Crookes says, indeed, "that the atoms are not eternal in existence, but share with all other created beings the attributes of decay and death." Thus, 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 working of spirits, if such exists, from material gase. 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. STANFIELD WAKE.

360 North Clark St., Chicago. June 2.

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 childhood, 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's models and his intuitive notions would certainly be of direct aid in this direction. Some sensory element is also required, and especially verification of knowledge 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.


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 Ensignment 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 fingers, or 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, Uhy, Bahson, Selor, and de Mortelot, 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 technology. 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-poo 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.


— 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.
JUNE 10, 1892.]

SCIENCE.

Charles Scribner's Sons will publish shortly a book on Norse history, industries, literature, and social life, etc., entitled "Norse and the Norwegian," by C. F. K. Brehm, 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. Elysee of Columbia; and a book called "Fire, Poison, and Injury" was written by Captain James E. Pitcher, 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 Flora 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 Electrica," 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; Electrochemistry; Electromotors; Galvanoplasty; Electric Bells; Domestic Electricity; Instruments; Electric Transmission of Energy; Conduit; Electric Machines; Measurements; Potential; Statical Electricity; Tables and Formule; Telegraphy; Transformers; and Electric Clock Making. The catalogue is a reasonably complete list of modern electrotechnical literature issued since 1888, with data of size, price, and name of publisher, and a full author-index. Published in New York by the International News Company.

Messes. Houghton, Mifflin, & Co. have published a work by the Rev. Lyman Abbott entitled "The Evolution of Christkindly." 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 Le Conte's definition of evolution as "continuous progressive change, according to certain laws, and by means of residuums," 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 consideration 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, predominant. 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 significant 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 Terms, Words, 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 370 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 of 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 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 of the 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 Geographical Magazine for May, of the reports on the French Expedition under the command of M. Victor H. The Onas inhabit the eastern part of the main island; the Alakafu dwell on the smaller islands on the north-western side of the Archipelago; and the Yagans, physically and anatomically allied to the Alakafu, are found among the southern islands. They are far from other tribes, and, as the district, in which they were 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, with a greenish tinge.

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

**CALENDAR OF SOCIETIES.**


Publications Received at Editor’s Office.

**NATIONAL CONFERENCE ON UNIVERSITY EXTENSION.** Proceedings of the First annual meeting, Philadelphia, J. B. Lippincott Co. 8vo, 268 p. $1.50...


POMEROY, GEORGE J. Darwin and after Darwin. J. D. Bancroft, Chicago, 8vo, 260 p. 50 c.


UNIVERSITY OF WASHINGTON. Eighth Annual Report of the department of geology and mineralogy, for the year ending June 30, 1891, Madison, Madison, 8vo, 174 p.


Annual fee, ten francs.

The Journal of the Society appears twice a month, and consists entirely of original articles 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 parts 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 Societiet Entomologica, Zurich-Hottingen, Switzerland.

**Exchanges.** [Please change to all, if not satisfactory character. Address D. C. HODGES, Broadway, N. Y.]

**Taxidermist out of business has quantity of mounted specimens of American birds, mammals and reptiles and skins of birds for sale, including a full lot of skinned alligator skins, showing some great variations of species; also quantity of skins of bears and mountain sheep, and mounted heads of same. Will give good exchange for bird skins with outfit. Address quickly to J. B. Thurston, 850 Yonge St., Toronto, Ont.**

**Wanted.**—For a fine thirteen-keyed flute in leather covered case, for a photograph camera suitable for making lantern slides. Flute cost $5, and is nearly new. U. O. COX, Mankato, Minn.

To exchange: Experiment Station bullfins and reports for bullfins and reports not in my file. I will send list of what I have for exchange. P. H. ROLLS, Lakes City, Minn.

**Finished specimens of all colors of Vermont marbles for fine fossils or crystals. Will be given only for valuable specimens belonging. GEO. W. PERRY, State Geologist, Rutland, Vt.**


For Sale or Exchange for books a complete present chemical laboratory outfit. Includes large balance beam (1000 to 100g.), platinum dishes and crucibles, sages motors, glass-blowing apparatus, etc. For sale in part or whole. Also complete file of "Scholar's Journal," 1891-95, 4-5 (25 x 32 cm) bound, Smith's Reports, 1842-1883; U. S. Coast Survey, 1844-1896. Full particulars to enquirers. F. GARDINER, JF., Potsmêt, Conn.


**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 like nature, is invited to send to the editor a statement of his qualifications, the kind of a teacher of science, chemistry, draughtsmanship, or what not, and salary to be paid. A FEE OF $1.00 IS CHARGED, if the subscriber furnishes the writer of the will of the substance of such letter and a copies of the results of his scientific work, the address of the person concerned and the nature of the position for which he desires to be considered is forwarded to the person for whom a candidate is desired.

WANTED.—We want any and all of the following books, which we propose to purchase, if necessary, for cash: Academy, London; vol. 1 to 88, 90, 91, and Jan. and Feb. 79; Ape of Steel, vol. 1 to 60; American Antiquarian, vol. 1; E. S. American Architect, vol. 1 to 60; American Art Review, vol. 1 to 31; American Field, vol. 1 to 200; American Historiographer, vol. 1 to 6; American Musical Omnibus, vol. 1 to 4; Art Amateur, vol. 1 to 7, Oct., Art Interchange, vol. 1 to 9; Art Union, vol. 1 to 6, Jan., 1867, July, 1869; Bibliotheca Sacra, vol. 1 to 10; Bible of the Lady's Book, vol. 1 to 30; Englishwoman, vol. 11; Zoologica, Series 1 and 2; Zoologica, Series 3; AND, if possible, Rayner's "Old Book Store," 394 6th Ave., New York.

WANTED.—By a young man, a Swarthmore College junior, a position as principal of a public school in Philadelphia or any neighboring town, in botany, physiology, and geology in an academy or normal school, Address H. B., care of Librarian, Swarthmore College, Pennsylvania.

WANTED.—A teacher of geology who is familiar with the fossils of the Hamilton group, as instructor of geology during July and August at the Natural Science Camp on Canandaigua lake. Address A. M. ARMY, Director, 329 Averill Ave., Rochester, N. Y.

WANTED.—To act as correspondent for one or two weeks during the summer and fall, to report on books, for a good scientific periodical. Address GEO. C. MAISON, 14 Elm St., Hartford, Conn.

TRANSLATOR wanted to read German architectural works at eight or ten dollars per week. Address "ADAMS" 180, New York Post Office.

WANTED.—In a position in a manufacturing establishment by a manufacturing Chemist of high standing, preferably in M. W. B., care of science, 874 Broadway, N. Y.


WANTED.—A college graduate with some knowledge of Latin, to work through the summer, in a southern college. A Baptist or a Methodist student, with some knowledge of Latin scholars. A. H. BEALS, Box K, Millgrove, Ga.

ADDRESS WANTED.—Will some one please send me the address of the American Historical Society in Philological Society. Also that of Herbert Spencer. ADDRESS WANTED, 600 B, Madison St., Jackson, III.
Mary A. Spear, late principal of the Model School of West Chester (Pa.) State Normal School. These plant studies combine drill in reading and study botanical information, calculated to serve as a useful basis to later students. 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, 1903, 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. Schütz 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. Stahan, 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 début in the July "Ladies' Home Journal" with a most entertaining description of "Camping 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.
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 no exception is yet known, although this query has been published far and wide among electricians.

First inserted June 19. No response to date.

N. D. C. HODGES, 874 BROADWAY, NEW YORK.

JUST READY.

THE LABRADOR COAST.

A Journal of two Summer Cruises to that region; with notes on its early discovery, on the Eskimo, on its physical geography, geology and natural history, together with a bibliography of charts, works and articles relating to the civil and natural history of the Labrador Peninsula.

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