In the work now before us, Dr. Minks considers the question of the so-called parasitic Lichens. In 1890, in "Morphologische lichenographische Studien," II., he had said that "Lichen and parasite are two irreconcilable conceptions." In the present work he develops this idea and extends it to a considerable number of Lichens, the apothecia of which had been previously considered to belong to the thallus upon which they are found, and applies the term "syntrophy" to all such. In a syntropic lichen, by careful microscopic investigation, the ephytic apothecia are found to have a very delicate thalline tissue of its own, from which it derives sustenance independently of the foreign thallus upon which it grows. Dr. Minks describes this relation in language almost as picturesque as that used by Schwendener, in a phrase which has become classic. The syntropic apothecia, he says, "are guests, because they offer nothing to the host, but claim service. They are tenants, who pay no rent, but share the lot of the landlord."

In application of this doctrine, Dr. Minks considers a number of genera and species of Lichens, which, from his point of view, are syntropic. Prominent among these is the genus Fucus, the apothecia of which are syntropic on species of Physicia. Others are the Calicaceae and the Gyalaceae, the latter being elevated to the dignity of a tribe, while the author follows Nylander in combining the Lecanorae and the Lecideae in one tribe, the Lecan-ileid. It was much to be desired that some of our younger botanists and microscopists, instead of consuming time in tedious and often superfluous attempts to determine species, and of accepting as a dogma the Schwendener theory, neglecting to study what has been said on both sides of the controversy, would make themselves familiar with the copious literature of the last few years, and apply themselves to the study of the morphology and physiology of the Lichens, which, from whatever point of view they are considered, are among the most remarkable products of the vegetable kingdom. They might be able, by patient labor, and by not being in too much haste to arrive at conclusions, to make valuable contributions to the vexed controversy.


The story of difficulties overcome in the endeavor to accomplish a great work is always interesting, and the account here given of the laying of the Atlantic cable reads like a romance. As is natural, since the writer is a brother of his, the work of Mr. Cyrus W. Field is given the most prominence, but we notice with pleasure that the indomitable perseverance and courage of the financiers engaged in the undertaking is recognized as it should be.


Dr. Park Benjamin has had long experience in collecting the material for encyclopedic treatises, and the reader of this book may be sure that nearly all that could be collected on the subject has been incorporated here. This, however, does not necessarily constitute a good book, and in the present case the material was in cementing together the vast quantity of contained information might have been improved upon had a little more care been spent on this part of the work. For instance, while the list of cuts of storage cells is a very complete one, the theory of the changes which go on during the charge and discharge is hardly touched upon. The book contains a large number of valuable tables of conductivities of solutions, heats of combination, etc.

A Tonic

For Brain-Workers, the Weak and Debilitated.

Horsford's Acid Phosphate is without exception the Best Remedy for Nervous Exhaustion; and where the system has become debilitated by disease, it acts as a general tonic and vitalizer, affording sustenance to both brain and body.

Dr. J. C. Wilson, Philadelphia, Pa., says: "I have used it as a general tonic, and in particular in the debility and dyspepsia of overworked men, with satisfactory results."

Descriptive pamphlet free.

Newton Chemical Works, Providence, R. I. To be sold by the dealers.

Beware of Substitutes and Imitations.

Exchanges.

[Proof charge to all, if satisfactory character, Address N. D. C. Hodges, 274 Broadway, New York.]

For sale or exchange—A Telescope (86 diameters, copper barrel) for $30 cash or scientific books of the value. A. S. Sonnet, La Forte, Ind.

For sale—A complete set of the Reports of the Second Geological Survey of Pa., 1874-1880, including also Grand Atlas. Publisher's price over $113. Will sell for $50. Address F. G. Chester, Newark, Del.

The undersigned has founds of Pennsylvania and New Jersey birds, as well as others which he would like to exchange for marine or fresh water specimens of the South and West. Correspondence with collectors desired. P. C. Moore, School of Biology, University of Pennsylvania, Philadelphia.

For sale or exchange—I have a Caligraph typewriter (No. 5) in perfect order and nearly new. It is in a heavy leather, brass-lined office case, the whole cost me about $100. I desire to obtain for it, either by sale or exchange, a new No. 5 "Kodak" camera, with six double-plate, weight-plate, back 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 $75. Address, for particulars, P. O. Box 214, Takoma, District of Columbia.

For sale.—An Abbe binocular eye-piece for the microscope. Alfred C. Stokes, 225 Monmouth St., Trenton, N. J.

For sale or exchange.—One good long range Remington R. L. rifle, 64 caliber, also land and fresh water, and marine shells. Want shells, Safety, camera or printing press. A. H. Boies, Hudson, Minn.

Fine collection of microscope slides for sale, or would exchange for first-class pneumatic bicycle.

J. E. White, 54 Main St., Northfield, N. H.


For sale.—A complete set of the third series of the American Journal of Science (1829-1836) handsomely bound in leather, volume in dark brown leather, to. Address G. H. Williams, 403 Cathedral Street, Baltimore, Md.

Wants.

WANTED, as principal of a flourishing technical school, a gentleman of education and experience who will be capable of superintending both mechanical and common school instruction. Special familiarity with some technical branch desirable. Address, giving age, qualifications, etc., J. B. Bloomer, 7 Broad and Third avenues.

The undersigned desires specimens of North American Gallinules in the flesh for the study of their pterygoids. These species are especially desired: Colinus ridgwayi, colinus montanensis, defluviogallinula franklini, lucenaehypoleuca and juncitidae plumbeus. Any persons in possession of or having access to any of these species are requested to write to the undersigned at 600 W. Lyman Clark, 300 Fifth Avenue, Pittsburgh, Pa.

A COMPETENT TRAJECTOR of botany in college A. or university open to engagement. Address L. B., 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, 138 W. Eighty-first St., New York.


WANTED—American Journal of Conchology, seven volumes. Parties having these for sale will please address condition and price. R. Ellsworth Call, Louisville, Ky.

A GRADUATE ENGINEER will give instruction in Mechanics, Mechanics, Chemistry, Physics, surveying, mechanical drawing and general engineering. Five years' experience in field and office work on engineer- ing. References furnished. C. S. B., 138 Tribune Building, New York.

WANTED—By well-qualified and experienced civil and mechanical engineer to act as consulting man and associate of the local school of Mines, London, aged 35 (at present in England), a membership in technical college or university for any of the above-mentioned subjects. He is prepared to give lectures on vector theory and mechanical physics, chemical analysis, electricity, optics and meteorology, etc., and will furnish references and credentials. Apply, J. G., 17 Swan St., Rochdale, England.
QUERY.

Can any reader of _Science_ cite a case of lightning stroke in which the dissipation of a small conductor (one-sixteenth of an inch in diameter, say,) has failed to protect between two horizontal planes passing through its upper and lower ends respectively? Plenty of cases have been found which show that when the conductor is dissipated the building is not injured to the extent explained (for many of these see volumes of Philosophical Transactions at the time when lightning was attracting the attention of the Royal Society), but not an exception is yet known, although this query has been published far and wide among electricians.

First inserted June 19, 1891. No response to date.

N. D. C. Hodges, 874 Broadway, N. Y.

**SCIENCE CLUBBING RATES.**

10% DISCOUNT.

We will allow the above discount to any subscriber to _Science_ who will send us an order for periodicals exceeding $10, counting each at its full price.

N. D. C. Hodges, 874 Broadway, N. Y.

---

**BUSY FOLK'S GYMNASIUM.**

A few minutes' daily exercise on our fascinating apparatus clears the brain, tones up the body, develops weak parts. Our cabinet contains chest weights, rowing-weights, lifting-weights, clubs and dumb bells, adjustable for old and young. It is the only complete exercising outfit in the world suitable for use in living rooms. All prices. You can order on approval. Chest machine separate, $4.50 and up. Educated agents wanted. _Physical Culture Chart_, with illustrated directions for developing every part of the body healthfully, 50 cts. Sent for half price to those naming this paper.

**WHITNEY HOME GYMNASIUM CO., Box D, Rochester, N. Y.**