older philosophy. As an example of his own reasoning, we may give the following: "What is it that produces this movement? (speaking of the attraction of electrified bodies). The body itself circumscribed by its contour? Or is it something imperceptible for us, flowing out of the substance into the ambient air? And, if it is an effluvium, does the effluvium set the air in current, and is the current then followed by the bodies? Or is it the bodies themselves that are directly drawn up? But, if the amber attracts the body itself, then suppose the body itself is clean and free from adhesions, what need is there of friction? Nor does the force come from the lustre proceeding from the rubbed and polished electric, for the vincentina, the diamond, and pure glass attract when they are rough, but not so strongly nor so readily; because they are not so readily cleaned from the extraneous moisture settled on the surface, nor are they subjected all over to such an equal degree of friction as to be resolved into effluvia. Nor does the sun, with its shining and its rays, which are of vast importance in nature, attract bodies thus, and yet the common run of philosophers think that liquids are attracted by the sun, whereas only the denser humors are resolved into rarer, (and) into vapor and air; and thus, through the motion given them by diffusion, they ascend to the upper regions, or, being attenuated exhalations, they are lifted by the heavier air. Neither does it seem that the electric attraction is, by the effluvia, rarefying the air so that the bodies, impelled by the denser air, move towards the source of rarefaction. If that were so, then hot bodies and flaming bodies would attract other bodies, but no lightest straw, no rotating pointer is drawn toward a flame. If there is afflux and appulsion of air, how can a minute diamond, the size of a chick-pea, pull to itself so much air as to sweep in a corpuscle of relatively considerable length, the air being pulled toward the diamond only from round a small part of one or other end? Beside, the attracting body must move more slowly or stand still before coming into contact, especially if the attracting body be a broad flat piece of amber, on account of the heaping-up of air on the surface, and its rebounding after collision. And if the effluvia go out rare and return dense, as with vapors, then the body would begin to move towards the electric a little after the beginning of the application, yet when rubbed electrics are suddenly applied to a versorium, instantly the pointer turns, and the nearer it is to the electric, the quicker is the attraction. . . . In addition to the attraction of bodies, electrics hold them for a considerable time, hence it is probable that amber exhales something peculiar which attracts the bodies themselves, and not the air. It plainly attracts the body itself in the case of a spherical drop of water standing on a dry surface; for a piece of amber held at a suitable distance pulls towards itself the nearest particles and draws them into a cone, were they drawn by the air the whole drop would come toward the amber."

Page 273. "The variation in the Indian Ocean all the way to Goa and the Moluccas is noted by the Portuguese, but they are mistaken in many points, for they follow the first observers who set down the variations for sundry places, ascertained by the use of unfit instruments, or by inaccurate observations, or by conjecture. Thus in the island of Brandö they make the compass vary 22 degrees to the northwest. Now, in no region, in no place on the earth that has not a higher latitude than that, is the variation so much as 22 degrees; in fact the variation on the island is trifling, so when they say that in Mozambique the compass varies to the northwest one point, they are in error, even though the compass they use be that of Portugal, for without a doubt the needle varies in Mozambique to the southwest one-quarter of a point or more."

The book is handsomely bound, and will form a valuable addition to the electrical library. R. A. F.

Exchanges.

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

Minerals for exchange—John Holl. Rollo, Wilmington, Delaware.

For sale or exchange.—Johnson's Universal Cyclopædia, 8 vols., ed. 1888. Binding, half-morocco. Will sell cheap for cash or would exchange for typewriter. Address W. J. McKom, Mason, Mich.

I have 500 microscopic slides to exchange in lots to suit. Want Kodak, first-class field-glass or scientific books. A. C. Gruhlke, Waterloo, Ind.

Texas Plants. I will collect sets of plants represented in this region of Texas, either for sale or for exchange for literature, for anyone who will send me an order in time to fill it. Plants to be ready complete in November. C. F. Maxwell, Box 174, Dublin, Texas.

For sale or exchange—A Telescope (36 diameters, copper barrel)—for $20 cash or scientific books of that value. A. N. Somers, La Porte, Ind.

For sale—A complete set of the Reports of the Second Geological Survey of Pa., 1874-1893, including the Grand Atlas. Publisher's price over $115. Will sell for $50. Address F. D. Chester, Newark, Del.

The undersigned has skins of Pennsylvania and New Jersey birds, as well as other natural history specimens: which he wishes to exchange for marine, fresh water, and earthworms of the South and West. Correspondence with collectors desired. J. Percy Moore, School of Biology, University of Pennsylvania, Philadelphia.

For sale or exchange.—I have a Caligraph typewriter (No. 2) in perfect order and nearly new. It is in a heavy leather, plush-lined office case, the whole costing me about $100. I desire to obtain for it, either by sale or exchange, a new, No. 5 "Kodak" camera, with six double feather-weight plate-holders and the latest pattern of their tripod. The lens and pneumatic time-shutter must also be the same as those now sold with the last No. 5 Kodak. The price of what I desire in exchange is $78. Address, for particulars, P. O. Box 314, Takoma, District of Columbia.

For sale.—An Abbe binocular eye-piece for the microscope. Alfred C. Stokes, 527 Monmouth St., Trenton, N. J.

For sale or exchange.—One good long range Remington B. L. rifle, 44 calibre, also land and fresh water, and marine shells. Want shells, Safety, camera or printing press. A. H. Boies, Hudson, Mich.

Wants.

WANTED.—Second-hand copy of Ehrenberg's Radiolaria, Berlin, 1875. Selected diatom slides, cash or both in exchange. D. C. Lewis, M.D. Skaneateles, N. Y.

WANTED, as principal of a flourishing technical school, a gentleman of education and experience who will be capable of supervising both mechanical and common school instruction. Special familiarity with some technical branch desirable. Address, giving age, qualifications, etc., J. B. Bloomingdale, Fifty-ninth street and Third avenue, N. Y.

WANTED.—A young man as assistant in our microscopical department. Queen & Co., Philadelphia.

THE undersigned desires specimens of North American Gallinae in the flesh for the study of their pterylosis. These species are especially desired: *Colinus ridgwayi, cyrtonyx montezumae, deudragapus franklini, lagopus welchi, tympanuchus cupido* and *pediocetes phasianellus*. Any persons having alcoholic specimens which they are willing to loan or who can obtain specimens of any of the above are requested to communicate with Hubert Lyman Clark, 3922 Fifth Avenue, Pittsburgh, Pa.

A COMPETENT TEACHER of botany in college or university is open to engagement. Address L., Box 86, Rochester, Mich.

CAN any one inform me as to the age to which cats have lived? I have one twenty years old. Edward D. Webb, 132 W. Eighty-first St., New York.

WANTED — Second-hand. Foster's Physiology, Balfour's Comparative Embryology, Claus & Sedgwick's Zoology, Flower's Osteology of Mammalia, Vine's Physiology of Plants. Please state editions and prices asked and address Richard Lees Brampton, Ontario, Canada

A GRADUATE ENGINEER will give instruction evenings in geometry, trigonometry and surveying, mechanics, physics, mechanical drawing and general engineering construction. Five years' experience in field and editorial work on engineering journal. References furnished. C. S. H., 102 Tribune Building, New York.