It is thought that thus "the rich results obtained by the comparative method in natural and human sciences justify the hope that not less valuable returns will be obtained" by this extension of the system. Architecture falls under the domain of law, and the immense walls of the Assyrians and the ponderous arches of the Romans are the product, not of fancy, but of the condition of environment of their builders. Mr. Ferree believes with Freeman; "Deal worthily with the history of architecture and it is worthy to take its place alongside the history of law and of language." "Comparative architecture has to do with architecture as the product of the human mind, as the result of intellectual processes and reasonings; and each day these things enter more and more into the making of modern architecture." The paper is well worthy of the careful perusal of the architect whether professional or amateur.

Energy and Vision. By S. P. Langley. Washington, Nat. Acad. 18p. 4°.

This small volume contains, as is always expected of the papers of the distinguished astronomer and physicist, very important matter. The work was first presented to the National Academy of Sciences at its April meeting in 1888. It relates to the differing optical effects produced by waves of light of varying magnitude though containing equal energy. Two lines of research are marked out: the one to ascertain the quantity of energy in each ray; the other to measure the corresponding visual effect. In the first the "bolometer" of Langley is used to measure energy of various heat and light waves. Solar measures constitute the second. The result gives the value of equal amounts of energy at different points in the spectrum as affecting the retina. It was at once found that energy itself is not uniformly distributed in the spectrum. The gauge of energy was taken as the intensity of light required to read a table of logarithms; which method is thought more accurate than any of the usual photometric systems. It is found that the eye requires more time to regain its sensitiveness for violet light, after having been exposed to sunlight, than for any other color. It is found that the eye can perceive lights varying in intensity in the proportion of 1 to 1,000,000,000,000,000. The same amount of energy may produce 100,000 times as much effect in one portion of the spectrum as in another. Work done in giving rise to deepest red light amounts to about 0.002 erg per second.

Spons' Tables and Memoranda for Engineers. By J. T. Hurst Eleventh edition. New York, Spon & Chamberlain.

This is a little pocket-edition of Hurst's tables, and is likely to prove, as indeed the issue of eleven editions shows to be the fact, a very useful miniature reference-book. It is about one and a half by two and a half inches, and 140 pages of carefully selected tables and data, with a good index. It can be carried in the waistcoat-pocket. It is even smaller than the admirable little pocket-book published by the American Iron Works of Jones, Laughlin, & Co., and but a fraction of the size of Hurst's larger tables, of Molesworth, and other so-called pocket-books.

AMONG THE PUBLISHERS.

— The tenth and concluding volume of the new edition of "Chambers's Encyclopædia" will be issued by J. B. Lippincott Co. in a few weeks. Mr. Stanley Lane-Poole writes on Swift and Turkey; Mr. F. T. Palgrave contributes the memoir of Tennyson and that of Wordsworth, Mr. Richmond Ritchie that on Thackeray. Sir W. Lawson treats of Temperance, Mr. R. W. Lowe of the Theatre, Mrs. Besant of Theosophy, and Mr. G. Howell of Trades-Unions. Mr. Hamerton is the author of the biography of Titian and of that of Turner, while Mr. J. Gray writes on Van Dyck. The article on Anthony Trollope is by his brother, the late Thomas A. Trollope. Mr. Vámbéry writes on Turkestan, Professor Shaler on the Geology of the United States, Professor J. Geikie on Volcanoes, Mr. Austin Dobson on Horace Walpole, Mr. Loftie on Westminster and Windsor, Mr. Fraser

CALENDAR OF SOCIETIES.

Biological Society, Washington.

Dec. 17.—Principal topic of the evening, What should be the Scope and Object of a Biological Society? introduced by Mr. B. E. Fernow. Communications: Lester F. Ward, Frost Freaks of the Dittany; Erwin F. Smith, Notes on Peach Rosette; M. B. Waite, Destruction of Lichens on Pear Trees; D. G. Fairchild, Notes on Apple and Pear Fusicladii.

New York Academy of Sciences.

Dec. 19.—W. B. Scott, Fossil Hunting in the North-West.

New York Academy of Sciences, Biological Section.

Dec. 12.—The following is a synopsis of the papers: On the Miocene Deposits of the White River, by Dr. T. L. Wortman. These deposits were arranged in three groups, Lower, or Menodus, beds; Middle, or Orcodon, beds; and Upper, or Protoceros, beds. The Protoceros beds were regarded as in part contemporary with the John Day beds of Oregon. On the Ilco-Colic Junction of Procyon lotor and Allied Arcthoids, by G. S. Huntington. The absence of caccum in Procyon was noted as repeating the condition found in Hyena and the Ursidæ. The provision for preventing return of contents of large intestine appears to consist in a series of constructions in the terminal part of the ileum together with increase in the circular muscular fibres in these situations as well as at the ilco colic junction itself. There is a complete absence of an ilco-colic valve. On the Origin of West Indian Bird Life, by F. M. Chapman. Conclusions from study of bird (and mammal) life were (1) distinctness geologically of Lesser from Greater Antilles; (2) independence of islands and mainland since the appearance of the present fauna; (3) original connection of Indes to Central America by way of Jamaica, Central America at this time an archipelago created by passage leading from Pacific to Carribean Sea; (4) the older faunal forms of the Indes represent survivors of the insular Tertiary species; (5) the newer forms are immigrants and become differentiated under new conditions of living. H. F. Osborn reported the discovery in the Miocene of South Dakota of a horned Artiodactyl represented by male and female skulls and complete fore and hind feet. The female skull is comparatively hornless and proves to be identical with Protoceras celer Marsh. The male skull exhibits no less than five protuberances upon each side, or ten altogether. Two of these upon the frontals and sides of the maxillaries are very small; the parietal, supra-orbital, and maxilliary protuberances are very prominent and had, apparently, a dermal covering, as in the giraffe. There are four toes in front and two behind, as in the early Tragulidæ. The types were found by Dr. T. L. Wortman, and are in the recent collections of the American Museum of Natural History.

Society of Natural History, Boston.

Dec. 21.—W. F. Ganong, Some New Experiments on the Absorption of Liquids by Aerial Parts of Plants; S. H. Scudder, The Abdominal Pouch of Butterflies of the Genus Parnassius; W. H. Niles, Columnar Structure in Stratified Rock.

Publications Received at Editor's Office.

George, Henry. A Perplexed Philosopher. New York, C. L. Webster & Co. 319 p. 12°. $1.

Hale, George E. Ultra-violet Spectrum of the Solar Prominences; The Yerkes Observatory of the University of Chicago: Some Results and Conclusions Derived from Photographic Study of the Sun. Reprints. Chicago, The Author.

Newth, G. S. Chemical Lecture Experiments. London and New York, Longmans, Green & Co. 323 p. 8°. $3.

U. S. Navy Dep't Notes on the Year's Naval Progress. Washington, Government. 366 p., pl. 8°.

Rae on John Wilkes, Dr. Buchan on Wind, and Mr. Price Hughes on Wesley. Canon Isaac Taylor contributes the articles on Writing and on York and Yorkshire, and Cavendish that on Whist. Dr. Mills expounds Zend, and Mr. G. Saintsbury criticises Zola. The first volume of the new edition was issued in March, 1888, so that the work has been completed in less than five years — a very short time indeed when its magnitude is considered. The "Encyclopædia" contains over thirty thousand articles, contributed by nearly one thousand different writers, and includes among its contributors many of the chief authorities in various departments of knowledge.

— "Questions and Answers about Electricity," a small volume of 100 pages (50 cents) from the press of the D. Van Nostrand Company, is peculiar in some respects. It has four authors and one editor, and the latter, we fear, has taken undue liberties with the manuscripts of the authors. In no other way can we account for the presence of such words as "ampage," "furtherest," "shellaced," etc.; and such statements as, when cells are connected in multiple, the current can travel "only a few feet." Though intended specially for amateurs and students, we fear the book will prove more interesting to those "well up" in the subject. A glossary, by the editor, no doubt, adds to the originality of the work.

— "The Sloyd System of Wood-working" is the title of a 250-page volume from the pen of B. B. Hoffmann, A.B., superintendent of the Baron de Hirsch trade-schools, and just published by the American Book Co. (Price $1.) The book gives an excellent account of the theory and practical application of the Naas system of manual training, which has already received considerable attention in the volumes of *Science*. The first two chapters of the work give the clearest and most comprehensive exposition of the system we have seen; the third chapter (some things in which might better have been omitted for common-school purposes) gives a history of the manual training idea; the final chapters give an account of various model series and of the progress of the system in elementary schools.

—The D. Van Nostrand Company have just published "The Practical Management of Dynamos and Motors," by Francis B. Crocker, professor of electrical engineering in Columbia College, and Schuyler S. Wheeler, D.Sc. To the man in charge of an electric light or power plant this volume will prove invaluable, as it is the first book, as far as we know, devoted specially to their requirements. It gives simple and readily comprehended instructions in the practical use and management of dynamos and motors. The different subjects are treated separately and in logical order, and are arranged so as to facilitate ready reference on any point on which information is desired. ($1.)

— Metal-Coloring and Bronzing" is the title of a new 12mo volume of 336 pages just issued from the press of Macmillan & Co. (Price $1.) The book is the result of experiments and investigations carried on for eighteen months by Arthur H. Hiorns, principal of the metallurgy and engineering department of the Birmingham (England) municipal school; and is, we believe, the first systematic treatise on metal-coloring (more commonly known as bronzing) that has been published. The essential portion of the work is treated under three principal divisions, namely, chemical, electro-chemical, and mechanical metal coloring, the first being given greater space on account of its greater importance. The introductory portion contains a brief account of the properties of the ordinary metals and their chemical relations with regard to oxygen, sulphur, chlorine, etc.; and also deals with the chemical effects of the atmosphere on metals, the relation of metals to color, and chemical principles and changes. The rest of the volume is devoted mainly to the mechanical processes employed. As an authority on metallurgy the author of this work is well known; and this, with the fact that the book is the first in its peculiar field, insures for it a secure place in technical literature.

Exchanges.

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

For sale or suitable exchange.—A spectrometer made by Fauth & Co., Washington, D. C., according to the plan of Prof. C. A. Young. This instrument is suitable for the most advanced investigations and determinations. Cost originally $700 and has been used but little. Will be disposed of at a considerable reduction. Address Department of Physics, Ohio University, Athens, O.

I will send British land and fresh-water shells in return for those of America, any part, sent to me. I have at present about fifty or sixty species, with many varieties. W. A. Gain, Tuxford, Newark, England.

The Biological Department of Hamline University desires to offer microscopic slides of animal tissues, or whole animals, in exchange for first-class fossils. Address correspondence to Henry L. Osborne, Hamline University, Hamline, Minn.

For sale.—A set of the Berichte der Deutschen Chemischen Gesellscaft, from Jan. 1, 1877, to Jan. 1 1892, bound in twenty-six volumes to Jan. 1, 1888 and remaining four years unbound. Also the Bulletin de la Société Chemique de Paris, from Jan. 1 1879, to Jan. 1, 1892, bound in eighteen volumes to Jan. 1, 1888, and remaining four years unbound. Dr. Marcus Benjamin, care of D. Appleton & Co., 1 Bond St., New York City.

For sale.—1,500 bird, and 125 mammal skins, which are first-class and labelled with strictly reliable data. They were collected in this immediate vicinity and are preserved and made up according to the latest approved methods. As I offer the above at a very low price, it would be a good opportunity for a college or a museum. Willard E. Treat, East Hartford, Conn.

For Sale.—A new Model U. S. Army Hospital Microscope (Zentmayer), also ½-inch and 1½-inch Objectives. HENRY C. WELLS, 151 Broadway, New York.

Wants.

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

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.

A POSITION is desired in the South, preferably the Gulf States, where I can teach the sciences. Can also instruct in other branches. Salary only nominal, as I am simply desirous of employment while spending the winter in the South. A private family preferred, but will accept regular school work if not too confining. MORRIS GIBBS, M.D., Kalamazoo, Mich.

WANTED.—By well-qualified and experienced science master and associate of the Royal School of Mines, London, aged 26 (at present in England), a mastership in technical college or university for any of the following subjects: Engineering sciences, geology and mineralogy, physics, chemistry and metallurgy, etc., etc. Can provide excellent references and credentials. Apply, J. G., 17 Sussex St., Rochdale, England.

A GRADUATE of the University of Pennsylvania and a practical mineralogist of twenty years' experience desires to give his services and a cabinet of 25,000 specimens, all named, with about the same number of duplicates, in minerals, crystals, rocks, gems, fossils, shells, archæological and ethnological specimens and woods to any institution desiring a fine outfit for study. The owner will increase the cabinet to 50,000 specimens in two years and will act as curator. Correspondence solicited from any scientific institution. J. W. Hortter, M.D., Ph.D., San Francisco, Cal., General P. O. Delivery.

TO THOSE INTERESTED IN SCIENCE.

[Science (weekly) established in 1883, N. D. C. HODGES, 874 Broadway, New York City.]

Titles of Some Articles Published in *Science* since Jan. 1, 1892.

Aboriginal North American Tea.
Actinism.
Agriculture, Experimental, Status of.
Amenhotep, King, the tomb of.
Anatomy, The Teaching of, to Advanced Medical Students.
Anthropology, Current Notes on.
Architectural Exhibition in Brooklyn.
Arsenical Poisoning from Domestic Fabrics.
Artesian Wells in Iowa.
Astronomical Notes.
Bacteria, Some Uses of.
Bird on Its Nest, The.
Birds Breeding at Hanover, N. H.
Botanical Laboratory, A.
Botanists, American and Nomenclature.
Brain, A Few Characteristics of the Avian.
Bythoscopidæ and Cereopidæ.
Canada, Royal Society of.
Celts, The Question of the.
Chalicotherium, The Ancestry of.
Chemical Laboratory of the Case School.
Children, Growth of.
Collection of Objects Used in Worship.
Cornell, The Change at.
Deaf, Higher Education of the.
Diamonds in Meteorites.
Diphtheria, Tox-Albumin.
Dynamics, Fundamental Hypotheses of.
Electrical Engineer, The Technical Education of.
Eskimo Throwing Sticks.
Etymology of two Iroquoian Compound Stems.
Eye-Habits.
Eyes, Relations of the Motor Muscles of, to Certain Facial Expressions.
Family Traits, Persistency of.
Fishes, The Distribution of.
Fossils, Notice of New Gigantic.
Four-fold Space, Possibility of a Realization of.
Gems, Artificial, Detection of.
Glacial Phenomena in Northeastern New York.
Grasses, Homoptera Injurious to.
Great Lakes, Origin of the Basins of.
"Healing, Divine."
Hemipter us Mouth, Structure of the.
Hofmann, August Wilhelm von.
Hypnotism among the Lower Animals.
Hypnotism, Traumatic.
Indian occupation of New York.
Infant's Movements.
Influenza, Latest Details Concerning the Germs of.
Insects in Popular Dread in New Mexico.
Inventions in Foreign Countries, How to Protect.
Inventors and Manufacturers Association.
Iowa Academy of Sciences.
Jargon, The Chinook.
Jassidæ; Notes on Local.
Keller, Helen.
Klamath Nation, Linguistics.
Laboratory Training, Aims of.
Lewis H. Carvill, Work on the Glacial Phenomena.
Lightning, New Method of Protecting Buildings from.
Lion Breeding.
Lissajou's Curves, Apparatus for the Production of.
Maize Plant, Growth and Chemical Composition of.
Maya Codices, a Key to the Mystery of.
Medicine, Preparation for the Study of.
Mineral Discoveries, Washington.
Museums, The Support of.
Palenque Tablet, a Brief Study of.
Patent Office Building, The.
Physa Heterostropha Say, Notes on the Fertility of.
Pict's House, A.
Pocket Gopher, Attempted Extermination of.
Polariscopes, Direct Reflecting.
Psychological Laboratory at Toronto.
Psychological Training, The Need of.
Psylla, the Pear-Tree.
Rain-Making.
Rice-Culture in Japan, Mexico and the United States.
Rivers, Evolution of the Loup, in Nebraska.
Scientific Alliance, The.
Sistrurus and Crotalophorus.
Star Photography, Notes on.
Star, The New, in Auriga.
Storage of Storm-Waters on the Great Plains.
Teaching of Science.
Tiger, A New Sabre-Toothed, from Kansas.
Timber Trees of West Virginia.
Tracheæ of Insects, Structure of.
Vein-Formation, Valuable Experiments in.
Weeds as Fertilizing Material.
Weeds, American.
Will, a Recent Analysis of.
Wind-Storms and Trees.
Wines, The Sophisticated French.
Zoology in the Public Schools of Washington, D. C.

Some of the Contributors to *Science* Since Jan. 1, 1892.

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