

Crookes says, indeed, "that the atoms are not eternal in existence, but share with all other created beings the attributes of decay and death." They cannot be dissolved into nothing, however, and the only condition they could assume would be that of the formless fluid from which they originally emerged. If this were to happen, matter as we know it would cease to exist, and material or three-dimensional space would with it disappear.

Such a change as is here supposed would be one of pure negation, that is, it would be the negation of all material existence. And yet it would not be absolute negation. It might be described as the absence of position. Every past stage of evolution is negative to that which immediately succeeds it, and yet it is positive to that which has gone before; so that if we go back to the beginning of evolution, the earliest negation is the most real of all existences, because it is that from which all other existence has been derived. Thus formed matter in ceasing to exist as such, and in being resolved again into the primitive formless fluid, would yet continue to exist in a negative state, that is, in its original formless condition, as to the nature of which we can frame no clear idea, beyond that it would be non-material and invisible. Probably we should be justified in considering it the same as the ether.

The existence of the ether is as real as that of formed matter, judging from the phenomena of light, and for that we know there may be ethereal existences which are not subject to the laws which affect that matter. It may be, moreover, that the ether furnishes the link which unites individuals so as to form "genetic or race relationships," and that it conceals the world of spirits, if such exists, from material gaze. The race unity which Professor Hall refers to may, indeed, be conceived of as consistent with, and as even requiring the continued existence of, individuals; just as the existence of a wire depends on that of its constituent molecules. Thus the death of an organism may include a change, unless it be simply a *return*, to a state of immateriality and, therefore, of invisibility. If so, such a negative existence may be the end of all things, material as well as organic; and, since complete change of form often, as in the case of destruction by fire, takes place rapidly, there may be conditions under which, instead of as Professor Hall imagines a plane being stepping out of our space and re-entering it again, matter may suddenly become invisible, that is, be reduced to a state of formless fluid, and again become visible. Under such a condition, all the phenomena which it is supposed the existence of four-fold space would render possible, could be equally well produced without it. The erratic nature of ghosts even would be explainable on the assumption that ethereal existences have the power, under special circumstances, of making use of the physical forces so as to render themselves visible. This is, however, beside the real question, which is the possibility of a state of relatively negative existence, which, although invisible to us, is as real as that on the material plane.

C. STANILAND WAKE,

349 North Clark St., Chicago, June 1.

#### The Possibility of a Realization of Four-Fold Space.

DR. HALL's argument for this possibility (*Science*, May 13, 1892) turns upon two other possibilities: first, upon the possibility of building up the conception of this kind of space from that which we already know; and, second, on the possibility of making such a conception so perfect that it may fairly be said to be realized. In support of the first he instances the visual perception of space in which we are supposed to get three fold space by inference from a plane image. Many psychologists, however, contend that such a constructive inference is quite impossible, and others believe that it is only made possible in the case of vision by the aid of touch. Even those that admit a construction of the sort required, can hardly deny that it occurs in the very beginning of babyhood, a fact that points to a racial rather than an individual acquisition. It appears, therefore, to be extremely doubtful whether Dr. Hall could get a four fold space conception built up in a single generation, if at all; that is, if it is to be realized in anything like the degree in which we realize three-fold space.

If, however, by realization is meant only a tolerably complete

knowledge about four-fold space,—such, for example, as a deaf physicist could get of sound,—it may be possible to realize it; and Dr. Hall has undoubtedly taken the right road. But knowledge about a thing seems to come somewhat short of realization of it. Some sensory element is also required, and especially verification by touch, which is the sense of last appeal in cases of doubtful reality. Dr. Hall's models would appear to this sense as unquestionably three-fold as a perspective drawing would appear plane.

In regard to the benefits of a full knowledge of four-fold space, Dr. Hall should not allow himself to hope too much. A really clever and elusive ghost would never stop at four-dimensions, but would surely lead him, Will o' the-wisp fashion, through all the series of  $n$  dimensions.

EDMUND C. SANFORD.

Clark University, Worcester, Mass., June 6.

#### Eskimo Throwing-Sticks.

IN my pamphlet on the Eskimo Throwing-Sticks I drew attention to the fact that they are all right-handed save two from the Alaskan Peninsula and that neighborhood. I also mentioned two specimens afterwards described by Ensign Niblack from the Tlingit area in south-eastern Alaska. I neglected to mention that they are ambidextrous, and so is a beautiful specimen from the Vancouver collection, figured by Mr. Charles H. Read in the *Journal of the Anthropological Institute* (Vol. XXI., pl. xi.), bilaterally symmetrical and, doubtless, ambidextrous. In British Columbia and Washington the long-handled fish-spear is ambidextrous, and has two finger-notches on the end, answering to, if not derived from, the form further south. Mr. Read's specimen from Santa Barbara, Cal., is an abbreviated specimen of like form to one lately recovered from Lake Patzcuaro, Mex., by Captain John G. Bourke, U.S.A., suitable for either hand. Looking over the interesting pamphlets of Mrs. Nuttall and Messieurs Stolpe, Uhle, Bahnson, Seler, and de Mortellet, I find most of the spear-throwers or throwing-sticks adapted to either hand. The ornamentation throws a considerable amount of uncertainty over the elaborate forms, but, omitting the Eskimo examples, all other spear-throwers appear to be ambidextrous. Indeed, I should like to inquire whether outside of the Eskimo area any American aborigines had apparatus that would not fit either hand.

Hasty conclusions are dangerous, but we may be allowed to say that the development of a purely right handed implement points to a southern origin for the original invention. At any rate, the atlatl is assuming an enviable importance in comparative technography. While upon the subject I should like to draw attention to the Mexican artist's fashion of pulling certain parts of a solid body into the foreground, as in the heart-shaped finger-pocket or grip on the bottom of the atlatl, always exhibited on the side. Notice is also called to the fashion of shortening objects to get them into a picture; for example, in many cases a harpoon with a shaft ten feet long is represented with all its parts in as many inches.

O. T. MASON.

Washington, D.C., June 7.

#### AMONG THE PUBLISHERS.

THE Scientific Publishing Company, 27 Park Place, New York, have in press Dr. Endlich's "Manual of Qualitative Blowpipe Analysis."

— William R. Jenkins, New York, has just issued "Parasites and Parasitic Diseases of the Domesticated Animals," by L. G. Neumann, professor at the National Veterinary School of Toulouse, translated and edited by George Fleming.

— Harper & Brothers have nearly ready a book which doubtless will provoke no little discussion and controversy. It is entitled "The Puritan in Holland, England, and America," by Douglas Campbell, who claims that the last word regarding the Puritan settlers of New England has not yet been written, and that many of the prevalent ideas concerning the earlier influences upon the political, social, and religious life of the American people are susceptible of revision.

— Charles Scribner's Sons will publish shortly a book on Norse history, industries, literature, and social life, etc., entitled "Norway and the Norwegians," by C. F. Keary, an authority on the land of the Vikings; an important and entertaining volume, entitled "Conversations and Correspondence with Thomas Carlyle," by Sir Charles G. Duffy; "Principles of Theoretical and Practical Logic," by Professor J. H. Hyslop of Columbia; and a book called "First Aid in Illness and Injury" (written and illustrated by Captain James E. Pilcher, U.S.A.), the purpose of which is to supply instructions that anyone can understand, for the emergencies and accidents that the human machine is liable to.

— *Babyhood* contains in its June issue an article on "Infantile Grief," in which the writer, Dr. J. M. W. Kitchen, relates the results of his investigations into a baby's cry. Dr. D. Warman speaks of the heart affections of children due to over-exertion, and describes several striking cases in which the heart was affected by rope-jumping and sudden fright. Other medical topics are discussed. The mothers themselves write in the "Parliament" about the best way of putting children to sleep, about the careful and the careless way of training the little ones, about purity in the bath, and many other things of interest.

— Houghton, Mifflin, & Co. will publish this month Walter Crane's new book, "The Claims of Decorative Art," papers on "The Structure and Evolution of Decorative Pattern," "Art and Labor," "The Position and Claims of Decorative Art," "Art and Handicraft," "Importance of the Applied Arts and Their Relations to Common Life," and other subjects, illustrated by the author; "Favorite Flies and Their Histories: with replies from experienced anglers to inquiries concerning how, when, and where to use them," by Mary E. Orvis Marbury, with numerous illustrations; the fourth volume of Charles S. Sargent's important work on "The Silva of North America;" "Phases of Thought and Criticism," by Brother Azarias, who has won an enviable reputation for his scholarship and for his clear and attractive style; and the fourth edition, revised, of Edward Stanwood's "History of Presidential Elections."

— Fritz von Szczepanski, the author of the valuable "Bibliotheca Polytechnica" published last year, has just issued a "Bibliotheca Electrotechnica," being a classified and descriptive guide to electrical books published in English, German, and French. The catalogue is divided into thirty-one departments under the following headings: Journals and Annuals; Theory of Electricity and Magnetism; History of Electricity; Electricity in Exhibitions; Batteries and Storage Batteries; Electric Lighting; Electricity in Mining; Bibliography; Lightning Conductors; Electricity in Railways; Military Electricity; Legal Aspect of Electricity; Electro-Chemistry; Electromotors; Galvanoplasty; Electric Bells; Domestic Electricity; Instruments; Electric Transmission of Energy; Conduits; Electric Machines; Measurements; Potential; Static Electricity; Tables and Formulæ; Telegraphy; Transformers; and Electric Clock Making. The catalogue is a reasonably complete list of modern electrotechnical literature issued since 1883, with data of size, price, and name of publisher, and a full author-index. Published in New York by the International News Company.

— Messrs. Houghton, Mifflin, & Co. have published a work by the Rev. Lyman Abbott entitled "The Evolution of Christianity." Mr. Abbott is enamored of the doctrine of evolution, and, seeing its inconsistency with many things in Christianity, he has endeavored in this volume to give a new interpretation to some of the older doctrines, so as to bring his religion into harmony with the new philosophy. He is not the first to make such an attempt, but we cannot think that he has had much better success than those who have tried the same task before him. He quotes Professor LeConte's definition of evolution as "continuous progressive change, according to certain laws, and by means of resident forces;" he defines religion as "the life of God in the soul of man;" and then endeavors to show that "the Christian religion is itself an evolution." To a certain extent, of course, he has no difficulty in so doing, though we cannot think he has always sketched the development of Christianity correctly. But he insists that Jesus was an exception to the universal law—that he

was in no sense a product of evolution. The principal defect of Mr. Abbott's work, however, is its vagueness in matters of doctrine. He avoids the discussion of doctrines as far as he can, and whenever he alludes to them, he leaves us in doubt as to what his real opinion is. We cannot make out even what he thinks about God, his views on the subject of Deity being a compound of Christian theism and German pantheism, with the latter element, it seems to us, predominating. Mr. Abbott's book will suit those whose religion is sentimental rather than intellectual and practical, and will doubtless please the partisans of evolutionism; but it does not even touch the deeper religious problems of the age, and consequently contributes nothing toward the religion of the future.

— During the past year the editor of "Appleton's General Guide" has made a trip over the entire United States and Canada. The information gathered by him has been incorporated in the present edition. Among the new features will be found: 1. Descriptions of routes, resulting from increased railroad facilities. 2. Descriptions of resorts, notably those on the Pacific Coast. 3. The leading cities have all been visited, and the latest information concerning each has been gathered for this work by some special expert. 4. Itineraries of each of the larger cities will be found at the proper places, describing how the salient features may be seen in the shortest space of time possible. 5. New plans and new maps of the environs of the cities have been specially prepared for this edition. 6. The old illustrations give place to new ones procured especially for the present edition. Each year finds an increasing number of our citizens who desire to know more about their own country, and each year brings an increasing influx of foreign tourists who desire to see those features which are most significantly American. For both of these classes this book is designed.

— Portraits of seventeen American anthropologists will accompany Prof. Frederick Starr's article on "Anthropological Work in America," which is to open *The Popular Science Monthly* for July. The article shows that both in quality and amount the work of Americans in this field compares favorably with that of Europeans, described by Professor Starr in an earlier number. The fifteenth article in the series on the Development of American Industries since Columbus will be published in the July number. It is on "Leather-making," and, like all in the series, it is fully illustrated. The author is Mr. George A. Rich, of the Boston *Journal*. There are illustrated articles on "New England Owls" and certain "Rare Monkeys." A stimulating article on present educational problems will be by Mrs. H. M. Plunkett. It is entitled "Kindergartens—Manual Training—Industrial Schools," and embodies some principles of training children that have not yet been duly appreciated.

— W. J. Johnston Co., Ltd., New York, have just issued the second edition of Professor E. J. Houston's "Dictionary of Electrical Words, Terms, and Phrases." The first edition of this work was published in 1889, and was the first book which defined and explained electrical terms in such language as could readily be understood by the general public. The second edition is almost entirely rewritten, and is fully twice the size of the first edition. It contains not far from 5,000 distinct titles under which definitions and explanatory matter are given, and nearly as many more titles under which cross-references occur. The treatment of each title includes—first, a brief definition in large type; and, second, explanatory and descriptive matter in smaller type for the benefit of those who wish fuller information than would be given in an ordinary definition. The text is amply illustrated by 570 figures of electrical apparatus. The book is one which cannot fail to be of value to the professional man generally, and also to the intelligent reader of scientific periodicals, as well as of the newspapers and magazines.

— We have received from the J. B. Lippincott Co. "The Proceedings of the first annual Meeting of the National Conference on University Extension," held in Philadelphia last December. The object of the meeting was to discuss the methods appropriate to university extension work and to devise plans for the more efficient conduct of the work hereafter; and the exercises con-

sisted partly of reports of the work already done or in progress in the different parts of the country, and partly of addresses on various topics connected with the subject. Among the reports that of Mr. Henderson, the general secretary, and that of Mr. Dewey on the extension movement in New York State are the most important; while of the addresses we may mention particularly those of William T. Harris on "The Place of University Extension in American Education;" of Michael E. Sadler, of Oxford, on "The Development of University Extension in England;" and of Edmund J. James, the president of the association, on "The University Extension Lecturer." Considerable enthusiasm was manifested among the members present; yet it is plain from what was said that the movement has not yet produced anything approaching the beneficial results of the corresponding movement in England. More than one speaker explicitly stated that hitherto the extension lectures had been chiefly attended by cultured persons, and that "thus far the effort to reach that great portion of the people whose opportunities for education and mental culture have been limited, has failed." This fact, together with the superficiality which is inherent in such a method of teaching, are serious drawbacks; yet if the new movement can accomplish half that its enthusiastic promoters anticipate, we heartily wish it success.

—The ethnography and ethnology of Tierra del Fuego is the subject of the seventh volume, noticed in the *Scottish Geographi-*

*cal Magazine* for May, of the reports on the French Expedition which in 1882, observed the Transit of Venus. The Onas inhabit the eastern part of the main island; the Alakaluf dwell on the smaller islands on the north-western side of the Archipelago; and the Yaghans, allied physically and anthropologically to the Alakaluf, are found among the southern islands. They are far more numerous than the other tribes, and, as the French station was established in their district, the anthropological observations principally relate to them. The average height of the men is 5 feet 2 inches, and of the women 4 feet 10 inches. The skull is large, comparatively high, and of medium breadth. The face is long and angular, with a narrow, low, and receding forehead. The eyes are small and brown in color, the nose concave with wide nostrils, the mouth broad and the lips thick, and the cheek bones prominent. The upper extremities are proportionally long, and the lower short. The hair is black, straight, and stiff. The skin is yellow, brownish or reddish. The Yaghans are decidedly different in type from the neighboring South American races, and resemble in their corporal peculiarities certain scattered tribes of the centre and north of South America—the Guarani, Coroado, the Aimara of Peru, and, above all, the Botocudo. They are probably remnants of an early sub-brachycephalous race who were scattered by the invasion of the later brachycephalous tribes.

—One of the early issues of D. C. Heath & Co. will be a little volume for primary schools called "Leaves and Flowers," by

#### CALENDAR OF SOCIETIES.

##### Appalachian Mountain Club, Boston.

June 8. — E. H. Russell, Camping Out; Thomas Crozier, The Grafton Camp.

##### Biological Society, Washington.

May 28. — Theodore Gill, On the Super-Family Chaetodontoidea; C. Hart Merriam, The Plants of the Pribilof Islands, Coon Cave, Missouri; Frederick V. Coville, Uses of Plants Among the Panamint Indians.

#### Publications Received at Editor's Office.

- NATIONAL CONFERENCE ON UNIVERSITY EXTENSION. Proceedings of the first annual meeting, Phila., J. B. Lippincott Co. 8°. 292 p. \$1.50.  
 PILLING, JAMES C. Bibliography of the Algonquian Languages. Washington, Government. 8°. 624 p.  
 ROMANES, GEORGE J. Darwin and after Darwin. I. The Darwinian Theory. Chicago, Open Court Pub. Co. 12°. 460 p. \$2.  
 SCHWAB, JOHN C. AND OTHERS. The Yale Review. Vol. I., No. 1, May, 1892. Boston, Ginn & Co. 8°, paper. 112 p. 75 cts.  
 UNIVERSITY OF WISCONSIN. Eighth Annual Report of the Agricultural Experiment Station, for the year ending June, 1891. Madison, State Printers. 8°. 326 p.  
 U. S. GEOLOGICAL SURVEY. Contributions to North American Ethnology. Vol. VI. Washington, Government. 4°. 812 p.  
 WHITNEY, HENRY M. Tourists' Guide through the Hawaiian Islands. Honolulu, Hawaiian Gazette Co. 8°. 176 p. 60 cts.  
 WRIGHT, JULIA MCNAIR. Nature Readers. No. 4 Sea-side and Way-side. Boston, D. C. Heath & Co. 12°. 370 p. Ill. 70 cts.

#### Societas Entomologica.

International Entomological Society, Zurich-Hottingen, Switzerland.  
 Annual fee, ten francs.

The Journal of the Society appears twice a month, and consists entirely of original articles on entomology, with a department for advertisements. All members may use this department free of cost for advertisements relating to entomology.

The Society consists of about 450 members in all countries of the world.

The new volume began April 1, 1892. The numbers already issued will be sent to new members.

For information address Mr. FRITZ RUHL, President of the Societas Entomologica, Zurich-Hottingen, Switzerland.

#### Exchanges.

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

Taxidermist going out of business has quantity of finely-mounted specimens of North American birds, mammals and reptiles and skins of birds for sale, including a full local collection of bird skins, showing some great variations of species; also quantity of skulls with horns of deer and mountain sheep, and mounted heads of same. Will give good exchange for Hawk Eye camera with outfit. Apply quickly to J. R. Thurston, 265 Yonge St., Toronto, Canada.

For exchange.—A fine thirteen-keyed flute in leather covered case, for a photograph camera suitable for making lantern slides. Flute cost \$27, and is nearly new. U. O. COX, Mankato, Minn.

To exchange; Experiment Station bulletins and reports for bulletins and reports not in my file. I will send list of what I have for exchange. P. H. ROLFS, Lake City, Florida.

Finished specimens of all colors of Vermont marble for fine fossils or crystals. Will be given only for valuable specimens because of the cost of polishing. GEO. W. PERRY, State Geologist, Rutland, Vt.

For exchange.—Three copies of "American State Papers Bearing on Sunday Legislation," 1891, \$2.50, new and unused, for "The Sabbath," by Harmon Kingsbury, 1840; "The Sabbath," by A. A. Phelps, 1842; "History of the Institution of the Sabbath Day, Its Uses and Abuses," by W. L. Fisher, 1839; "Humorous Phases of the Law," by Irving Browne; or other works amounting to value of books exchanged, on the question of governmental legislation touching religion, personal liberty, etc. I preferred I will sell "American State Papers," and buy other books on the subject. WILLIAM ADDISON BLAKELY, Chicago, Ill.

For Sale or Exchange for books a complete private chemical laboratory outfit. Includes large Becker balance (200g. to 1-romg.), platinum dishes and crucibles, agate mortars, glass-blowing apparatus, etc. For sale in part or whole. Also complete file of *Silliman's Journal*, 1862-1885 (62-71 bound); Smithsonian Reports, 1854-1883; U. S. Coast Survey, 1854-1869. Full particulars to enquirers. F. GARDINER, JR., Pomfret, Conn.

Wanted, in exchange for the following works, any standard works on Surgery and on Diseases of Children: Wilson's "American Ornithology," 3 vols.; Coues' "Birds of the Northwest" and "Birds of the Colorado Valley," 2 vols.; Minot's "Land and Game Birds of New England;" Samuels' "Our Northern and Eastern Birds;" all the Reports on the Birds of the Pacific R. R. Survey, bound in 2 vols., Morocco; and a complete set of the Reports of the Arkansas Geological Survey. Please give editions and dates in corresponding. R. ELLSWORTH CALL, High School, Des Moines, Iowa.

To exchange Wright's "Ice Age in North America" and Le Conte's "Elements of Geology" (Copyright 1882) for "Darwinism," by A. R. Wallace, "Origin of Species," by Darwin, "Descent of Man," by Darwin, "Man's Place in Nature," Huxley, "Mental Evolution in Animals," by Romanes, "Pre-Adamites," by Winchell. No books wanted except latest editions, and books in good condition. C. S. Brown, Jr., Vanderbilt University, Nashville, Tenn.

#### Wants.

Any person seeking a position for which he is qualified by his scientific attainments, or any person seeking some one to fill a position of this character, be it that of a teacher of science, chemist, draughtsman, or what not, may have the "Want" inserted under this head FREE OF COST, if he satisfies the publisher of the suitable character of his application. Any person seeking information on any scientific question, the address of any scientific man, or who can in any way use this column for a purpose consonant with the nature of the paper, is cordially invited to do so.

WANTED.—We want any and all of the following, providing we can trade other books and magazines or buy them cheap for cash: Academy, London, vol. 1 to 28, 35, Jan. and Feb., '89; Age of Steel, vol. 1 to 66; American Antiquarian, vol. 1, 2; American Architect, vol. 1 to 6, 9; American Art Review, vol. 3; American Field, vol. 1 to 21; American Geologist, vol. 1 to 6; American Machinist, vol. 1 to 4; Art Amateur, vol. 1 to 7, Oct., '4; Art Interchange, vol. 1 to 9; Art Union, vol. 1 to 4, Jan., '44, July, '45; Bibliotheca Sacra, vol. 1 to 46; Godey's Lady's Book, vol. 1 to 20; New Englander, vol. 11; Zoologist, Series 1 and 1, Series 3 vol. 1 to 14; Allen Armendale (a novel). Raymer's "Old Book" Store, 243 4th Ave. S., Minneapolis, Minn.

WANTED.—By a young man, a Swarthmore College junior, a position as principal of a public high school in one of the Gulf States, or as instructor in botany, physiology, and geology in an academy or normal school. Address B., care of Librarian, Swarthmore College, Penn.

WANTED.—A teacher of Geology who is familiar with the fossils of the Hamilton Group, as instructor of Geology during July next at the Natural Science Camp on Canandaigua lake. Apply to ALBERT L. AREY, Director, 229 Averill Ave., Rochester, N. Y.

WANTED.—To act as correspondent for one or two daily or weekly papers. Have worked on paper for about two years. Would like a position on editorial staff of humorous paper. Address GEO. C. MASON, 14 Elm St., Hartford, Conn.

TRANSLATOR wanted to read German architectural works at sight (no writing). One familiar with technical terms desired. Address "A," Box 149, New York Post Office.

WANTED.—A position in a manufacturing establishment by a manufacturing Chemist of inventive ability. Address M. W. B., care of Science, 874 Broadway, N. Y.

WANTED.—Books on Anatomy and Hypnotism. Will pay cash or give similar books in exchange. Also want medical battery and photo outfit. DR. ANDERSON, 182 State street, Chicago, Ill.

WANTED.—A college graduate with some normal training, to teach the sciences, at \$1,800 per year, in a Southern college. A Baptist or a Methodist preferred. Must also be a first-class Latin scholar. A. H. Beals, Box K, Milledgeville, Ga.

ADDRESS WANTED.—Will some one please send the address of the Secretary of the American Philological Society. Also that of Herbert Spencer. "ADDISON," Room 84, 164 Madison St., Chicago, Ill.

Mary A. Spear, late principal of the Model School of West Chester (Pa.) State Normal School. These plant studies combine drill in reading with sound botanical information, calculated to serve as a useful basis to later study. At the same time care is taken that the information shall be obtained by actual observation of leaves, stems, and flowers. A feature of this book is its arrangement, which enables it to be taken up in the autumn, if the study cannot be begun in the spring.

— *Neptunia*, January, 1892, contains a map showing the distribution of Plankton, in the North Atlantic, as far as it was ascertained by the expedition of the Humboldt Stiftung. In an accompanying paper, Herr F. Schütt discusses the result of the expedition.

— We learn from the *Scottish Geographical Magazine* that two handbooks of professional instructions for the trigonometrical and topographical branches of the Indian Survey Department have just been issued from the office of the former at Dehra Dun, in the North-West Provinces. They have been prepared by Colonel

G. Staban, R.E., under the direction of Colonel H. R. Thuillier, R.E., the Surveyor-General, and will prove most useful to the numerous officers of that department, as well as to students and others in this country who contemplate joining the service. Some of the miscellaneous chapters, such as those on the care and treatment of elephants and on the health and management of a party, will be found to have a good deal of interest for the general reader, while the more purely technical parts contain full and instructive information as to the important and miscellaneous scientific tasks which fall to the lot of the Indian surveyor.

— Bret Harte's young daughter, Miss Jessamy Harte, will make her literary debut in the July *Ladies' Home Journal* with a most entertaining description of "Camp Life in the Adirondacks," in which it is claimed every evidence shows itself of inherited literary tendencies not unlike those evidenced in Bret Harte's earlier work. Miss Harte is a girl still in her teens, and has artistic as well as literary proclivities, as one of the illustrations accompanying her first article shows.

## Exhaustion

### Horsford's Acid Phosphate.

A wonderful remedy, of the highest value in mental and nervous exhaustion.

Overworked men and women, the nervous, weak and debilitated, will find in the Acid Phosphate a most agreeable, grateful and harmless stimulant, giving renewed strength and vigor to the entire system.

Dr. Edwin F. Vose, Portland, Me., says: "I have used it in my own case when suffering from nervous exhaustion, with gratifying results. I have prescribed it for many of the various forms of nervous debility, and it has never failed to do good."

Descriptive pamphlet free.

Rumford Chemical Works, Providence, R. I.

Beware of Substitutes and Imitations.

**CAUTION.**—Be sure the word "Horsford's" is on the label. All others are spurious. Never sold in bulk.

### A TEMPORARY BINDER

for *Science* is now ready, and will be mailed postpaid on receipt of 75 cents.



This binder is strong, durable and elegant, has gilt side-title, and allows the opening of the pages perfectly flat. Any number can be taken out or replaced without disturbing the others, and the papers are not mutilated for subsequent permanent binding. Filed in this binder, *Science* is always convenient for reference.

N. D. C. HODGES, Publisher,  
874 Broadway, New York.

### LITERARY OUTFIT FREE.

Anyone sending us \$1.00 at once and mentioning "Science," will receive a copy of "Historical Sketches and Events in the Colonization of America," by G. B. Hall. A square 8vo. book (6 1/2 x 9 inches), 223 pages, illustrated. This is a regular \$2.00 book and a bargain at that price. . . . \$ 2 00  
200 Private Library Labels; they should be used by all who own books. . . . 50  
"The Library," a 100-page book containing a brief list of most important standard and miscellaneous books in every department of literature. Intended for those who are about forming a library. Hints about what books to read and how to buy them. . . . 50  
1 year's subscription to the "Literary Light," a monthly magazine of Ancient, Medieval and Modern Literature. . . . 1 00

\$4.00 actual value for \$1.00. Sample copy of "Literary Light," 10 cents (postal card won't do).

Address, **Literary Light**,  
243 4th Ave. S. Minneapolis, Minn.

### ESTERBROOK'S STEEL PENS.

OF SUPERIOR AND STANDARD QUALITY.  
Leading Nos.: 048, 14, 130, 135, 239, 333

For Sale by all Stationers.

THE ESTERBROOK STEEL PEN CO.,  
Works: Camden, N. J. 26 John St., New York.

THE LATEST IMPROVEMENT  
FOR STEREOPTICONS. OUR PATENT.  
**MULTI-FOCAL ATTACHMENT.**  
PRODUCES PICTURES FROM 12 TO 20 FEET AT  
ANY DISTANCE WITHOUT CHANGING THE OBJECTIVE  
SEND FOR DESCRIPTIVE CIRCULAR TO **QUEEN & CO. PHILA.**

THE CHEAPEST AND BEST  
**PHOTO ENGRAVING CO.**  
67 PARK PLACE NEW YORK  
ENGRAVING FOR ALL ILLUSTRATIVE AND  
ADVERTISING PURPOSES

### PATENTS

For INVENTORS. 40-page BOOK FREE. Address  
W. T. Fitzgerald, Attorney at Law, Washington, D. C.

**GEM OPALS.** Cut ready for setting. Having purchased a large lot at the Mexican locality, we are offering them at about one-fifth jewelers' prices; 50c., \$1., \$1.50, \$2., \$3. This is a rare opportunity to secure a fine gem very cheap. 100 pp. Mineral Catalogue 15c. in cloth 25c. Supplement 2c. **Geo. L. English & Co.,** Mineralogists, 733 and 735 Broadway, New York City.

### THE WEEKLY BULLETIN OF NEWSPAPER AND PERIODICAL LITERATURE.

Catalogues and Classifies Each Week  
**THE PRINCIPAL CONTENTS OF THE PERIODICAL PRESS.**

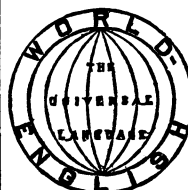
That huge mass of material heretofore inaccessible to the eager student is now rendered available. Special attention is invited to the Bulletin's

### INDEX OF TECHNICAL LITERATURE

Send for a free sample copy and learn how

The Bulletin Supplies  
The Articles Catalogued.

Address **THE WEEKLY BULLETIN**,  
5 Somerset Street, - - Boston, Mass.



**WORLD-ENGLISH.**  
25 Cents.

**HANDBOOK OF WORLD-ENGLISH.**  
25 Cents.

Ex-President Andrew D.

White, of Cornell University, says: "I believe that the highest interests of Christian civilization and of humanity would be served by its adoption."

"So set down, our tongue is the best for the world to unite upon."—*Brooklyn Eagle*.

"The idea of Mr. Bell has much to recommend it, and the presentation is charmingly clear."—*American*, Phila.

"The result is a language which cannot fail to meet with acceptance."—*Boston Traveller*.

"World-English deserves the careful consideration of all serious scholars."—*Modern Language Notes*.

Sent, postpaid, on receipt of price.

N. D. C. HODGES, 874 Broadway, New York.

### FOSSIL RESINS.

This book is the result of an attempt to collect the scattered notices of fossil resins, exclusive of those on amber. The work is of interest also on account of descriptions given of the insects found embedded in these long-preserved exudations from early vegetation.

By **CLARENCE LOWN** and **HENRY BOOTH**  
12°. \$1.

N. D. C. HODGES, 874 Broadway, N. Y.  
**POPULAR MANUAL OF VISIBLE SPEECH AND VOCAL PHYSIOLOGY.**

For use in Colleges and Normal Schools. Price 50 cents. Sent free by post by

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