ing of amusement created by the author's curious notions and chosen 'wild and wooly' style, on which latter he especially plumes himself. Only, it is out of place in the 'Biologia.' It should have been issued by Bret Harte's scientific society 'on the Stanislaw,' and reported upon by 'Truthful James.'

Nor, in the hundreds of guesses of the author, has he failed of some worth passing reflection. His theory of the correction for the bissextile year is at least suggestive. His explanation of the *ua katun;* his comments on the Cakchiquel calendar; his reasons for dismissing the cypher in Mayan numeration; his argument that the ancient system of computation was to the end of a period instead of the beginning of a new one—these and some other thoughts may be rescued from the mass of crude assertions as meriting separate consideration. But, as a whole, the conviction will be forced on the enlightened reader that the cause of American archæology has gained practically nothing, and has lost something, by the publication of this heavy tome.

D. G. Brinton.
University of Pennsylvania.

SCIENTIFIC JOURNALS.

AMERICAN CHEMICAL JOURNAL, APRIL.

On the Butanes and Octanes in American Petroeum: By Chas. F. Mabery and Edward J. Hudson. The authors have studied the very volatile portions of petroleum, obtained by distilling the crude product during the cold winter months, the distillation in some cases proceeding from the heart of the atmosphere and being regulated by cooling the still. In order to identify the different hydrocarbons formed they were converted into their chlorine substitution products by bringing the vapor of the hydrocarbon together with chlorine. The distillations were carried out with great care and ingenuity and a number of derivations of butane were made and studied. The results showed that the petroleum contained no normal butane, but isobutane. In isolating the octane the authors found that a long series of distillations had to be carried on to obtain pure products. They state that these octanes do not begin to accumulate with any degree of purity until the twentieth distillation. They obtain an octane which they studied and also showed that the petroleum contained no octane boiling above 125°.

Naphthalene Tetrabromide: By W. R. Orndorff and C. B. Moyer. Naphthalene tetrachloride has been studied by a number of chemists, but the corresponding bromine compound had not been prepared until the authors of this paper undertook its investigation. They found it could be prepared by treating naphthalene, in sodium hydroxide, with bromine. Cracked ice was put in the flask and also around it to prevent any decomposition taking place from the heat developed. A white cystalline substance was obtained which melted at 111° C. The cystallography of this substance was studied, the angles measured and the more common forms drawn. Many attempts were made to obtain an isomeric substance, but they all failed. The molecular weight could not be determined by the boiling-point method, but some rough determinations of the molecular weight of the tetrachloride were made and the composition of the bromide deduced from this by analogy. By this method and by analysis the composition was shown to be $C_{10}H_8Br_4$.

On Hydrocobaltocobalticyanic Acid and Its Salts: By C. Loring Jackson and A. M. Comey. This work was undertaken in the hope of preparing, from potassium cobalticyanide, compounds analogous to the nitroprussides. When this compound was boiled for some time with strong nitric acid a gelatinous substance was formed, which was found to contain all the cobalt and to have the composition $KH_2CO_3(CN)_{11}H_2O$. This is the monopotassium salt of hydrocobaltocobalticyanic acid. The barium, silver, copper and zinc salts of the acid were also prepared. When the monopotassium salt was treated with potassium hydroxide cobaltic hydrate was precipitated and a substance was isolated from the filtrate which proved to be potassium cobalticyanide. The fact that the substance crystallized in needles instead of in broad, rhombic crystals was probably due to a slight amount of impurity. While some of the properties of these substances are similar to those of the ferrocyanides and ferri-

cyanides, they are not such as would aid speculation on the nature of their salts.

On the Analogies in Composition of the Salts of Calcium, Strontium and Barium: By J. H. KASTLE. The author calls attention to the strong analogies which exist between the calcium, barium and strontium salts. According to the views of Lenssen strontium and barium show greater analogies, in the composition of their salts, to one another than they do to calcium. In this paper the author cites a large number of salts, and concludes from a study of their composition that the analogy and composition of the calcium, barium and strontium salts of any given acid is just as likely to show itself between the salts of all three of these metals, or between the calcium and strontium salts of that acid, as it is between the calcium and barium salts, or those of strontium and barium, and *vice versa;* or that, so far as composition of their salts is concerned, these three metals are altogether similar.

Action of Mercaptides on Quinones: By H. S. GRINDLEY and J. L. SAMMIS. This article contains a preliminary notice of an investigation being carried on by the authors, on the action of mercaptides or substituted quinones. They have obtained a product, by the action of sodium mercaptide on dichlor-diphenoxyquinone, which is very unstable and decomposes in the presence of water, forming tetrathioethylquinone. Some of the derivatives of this substance were also prepared and studied.

The Action of Sodium Ethylate on Amide Bromides: By S. E. SWARTZ. It has been shown that amines can be formed from acid amide bromides by treatment with caustic alkali, and that the peculiar rearrangement which takes place in the molecule is perfectly analogous to the so-called Beckmann's rearrangement of ketoximes. These changes take place in alcoholic solutions, and it was suggested that, perhaps, if the substances were brought together in some solvent which would not produce electrolytic dissociation, the rearrangement might be prevented and direct substitution effected. It was found that succinimide bromide, treated with dry sodium methylate, regenerated succinimide, that no rearrangement took place, and that at the same time bromine was not replaced by the methoxy group. When the reaction was carried out in alcoholic solution in every case rearrangement was effected. A number of amide bromides were decomposed in this way, and in every case the action took place as described above. One of the products, phenyl urethane, was treated with phosphorus pentachloride and chloroformanilide and phenyl isocyanate were obtained. As these compounds had been studied very little, a number of their derivatives were prepared and studied.

The Hydrolysis of Acid Amides: By IRA REMSEN. The author calls attention to the changes produced by the action of dilute acids on acid amides. It has been shown by him, in the course of an investigation on the oxidation of substitution products of aromatic hydrocarbons, that when chromic acid is used, an oxidizable residue, situated in the ortho position with reference to a group that is not oxidizable, is almost completely protected from oxidation, while similar groups in the meta or para position are easily oxidized. An investigation is now being carried out which, up to the present, shows that the ortho amide resists the action of the hydrolysing agent to a marked degree, while the meta and para amides yield readily, the latter more so than the meta. The investigation will be extended to other amides to see if they will conduct themselves in the same way.

A review of Lehrbuch der allgemeinen Chemie, W. Ostwald; Zweiten Bandes, zweiter Teil; is also contained in this number of the *Journal.*

J. ELLIOTT GILPIN.

TERRESTRIAL MAGNETISM, MARCH, 1897.

WITH the present number, this journal, devoted to Terrestrial Magnetism and allied subjects, such as Earth Currents, Auroras and Atmospheric Electricity, enters on its second volume. The editor, Dr. L. A. Bauer, having been appointed assistant professor at the University of Cincinnati, the office of publication has been transferred to that institution. The contents of the present number are:

The Effect of Hardness on the Electrical and Magnetic Constants of Steel, with Particular Reference to the Tempering of the Magnetic Parts of Instruments, Carl Barus; Vertical Earth-Air Electric Currents,

L. A. Bauer; Magnetic Work at the Kew Observatory, Charles Chree; On the Distribution of Magnetic Observatories over the Globe, Adolf Schmidt; Results of Magnetic Observations on the Greenland Expedition of 1896, G. R. Putnam; Letter to Editor: A Proposal with Regard to an International Magnetic Congress, A. Schuster.

Professor Barus, in his article, gives a valuable summary of the results obtained in the tempering of magnetic needles, by Dr. Strouhal and himself, some years ago. The article, which is illustrated, closes with rules for the practical treatment of magnets, where great secular permanence of magnetization is the principal desideratum.

Dr. Bauer investigates the matter of electric currents passing from the air into the earth or from the earth into the air. If such currents exist, their presence will be indicated by the non-vanishing of the line integral of the earth's magnetic force, resolved along a closed curve of the earth's surface. The author selects, as his closed circuits, parallels of latitude between 60° N and 60° S and distant by 5° from each other. He bases his investigations on the Neumeyer magnetic maps of 1885. The result of the investigation would seem to be that, apparently, an appreciable part of the earth's total magnetism can be referred to an effect similar to that of vertical electric currents. The average intensity of these currents for the region between 60 N and 60 S would be about one-tenth of an ampere per square kilometer of surface.

Dr. Chree gives an interesting account of the work done at Kew Observatory, of which he is Superintendent. Dr. Schmidt finds that the present distribution of magnetic observatories, the great majority being on European ground, is far from satisfying the demands of modern science. In order to establish some criterion with regard to the precision to be obtained in the results of a geomagnetic investigation as based upon the present observatories, he undertakes a mathematical examination, making various combinations of existing observatories and proposed ones. It is remarkable how much the addition of one or two observatories in the southern hemisphere will reduce the probable error in the coefficients of the spherical harmonic series representing the phenomenon under consideration. New observatories are, above all, needed in the southern part of South America, the central Pacific and in New Zealand.

Mr. Putnam summarizes his recent magnetic work in Greenland. Professor Schuster proposes that an International Magnetic Congress of all those interested in the subject be held in 1899.

THE AMERICAN PHYSICAL EDUCATIONAL REVIEW.*

THE American Association for the Advancement of Physical Education has made a new departure in the line of publication. This Association has been in existence since 1885 and has published ten reports containing papers given at the annual meetings. These reports have been increasing in size and value and constitute the best literature of physical education in English.

In the reorganization of the Association, which took place a year and a-half ago, the annual meetings ceased, to give place to triennial or quadrennial conventions. The effort is now being directed to the formation of local physical education societies and of State branches, making it possible for the teachers to have sections in connection with the County and State Teachers' Associations. Twelve local organizations have already sprung up and are exhibiting signs of considerable activity in their monthly and annual meetings.

The interests of the National Association are in the hands of a Council of nine members, who act as an executive committee in all matters relating to the Association's interest. The National Council, after publishing the Tenth Annual Report, which fell to their lot at the close of 1895, have undertaken, instead of such annual reports, the publication of the *American Physical Educational Review*, the first volume of which has just appeared. It is proposed during 1897 to publish four numbers consisting of about 60 pages each, to contain original articles relating to physical education, reprints of articles not easily accessible to members of

* Published quarterly under the auspices of the American Association for the Advancement of Physical Education. Edited by E. M. Hartwell, G. W. Fitz, R. G. Huling. Cambridge, 1896.

the Association, reviews of related literature, etc.

The first volume consists of the following original and reprinted papers:

'Peter Henry Ling, the Swedish Gymnasiarch,' by E. M. Hartwell; 'The Olympic Games and Their Influence upon Physical Education,' by Ellery G. Clark; 'Statistical Sketch of the Present Status of Physical Training,' by Karl Zapp; 'What the City of Braunschweig, Germany, Does for the Physical Training of her Children,' by Ernst Hermann; 'Report of Committee of the Boston Physical Education Society, to Suggest a Substitute for the Manual of Arms as a Means of Physical Exercise in the Military Training of School-boys;' 'Military Drill in the Public Schools,' by D. A. Sargent; 'Manual Training: Its Educational Value,' by Thomas M. Balliet; 'The Influence of Exercise upon Growth,' by Henry G. Beyer; Brookline Public Bath; Reports from Societies; Editorial Notes and Comment; Book Notices and Bibliography; 'Index to the Ten Reports of the A. A. A. P. E.,' by J. M. Pierce.

One of the most important contributions to this number is the Index to the ten reports of the A. A. A. P. E. prepared by Mr. John M. Pierce. The National Council have decided to strike this off as a reprint for the benefit of those who desire to bind it with the reports. The report of the Committee on Military Training has also been reprinted and should do good educational service in combating the misguided efforts in different parts of the country to foist military drill on the public schools in place of a rational system of sports, games and physical exercises. Copies of both these reprints may be obtained by application to the Corresponding Secretary, Dr. G. W. Fitz, Cambridge, Mass.

The Council of the A. A. A. P. E. are to be commended for their boldness in undertaking this publication, and to be congratulated on its creditable appearance. Teachers in general will feel indebted to them for making accessible valuable papers on physical education, especially since the low price of membership, one dollar per year, brings the *Review* easily within their reach. G. W. F.

HARVARD UNIVERSITY.

SOCIETIES AND ACADEMIES.

SCIENTIFIC ASSOCIATION OF THE JOHNS HOPKINS UNIVERSITY.

THE one hundred and thirty-second regular meeting was held March 18, 1897, President Remsen in the chair.

The papers presented and read were:

1. 'The Projection of Panoramic Views of Contoured Surfaces,' by Josiah Pierce, Jr.

The principal subjects brought up for discussion were: 1. The metrical and projective properties of contours and bas-reliefs. 2. The principles involved in the projection of irregular plane-figures and surfaces. 3. The practical applications of the laws of projection in the design of perspectographs and mechanical aids to projection.

It was demonstrated in the paper that the general problem of the projection of an irregular surface of any form could be reduced to one of great simplicity by the methods suggested by the author of projecting successive contours or equidistant sections of the surface. The methods were shown to be applicable to the illustration of complex geological problems, which under ordinary conditions would require to be illustrated upon models, and for the solution of many difficult problems in projection, such as the determination of shadows on irregular surfaces and the development of bas-reliefs and projective forms.

Illustrations were given of a number of practical applications of the methods by drawings of very irregular surfaces developed in relief by the projection of contours—such as panoramic views of wide areas, and surfaces developed in high or low relief under different conditions of projection from horizontal vertical and inclined sections.

In the discussion given of the general problem of the projection of irregular plane figures two methods of operation were presented—one involving the metrical and projective relations of corresponding points of plain figures in perspective, applicable in the design of perspectographs and linkages; the other the relations of corresponding lines in perspective—applicable in the methods of tracing the projections of irregular figures—enclosed in nets of intersecting lines.