harmony with the periodic system. The same may be said of tellurium and cobalt or nickel. Whether some or all of these elements are mixtures or whether their seemingly anomalous atomic weights must be explained in some other way does not as yet appear.

The action of the silent electric discharge in effecting chemical synthesis is being studied by Losanitsch and Jovitschitsch at the Königliche Hochschule at Belgrade. The apparatus used is an ordinary ozonizator, or, as they prefer to call it, electrizator. Mixed gases are led through the apparatus, exposed to the discharge of a Ruhmkorff excited by a current of 70 volts and three to five amperes. Carbon monoxid and water, also carbon dioxid and hydrogen, are condensed to formic acid; carbon dioxid and water yield formic acid and free oxygen; carbon monoxid and hydrogen give formaldehyde, which quickly polymerizes, apparently to a polymer glycolaldehyde. Carbon dioxid and methane condense to acetaldehyde, which soon forms aldol. A general method for formation of aldehydes is thus presented. Nitrogen and water condense directly to ammonium nitrite, a fact known to Berthelot, and considered to have a bearing on plant nourishment. Other interesting syntheses were obtained with sulfur compounds and with ammonia. In general, the reactions seem to be rather the reverse of those produced by heat.

The December *Zeitschrift für physikalische Chemie* contains a study by Paul and Krönig on the behavior of bacteria towards solutions of different salts. All salts of the same metal do not have the same germicidal effect upon the spores of the anthrax bacillus used for most of the experiments. Thus mercuric chlorid is more deadly than mercuric cyanid. Apparently those solutions containing the largest number of free ions of a metal possessing a specific poisonous character are most active. Mercuric chlorid is more completely dissociated in solution than the cyanid. Alkaline chlorids are often used to promote the solution of mercuric chlorid, but they also decrease the antiseptic power of the solution, since they diminish the dissociation and hence decrease the number of free mercuric ions. Dissolved in alcohol, mercuric chlorid has practically no effect on anthrax spores.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

REVUE DE MÉCANIQUE.*

A notable addition to the list of technical journals has been made in the establishment of this monthly. Its editors, Messieurs Haton, Bienaymé, Bourdon, Brüll, Collignon, De Comberousse, Flamant, Hirsch, Imbs, Linder, Raffard, Rozé, Sauvage, and the responsible collaborateur, Richard, all stand among the foremost men of applied science and engineering of France. They include the distinguished head of the École des Mines, member of the Institute, the inspector-general of the navy, a famous inventor and constructor, a past-President of the French Society of Civil Engineers, two inspectors-general of roads and bridges, two professors at the Conservatoire des Arts et Metiers, the engineer-in-chief of *ponts et chaussées*, upon whom the French government is accustomed to rely for advice respecting all its public works and especially at its international exhibitions, the inspector-general of mines, and the engineer-in-chief, and also a representative of the École Polytechnique.

This first volume opens with a prospectus indicating the scope of the plans of the editors and the field to be occupied by the new journal. The leading article is an extensive paper, sixteen pages, by M. Dwelshanvers-Dery, of the University of Liege; *Détermination des données fondamentales dans un essai de Machine à Vapeur*, in which the famous author gives, in full detail, the

* *Publiée sous le Patronage et le Direction technique d'un Comité de Rédaction, composé de* MM. Haton de la Goupillière, etc.; *Secrétaire de Rédaction*, G. Richard. Paris, P. Vicq-Dunod et Cie. Tome I., No. 1, Janvier, 1897.

methods employed by him in the analysis of the action of steam within the engine, and in the measurement of the heat and steam passing through its cylinder and in the determination of their various directions of useful application or of waste. This method is, in the main, that of Hirn, but reduced to algebraic expression by Dwelshauvers, and given application in scientific work of vastly more exact nature than was practicable in the time of the great master. The 'experimental engine' established within a few years at the School of Mines of the University of Liege affords M. Dwelshauvers opportunity to illustrate the principles enunciated and to secure original and helpful data, while, at the same time, giving practical instruction to his students.

A paper by M. Boulvin, of the University of Ghent, on 'Le Diagramme entropique et ses applications' follows. This diagram and method of representation of thermodynamic operations, original with our own Professor Gibbs, nearly a quarter of a century ago, is just attracting attention among scientific practitioners in engineering by its peculiar adaptation to the exposition of the effects of transformations upon the relative volumes of fluids, losing or gaining heat while work is being done. The pressure-volume diagram is usually better adapted to the needs of the engineer; but this special form of chart, the temperature-entropy diagram, better exhibits the physical condition of the fluid during the progress of the engine cycle. M. Boulvin, in his article, shows its practical uses, as particularly applied to the study of the permanent gases used as working substances in heat engines.

M. Sauvage studies the compound locomotive engine, exhibiting the structure of the principal classes in great detail and giving much attention to the forms familiar in the United States. M. Richard similarly discusses the refrigerating machines, giving detailed descriptions of the principal parts of such apparatus and according large space to those observed by him at the Chicago Exhibition of 1893. The same prolific pen offers an account of the construction of the later forms of the gas and petroleum engines. A 'chronicle' of current novelties and a review of contemporary literature conclude the volume, which occupies 112 giant pages.

With such extraordinary editorial support, and with such contributors, the new journal should promptly assume a place among the leading periodicals of its class; in fact, it may be said to have done so with this first issue.

The following original papers are announced as in preparation for succeeding numbers: L'Influence des parois dans les machines à vapeur, par Bryan Donkin; Le Surchauffe, par M. Sinigaglia; La Machine à vapeur américaine, par M. Thurston; Las Machines à vapeur marines, par M. Roche; Les Chaudiéres, par M. Walkenauer; Les Pompes, par M. Masse; Les Régulateurs, per M. Marie; Les Appareils de levage, Les Machines-outils, par M. Richard.

GENERAL.

MR. J. H. BRIGHAM, of Ohio, has been appointed Assistant Secretary of Agriculture.

THE fourth session of the Congress of American Physicians and Surgeons will be held at Washington, D. C., on May 4th, 5th and 6th, under the presidency of Professor W. H. Welch, of Johns Hopkins University. Fourteen of the most important medical societies, including the Physiological Society and the Society of Anatomists, will take part in the Congress. One of the three general meetings will be devoted to a discussion of 'Internal Secretions considered in their Physiological, Pathological and Clinical Aspects.' Dr. William H. Howell, of Baltimore, Md., and Dr. Russell H. Chittenden, of New Haven, Conn., will speak in behalf of the American Physiological Society. Dr. J. George Adami, of Montreal, Canada; Dr. James J. Putnam, of Boston, Mass., and Dr. Francis P. Kinnicutt, of New York City, in behalf of the Association of American Physicians, and Dr. William Osler, of Baltimore, Md., in behalf of the American Pediatric Society. The papers will be followed by a discussion.

THE anniversary meeting of the Geological Society of London was held at Burlington-house on February 17th. The officers were appointed as follows: President, Dr. Henry Hicks, F. R. S.; Vice-Presidents, Professor T. G. Bonney, F. R. S.; Lieutenant-General C. A. M'Mahon, Mr. J. J. H. Teall, F. R. S., and Dr.

Henry Woodward, F. R. S.; Secretaries, Mr. J. E. Marr, F. R. S., and Mr. R. S. Barries; Foreign Secretary, Sir John Evans, F. R. S.; Treasurer, Dr. W. T. Blanford, F. R. S.. The following awards of medals and funds were made: The Wollaston medal to Mr. W. H. Hudleston, F. R. S.; the Murchison medal and part of the fund to Mr. Horace B. Woodward, F. R. S.; the Lyell medal and part of the fund to Dr. G. J. Hinde, F. R. S.; the Bigsby medal to Mr. Clement Reid; the balance of the proceeds of the Wollaston fund to Mr. F. A. Bather; the balance of the proceeds of the Murchison fund to Mr. S. S. Buckman; the balance of the proceeds of the Lyell fund to Mr. W. J. Lewis Abbott and Mr. J. Lomas. The President delivered his anniversary address, which dealt with some recent evidence bearing on the geological and biological history of early Cambrian and pre-Cambrian times.

The Council of the Royal Photographic Society of Great Britain have awarded the progress medal of the Society to Professor Gabriel Lippmann, of Paris, for his discovery of the process of producing photographs in natural colors by the interference method.

A select committee of the British House of Commons has been appointed to inquire into and report upon the sufficiency of the law relating to the keeping, selling, using and conveying of petroleum and other inflammable liquids, and the precautions to be adopted for the prevention of accidents with petroleum lamps.

The Supreme Court of the State of Wisconsin has declared compulsory vaccination to be unconstitutional on the grounds that it may be objected to as a matter of conscience and its enforcement would be an interference with religious liberty.

The Council of the Sanitary Institute of Great Britain have accepted an invitation of the City Council of Leeds to hold a sanitary congress and health exhibition in that city in September.

The Senate has passed a joint resolution reciting the alarming spread of the bubonic plague now prevalent in India, and directing the Secretary of the Treasury to establish such national quarantine regulations as may become necessary to prevent the introduction and spread of infectious or contagious diseases. The resolution provides for the appointment of inspectors by the Secretary of the Treasury, on the advice of the surgeon-general of the Marine Hospital service, and for the inspection of vessels, persons, etc., pending the existence of the emergency.

The British Medical Journal states that a careful and comprehensive report on the progress of public hygiene in Prussia during the years 1889, 1890 and 1891 is being circulated by the Medical Board of the Prussian Cultus-Ministerium (Ministry of Education, etc.). It is a book of more than 600 pages, comprising chapters on every branch of public health and on epidemics in man and beast, besides a large number of statistical tables. The latter include general mortality, mortality at different ages, mortality from different specified diseases, and disease and mortality in different trades. The problems of water supply and drainage, police supervision of food and drink, supervision of factories and schools, etc., are fully discussed, and there are chapters on workmen's dwellings, working colonies, poorhouses, almshouses, hospitals, etc.

Professor W. M. Spaulding writes us of the death of Lorenzo N. Johnson, formerly instructor of botany in the University of Michigan, which occurred at Boulder, Colorado, Saturday, February 27th. "Mr. Johnson was an enthusiastic student of algæ and fungi and had devoted much time to systemmatic work on the Desmidiaceæ. He was the author of various papers on this group and had much extended their known range in the United States."

We regret also to record the death of Mr. John Pierce, formerly professor of chemistry in Brown University, and of Professor Edward Thomson Nelson, of the chair of science in Ohio Wesleyan University, on February 28th.

At the instance of the Commission on Bird Protection of the American Ornithologists' Union, the Lighthouse Board at Washington has issued a decree forbidding the sale of eggs of the sea birds of Farrallones Islands, California. It is said that as many as 20,000 dozen eggs were annually sold.

According to the *Electrical World*, on June 26th next an exhibition will be opened in the

Exhibition Building, Sydney, N. S. W., and will continue during the months of July and August. It is intended to embrace engineering in all its branches, and the exhibits will consist of raw material, manufactured articles, machinery and models (in motion and otherwise), drawings and photographs of all kinds relative to scientific, mechanical and educational works, in classified sections. The object of the exhibition is solely for the advancement of engineering science and the promotion of a general and practical education therein.

IT is stated in the daily papers that what appears to be a volcano has burst forth in the Great Salt Lake, a short distance southwest of Promontory Station on the Central Pacific Railway. The phenomenon first appeared recently in the form of a small cloud hovering over the water about a mile and a quarter from the shore. It gradually increased in dimensions and shotup so high in the air that it is now visible for a great distance, and the water in the immediate vicinity boils and seethes and the spray is thrown up in the air for hundreds of feet.

AT a recent meeting of the executive committee of the National Trust for Places of Historic Interest or Natural Beauty, Sir Robert Hunter in the chair, it was determined to take steps to initiate a regional survey of the country, and, by means of local correspondents, initiate the compilation of a catalogue of buildings, objects and places of historic and archæological interest, with a view to their proper protection and preservation. A report by the Treasurer showed that the work of repairing and making sound the old clergy-house at Alfriston (which has recently been acquired by the Trust) had had to be suspended on account of lack of funds, a sum of £200 being still needed. It was announced that the transfer of Barras Head, opposite Tintagel Castle (which has recently been acquired by the Trust) was complete. The committee were unanimous in agreeing to resist the Hastings Habour District Railway Bill on the ground of its serious interference with features of natural beauty in the district.

IT is stated in *Nature* the government of the Colony of the Cape of Good Hope has undertaken an investigation of the marine fauna of of the South African coast. A small marine station will probably be erected on False Bay, and a suitable steam vessel of about 150 tons is now being built for the station. The services of specialists are invited to work up the material that may be procured, under the following arrangements: Specimens will be forwarded as procured, and, on receipt of manuscript and drawings each piece of work will be published without delay in a uniform style, so as to form ultimately a complete record of the Cape marine fauna. Author's copies will be forwarded as soon as published, and a certain circulation will be guaranteed. No money remuneration is offered, but duplicate specimens may be retained by the authors. Unique specimens will be handed over to the South African Museum in Cape Town. Further information will be supplied on application to J. D. F. Gilchrist, Marine Biologist to Cape Government Agricultural Department, Cape Town.

WE have already noticed the return of Mr. J. E. S. Moore from his scientific expedition to Tanganyika. In conversation with a representative of Reuter's Agency Mr. Moore said that he left England in September, 1895, and proceeded to Chindi, thence going by a British gunboat to the north of Lake Nyasa. At Karongas he got together his caravan consisting of about 50 men, some of whom were armed with rifles. There was, however, no likelihood of difficulty with the natives. He then marched along the Stevenson Road to the south end of Tanganyika, where the Chartered Company placed at his disposal a steel boat. He commenced his researches in the beginning of April, 1896, and concluded in September. He found the fauna of Tanganyika to be unique—unlike anything else anywhere—and as limited as peculiar. The jellyfish and shrimps were certainly of a marine type while the geology of the district precluded the possibility of any connection with the sea in recent times. The water of this lake, which Livingstone found to be brackish, was now quite drinkable. All this seemed to prove that the Tanganyika part of the great rift valley running through that part of Africa at one time had access to the sea, while it was perfectly clear that Lake Nyasa,

some 246 miles to the southeast, apparently never had any marine connection. It was also a matter of interest that the fauna of Tanganyika was not only marine, but of a very peculiar and primitive type, and it was quite reasonable to suppose that the characteristics of the fauna were connected with the remote geological connection of the lake with the sea.

THE first census of the Russian Empire was completed on February 9th. The work has been in preparation for several years past, being carried out with the aid of the statistical committees and the Imperial Geographical Society. The inevitable difficulties, due to the vastness of the Empire and the diversified character of the people, have been increased by their ignorance and superstition. They are said to fear not only fresh taxes, but also a re-introduction of serfdom.

UNDER the title 'Magnetic Declination in the United States,' the United States Geological Survey has just published a compilation and discussion of magnetic declination, by Mr. Henry Gannett, which will be of value to surveyors throughout the country. The compilation is based upon magnetic observations made at about 22,000 stations. All data obtainable for the discussion of the secular variation in declination have been used, and the results are presented in the form of tables, showing the approximate reduction to a selected epoch—namely, the year 1900—at each tenth year prior to that time for the period during which it may be required. Finally, the declination data have been reduced to this epoch, 1900, and are presented in the table by counties, cities and towns. The calculated distribution of the magnetic declination for the United States in 1900 is graphically exhibited upon a map in a pocket in the cover. W. F. M.

WE have received from Dr. J. Milne an advance copy of a circular to be issued by the Seismological Investigation Committee of the British Association, asking cooperation in an endeavor to extend and systematize the observation of disturbances resulting from large earthquakes. The Committee recommend that similar instruments be used at all stations and are prepared to supply, for about £50, an instrument to those willing to forward to them notes of disturbances having an earthquake character, for analysis and comparisom with the records from other stations. From time to time the results of these examinations would be forwarded to each observatory. The first object in view is to determine the velocity with which motion is propagated round or possibly *through* our earth. To attain this, all that is required from a given station are the times at which various phases of motion are recorded; for which purpose, for the present at least, an instrument recording a single component of horizontal motion is sufficient. Other results which may be obtained from the proposed observations are numerous. The foci of submarine disturbances, such, for example, as those which from time to time have interfered with telegraph cables, may possibly be determined, and new light thrown upon changes taking place in ocean beds. The records throw light upon certain classes of disturbances now and then noted in magnetometers and other instruments susceptible to slight movements, whilst local changes of level, some of which may have a diurnal character, may, under certain conditions, become apparent. Those willing to cooperate in this important investigation should address The Seismological Committee, British Association, Burlington House, London, W.

UNIVERSITY AND EDUCATIONAL NEWS.

THE faculty of Mt. Holyoke College announce the gift to the College of $40,000 for a dormitory by Mr. John D. Rockefeller, of New York, and the receipt of a check 'from a friend' for $2,250.

SOME months ago it was announced in SCIENCE (August 7, 1896) that the University of Texas, through the liberality of Hon. George W. Brackenridge, of San Antonio, a member of the Board of Regents, had come into the possession of the finest collection of recent shells west of the Mississippi. We now have the pleasure of recording a supplementary gift from the same generous donor consisting of the Galveston Deep Well Collection, numbering 102 species; a collection of Eocene, Miocene and Pliocene fossils from California, Texas and other Southern States, 106 species; a collection