cational organizations where it is pretended to be taught.

United States.

It is my duty on this occasion to give some expression to this subject in its relation to America or to the Western Hemisphere. The length of this address precludes an exhaustive examination. The student or reader might, before proceeding further, read the address delivered before this Section, the first by Dr. Daniel G. Brinton* at New York in 1887, the title being 'A Review of the Data for the Study of the Prehistoric Chronology of America'; and the second that of Dr. C. C. Abbott at Cleveland in 1898, the title being 'Evidence of the Antiquity of Man in Eastern North America.'

The conditions under which the beginnings of our knowledge of prehistoric man were made, were quite different in America from those of Europe. In western Europe the historic period began with the invasion of Caesar, fifty or more years before the Christian era, and the prehistoric period with which we have had to deal came to a close about that time.

On the contrary, in America the prehistoric period continued until the discovery of the country by Columbus, and its subsequent occupation by the white man who was thus brought face to face with the prehistoric man. The superstitions, myths and folklore concerning stone hatchets and flint arrow heads so prevalent in western Europe, had no place in America. It was useless to talk to the white man of the heavenly origin of the stone hatchet or the flint arrow head, when he knew by the evidence of his own senses that these were the implements and weapons of the prehistoric savage with which he had to deal.

THOMAS WILSON.

U. S. NATIONAL MUSEUM.

(To be concluded.)

* Died at Atlantic City, July 30, 1899. Resolutions of condolence were adopted by Section H at the meeting after the delivery of this address.

CHEMISTRY AT THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

As has been the custom for several years, the American Chemical Society united with the Section in its meetings, the program on Monday and Tuesday being in charge of the Society and on the other days in charge of the Section. This has resulted very favorably to both parties and never more so than this year when over fifty papers were on the program and the attendance of chemists has been only once if ever surpassed.

The address of the Vice-President, Dr. F. P. Venable, on 'The Definition of the Element,' has already been published in this JOURNAL.

On Monday morning after the adjournment of the general session of the Association, several reports of committees were read. The most important was that of the Committee of the Chemical Society on Coal Analysis. This was presented by W. A. Noyes, the chairman of the committee and was the final report, and took up chiefly the matters of sampling and of moisture. Much discussion was elicited. The reading of papers began on Monday afternoon and continued until Thursday afternoon, when the Section adjourned.

A number of the papers read presented special interest in the field of inorganic chemistry. One of these was by W. R. Whitney on the nature of the change in chromium salts from violet to green on heating. It has of late been quite generally recognized that the chromium salt, say the sulfate, is decomposed on heating its solution into free acid and a more basic salt. The hitherto unsolved problem has been to determine the amount of free acid formed. This Mr. Whitney solved in a very ingenious manner. By enclosing the salt between gelatine walls in a U-tube the acid is made to diffuse, under the influence of an electric current, completely into the jelly,

in which it is easily titrated. The results obtained confirm very completely the correctness of the ordinary accepted theory.

A paper by Louis Kahlenberg, of the University of Wisconsin, on the electrolytic deposition of metals from non-aqueous solutions, dealt primarily with the validity of Faraday's law in such solutions. Experiments with silver nitrate dissolved in pyridin, nitro-benzene, anilin, benzonitril and acetone, and of some other salts in pyridin, show that Faraday's law holds good in these solvents. This is the more striking from the fact that in many other cases non-aqueous solutions do not act like those of water. Kahlenberg also called attention to the fact that from a solution of lead nitrate in pyridin the lead is deposited in bright crystals at the negative pole, while there is no deposit at the positive pole. Silver forms a very dense deposit from solutions of the nitrate in anilin. These latter facts may have some industrial value.

Closely connected with this paper was one by E. C. Franklin, of the University of Kansas, on the electrical conductivity of liquid ammonia solutions, which was a continuation of his work, which has already been noticed in these columns. Professor Franklin described a very ingeniously devised apparatus for purifying the liquid ammonia, particularly from water, and he found that its electric conductivity when thus purified was exceedingly small, not more than one-fourth that of purified water. Many conductivity curves were shown, which resembled more or less closely those of aqueous solutions. Under variable temperature, however, the conductivity increases with the temperature to a maximum and then decreases. This is theoretically the case with aqueous solutions, but the experimental conditions necessary for its demonstration are difficult to obtain.

Note was made in this column a few weeks ago of work which Charles Baskerville, of the University of North Carolina, and others have done on the distribution of titanium. In a paper before the Section, Dr. Baskerville reviewed the work which had been done by others and gave an account of his own work. The most important feature is that every sample of human flesh and bone examined shows the presence of at least traces of titanium. We must consequently consider that titanium is a constant constituent of the human organism, unless, indeed, it militates against Baskerville's work, that only specimens from the negro race were studied. Dr. Baskerville also finds a wide distribution of vanadium, notably in some peats.

A very interesting paper on the relation of physical chemistry to technical chemistry was read by Wilder D. Bancroft, of Cornell, and a most carefully prepared lecture on 'Some Experimental Illustrations of the Electrolytic Dissociation Theory,' was delivered by Arthur A. Noyes, of the Institute of Technology. A word should be added in commendation not alone of the lecture, but also of the idea of having such lectures. It is now the custom of the London Chemical Society to have its annual lecture, and of the German Chemical Society to have them more frequently. The delivery of one or two such lectures before the chemical section, by experts, on subjects about which every chemist wishes to be informed, while few are, would prove one of the most profitable features of the meeting, and it is to be hoped it will be repeated in the future.

Several papers in other fields than that of inorganic chemistry may be noticed. One of the most interesting of these was by H. W. Wiley and W. H. Krug on 'Some New Products of Maize Stalks.' It would have surprised a farmer to see the great variety of materials of which Dr. Wiley showed samples, all made from cornstalks. There was cellulose pith which is now extensively used on war vessels as a backing to armor

plate, from the fact that if pierced by a shot, the cellulose immediately swells and fills the hole, preventing the passage of water; chicken feed and cattle feed of various qualities, one variety containing a large quantity of molasses, and solving the problem of feeding molasses to stock; paper pulp and samples of paper of excellent quality made from it; nitroglycerin absorbents of different grades, giving different qualities of dynamite; superior qualities of nitrocellulose, some for the manufacture of smokeless powder, while from others excellent collodion is formed. Putting this paper with one by C. G. Hopkins on 'Improvement in the Chemical Composition of the Corn Kernel,' one recognizes that not only is corn raising the great American industry, but we to-day far from realize what will be the future importance of this crop. In a paper by M. Gomberg on 'Diazo-caffein,' the intense coloring power of the substance was noted. In another by the same author on the 'Preparation of Tri-phenylchlormethane and Tri-phenylcarbinol,' the synthesis by the use of aluminum chlorid was considered. For the preparation of the aluminum chlorid the author prefers to pass chlorin over hot aluminum, and this is far simpler than the method in which hydrochloric acid is used.

Professor W. A. Noyes contributed a paper on camphoric acid which added materially to our knowledge of this substance, and Professor W. McPherson gave the abstract of an interesting paper on the constitution of oxy-azo-compounds.

Professor H. A. Weber described the method of testing soils for application of commercial fertilizers, in use at the Ohio State University. It consists essentially in taking several samples of the soil, treating them respectively with potash, phosphoric acid and nitrogen, singly and in combination, sowing each with several seeds and basing opinions on the growth of the plants produced.

The estimation of carbon monoxid was considered by L. P. Kinnicutt and G. R. Sanford. In view of the fact that 0.05% of carbon monoxid in the air is dangerous, its detection and estimation is important. The absorption of carbon monoxid by hemaglobin is largely used, but the authors have found better the oxidation of carbon monoxid to the dioxid by hot iodic acid and subsequent titration by sodium thiosulfate.

A paper by Professor T. W. Richards on the atomic weight of calcium gave as the most correct figure at present 40.14.

Although not strictly pertaining to chemistry, mention should be made of the Commers tendered Section C by the Humboldt Verein, of which Professor H. A. Weber is president. The Verein, the Section and quite a number of other invited guests spent the evening enjoying the sumptuous hospitality of their hosts, expressed in thoroughly German style.

A list of the papers upon the program of the Section is appended.

The Nature of the Change from Violet to Green in Solution of Chromium Salts. W. R. Whitney.

Micro-structure of Antimony-tin Alloys. J. J. Kessler, Jr.

The Relation of Physical Chemistry to Technical Chemistry. W. D. Bancroft.

Methods of Analysis of Sulfite Solutions as used in Paper Making. R. de Roode.

The Electrolytic Deposition of Metals from Non-aqueous Solutions. L. Kahlenberg.

Some Experimental Illustrations of the Electrolytic Dissociation Theory (An experimental lecture.) A. A. Noyes.

Improvement in the Chemical Composition of the Corn Kernel. C. G. Hopkins.

Some New Products of the Maize Stalks. H. W. Wiley and W. H. Krug.

Soil Humus. E. F. Ladd.

The Relation of Fertilizers to Soil Moisture. J. T. Willard.

Secondary Heptylamin. T. Clark.

Propane Trisulfonic Acid. W. B. Shober.

Camphoric Acid, Alpha-hydroxy-dihydro-cis-campholytic Acid, and the Synthesis of Dimethyl-cyan-carbon-ethyl-cyclo-pentanone. W. A. Noyes and J. W. Shepherd.

Diazo-Caffein. M. Gomberg.

The Preparation of Tri-phenyl-chlor-methane and Triphenyl-carbinol. M. Gomberg.

The Action of Sodium Methylate upon the Dibromids of Propenyl Compounds and Unsaturated Ketones. F. J. Pond.

Some Secondary Cyclic Amins. C. C. Howard.

On the Constitution of the Oxy-azo-Compounds. W. McPherson.

On Naphthalene-azo-alpha-naphthol and its Derivatives. W. McPherson and R. Fischer.

Esterification Experiments with Hexahydro- and Tetrahydroxylic Acids. W. A. Noyes.

On the Condensation of Chloral with Ortho-, Meta- and Paranitranilins. C. Baskerville.

A Pneumatic System for Preventing the Bursting of Waterpipes through Freezing. N. M. Hopkins.

Note on the Occurrence of Chromium, Titanium and Vanadium in Peats. C. Baskerville.

On the Universal Distribution of Titanium. C. Baskerville.

The Atomic Weight of Calcium. T. W. Richards.

The Iodometric Determination of Small Quantities of Carbon Monoxid. L. P. Kinnicutt and G. R. Sanford.

Preliminary Report on a New Method for the Determination of Carbon Dioxid. M. E. Hiltner.

Analysis of Oils. A. H. Gill.

Examination of Lemon Flavoring Extracts. A. S. Mitchell.

The Composition of American and Foreign Dairy Salt. F. W. Woll.

Notes on Testing Soils for Application of Commercial Fertilizers. H. A. Weber.

The Electrical Conductivity of Liquid Ammonia Solutions. E. C. Franklin and C. A. Kraus.

A Determination of the Transformation Point of Sodium Sulfate. A. P. Saunders.

On the Derivatives of Isuretinic and Formhydroxamic Acid and their Relation to Fulminic Acid. H. C. Biddle.

The Reichert Figure of Butter. J. H. Stebbins, Jr.

The Determination of Nickel in Nickel Steel. G. W. Sargent.

Notes on the Estimation of Total Carbon in Iron and Steel. F. P. Dunnington.

Electrolysis of Metallic Phosphate Solutions. H. M. Fernberger and E. F. Smith.

On the Determination of Volatile Combustible Matter in Coke and Anthracite Coal. R. K. Meade and J. C. Atkins.

Observations upon Tungsten. E. F. Smith.

The Atomic Mass of Tungsten. W. L. Hardin.

Notes on the Determination of Sulfur in Pig Iron. M. J. Moore.

The Chemistry of Rancidity in Butter Fat. C. A. Browne, Jr.

An Electrolytic Study of Benzoin and Benzil. J. H. James.

The Quantitative Estimation of Boric Acid in Tourmaline. G. W. Sargent.

Some Boiling Point Curves. J. K. Haywood.

Electrolytic Determinations and Separations. L. G. Kollack.

The Precipitation of Copper by Zinc. J. G. Shengle and E. F. Smith.

Derivatives and Atomic Mass of Palladium. W. L. Hardin.

Action of Hydrochloric Acid Gas upon Sulfates, Selenates, Tellurates and Phosphates. R. W. Tunnell and E. F. Smith.

The Electrolytic Oxidation of Succinic Acid. C. H. Clarke and E. F. Smith.

The Persulfates of Rubidium, Cesium and Thallium. A. R. Foster and E. F. Smith.

The Chemical Composition of Butter Fat. C. A. Browne, Jr.

Halids and Perhalids of the Picolins. P. Murrill.

JAS. LEWIS HOWE.
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*THE COLLECTIONS OF NATURAL HISTORY AT SOUTH KENSINGTON.**

THE collections in the Natural History Museum at South Kensington have recently been considerably enriched by means of exploring expeditions which have brought home from various parts of the world collections of great scientific interest and value. The late Sir William Flower did much to encourage scientific studies on the part of travellers in remote countries, and he was always ready to coöperate in the organization of expeditions and in giving official aid in the determination of collections brought home by explorers. His successor at the Museum, Professor Ray Lankester has lost no time in evincing his complete accord with the ideas of his predecessor in this respect, and indeed it is already evident that he favors a great development of this policy. The fact is becoming more and more generally recognized that it is the business of a national museum of natural history not merely to preserve for scientific study and public instruction the specimens acquired by presentation or by purchase from dealers and others, but to obtain objects by the deliberate exploration of regions which are likely to yield rich harvests of new and important material. This idea has, we are glad to note, been encouraged by the authorities of the Museum. It is seldom now that an important expedition organized by private enterprise leaves these shores without either the explorer himself being in a measure instructed as to the best means of obtaining specimens and supplied with the necessary apparatus for collecting or taking with him one or more trained naturalists.

The natural history branch of the British Museum benefited greatly by the results of the expedition to Sokotra, which, under the liberal auspices of the Royal and Royal Geographical Societies and of the British Association, was organized by Mr. W. R. Ogilvie-Grant, representing the British Museum, and Dr. H. O. Forbes, director of the Liverpool Museum, with the generous aid of the committee of that institution, for the purpose of investigating and making collections of the natural history of that island. Dr. Forbes will, we believe, give an account of the geographical results of this expedition in Section E at the forthcoming meeting of the British Association at Dover. As regards its zoological work, which was its main object, the general results can be described as most successful. Sokotra does not seem to be rich in its mammal fauna. Only one mammal was recorded from it before Messrs. Forbes and Grant explored the island. They, however, obtained eight distinct species, including a wild ass, goat, Arabian hare, rat, two species of bat, and the Arabian baboon, of which two living examples were brought to England for the Zoological Gardens. The avifauna is very rich, as many as 62 species, represented by nearly 600 specimens, being secured. Eight of the species were new to science. Twenty-three species of reptiles, represented by 350 specimens, 8 of the species being new; 20 species of marine fish, represented by nearly 60 specimens, and large collections of land shells and insects containing many undescribed forms were also included in the harvest. The butterflies are especially numerous, several of the species being very beautiful and hitherto unrecorded.

* From the London *Times*.