SCIENTIFIC JOURNALS AND ARTICLES.

The Journal of Physical Chemistry, December, 1899. On 'Thermal and Dynamic Coefficients,' by J. E. Trevor; 'The Electrolytic Reduction of Potassium Chlorate,' by Adolph L. Voege. This is a quantitative study of the reduction of potassium chlorate under various considerations of density, current strength, poles of different metals, etc. Among the conclusions reached is the greater reduction in acid solutions than in alkaline, and the greater reduction with zinc poles than with those of cadmium or platinum; 'Note on the Preparation of Metallic Lithium,' by Louis Kahlenberg; metalic lithium can be obtained without difficulty by electrolysing a solution of lithium chlorid in pyridin, without the aid of a diaphragm. A carbon anode and iron cathode are used, fourteen volts difference of potential, and 0.2 to 0.3 ampere per 100 sq. cm. of cathode area. The metal is obtained in a dense, well-adhering, silver white coating, possessing all the well-known chemical and physical properties of metallic lithium.

A JOURNAL of Petrology is planned under the auspices of a committee appointed at the last International Congress of Geology. The journal is to have the scope of a Centralblatt, and it is proposed that contributions may be in English, French or German. Professor F. Becke, of the University of Vienna, is Chairman of the committee, and the American members are Professor J. P. Iddings of the University of Chicago, and Professor L. V. Pirsson of Yale University.

SOCIETIES AND ACADEMIES.

WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS.

THE thirtieth annual meeting of the Academy was held at Madison, December 28–30, 1899. The increasing number of meetings of national societies in Christmas week detracts somewhat from the attendance of members at the meetings of the Academy, but all five sessions of the present meeting were very satisfactory. The following list of papers were given and discussed:

'A study of the lead regions of Wisconsin, Illinois, and Iowa,' by Orin G. Libby.

'Household words—their etymology,' by James D. Butler.

'A problem in longevity,' by Charles H. Chandler.

'A new geometrical and analytical solution for determining the principal axes at any point of a rigid body,' by Charles S. Slichter.

'An elementary explanation of the probability curve,' by Charles S. Slichter.

'The ice ramparts formed along the shores of lakes Mendota and Monona during the winter of 1898-99,' by Ernest R. Buckley.

'The principles controlling the deposition of ores,' by Charles R. Van Hise.

'The nepheline syenite of the Wausau district,' by Samuel Weidman.

'Chlorine in natural waters—its accurate determination and significance,' by Erastus G. Smith.

'The action of light on certain nitroso compounds,' by Oswald Schreiner.

'The sour taste of acid salts and their electrolytic dissociation,' by Louis Kahlenberg.

'The historical development of chemical symbols from the times of alchemy to the present' (illustrated by lantern slides), by Oswald Schreiner.

'The absorption of the sun's energy by water,' by Edward A. Birge.

'Some of the undeveloped natural resources of Wisconsin: clays, road materials, and marls,' by Ernest R. Buckley.

'Account of some work done on the State survey,' by Dexter P. Nicholson.

'The work of the Wisconsin Geological and Natural History Survey,' Edward A. Birge.

Two additional papers were read by title: 'The Graphite Deposits of Central Wisconsin,' by G. E. Culver; 'On the Changes of Length of Substances in an Alternating Magnetic Field,' by W. M. Jolliffe.

At the one evening session a dinner was first given by the Madison members to the visiting members followed by a few speeches, including an eloquent plea by Professor Van Hise for the breadth of knowledge which the Academy aims to encourage. The company then adjourned to another room, open to the public, where the retiring President, Professor C. Dwight Marsh, of Ripon College, gave his address: The Plankton of Fresh Water Lakes. It was a well-written general discussion of the minute animal and vegetable life of our lakes, with some reference to economic features, and held the close attention of the audience to the end.

The Academy has now 225 members, and

there were elected at this meeting 18 active and two corresponding members. A new board of officers also were elected, for the term of three years, including Professor C. S. Slichter, University of Wisconsin, President; Professors Harriet B. Merrill, Milwaukee-Downer College, C. H. Chandler, Ripon College, E. G. Smith, Beloit College, Vice-Presidents; Professor F. C. Sharp, Secretary; Professor L. Kahlenberg, Librarian, both of the University of Wisconsin. The library of the Academy will be installed in the fine large building provided for the State Historical Society after the dedication of the building next May.

A. S. FLINT, *Secretary.*

MADISON, WIS., Jan. 1, 1900.

THE KANSAS ACADEMY OF SCIENCE.

THE thirty-second annual meeting of the Kansas Academy of Science was held at McPherson, on December 28–29th. This Academy is a coordinate branch of the State Board of Agriculture, and as such has rooms in the State House, and its Proceedings are printed by the State. The following papers were read at the meeting:

'On Apocynum cannabinum,' by L. E. Sayre.

'The first great roof,' by Charles H. Sternberg.

'Geology of the Glass Mountains of Western Oklahoma,' by Mark White.

'Silica cement mortars,' by William Tweedale.

'The home of the Kansas tiger beetle,' by Warren Knaus.

'An apparatus for determining the relative heating power of coal and gas,' by E. H. S. Bailey.

'Some interesting pyrite crystals,' by J. C. Cooper.

'The Leonid meteors of 1833 as observed by a native Kansan,' by J. R. Mead.

'An example of variation in the human cranium,' by H. J. Harnly.

'Additions to the published flora of Kansas,' by A. S. Hitchcock.

'The testing of paving bricks,' by F. O. Marvin.

'An historical list of Kansas mammals,' by D. E. Lantz.

'Stratigraphy of Eastern Kansas,' by G. I. Adams.

'On some Diatomaceæ of Silver Lake and vicinity,' by George H. Curtis.

'Analysis of a magnesium water near Madison,' by F. W. Bushong.

'Collecting notes from Southwest Kansas,' by Warren Knaus.

'Notes on a trip through Western Wyoming,' by J. R. Mead.

'Comparison of the fauna of the Permian of England and America,' by J. W. Beede.

'A geological section of Lyon and Chase counties, along the Cottonwood River,' by Alva J. Smith.

'Harmonic forms,' by B. B. Smyth.

'Ecological areas in Florida flora,' by A. S. Hitchcock.

'Some mineral deposits in Central Missouri,' by S. Z. Sharp.

'The Corona of the sun,' by E. Miller.

Address of the retiring president on 'A theory of the cosmos,' by E. B. Knerr.

E. H. S. B.

WASHINGTON CHEMICAL SOCIETY.

THE regular meeting was held on December 14, 1899.

The first paper of the evening was read by Dr. Bigelow, and was entitled 'The Determination of Metals in Canned Goods,' by W. D. Bigelow and L. S. Munson.

After an examination of a number of the methods most commonly employed, the authors gave preference to a modification of Allen's method.

The entire contents of the can are thoroughly mixed, and 75 to 100 grams taken for analysis. Often it is found preferable to dry the entire sample, extract with petroleum ether, again dry and grind, to obtain a permanent sample. In this case only 25 grams are employed in the determination of metals.

In either case the sample taken is treated with 4 cc. of strong sulfuric acid, 2 cc. of nitric acid and 3 grams of magnesia. The whole is heated on a water bath until it becomes pasty. It is then ignited over a Bunsen burner or in a muffle furnace, until thoroughly charred, ground in a mortar, again ignited to complete combustion, nitric acid being added from time to time towards the close of the operation. The residue is then boiled for a half hour in about 40 cc. of 1–3 hydrochloric acid, almost neutralized with sodium hydroxid, precipitated with hydrogen sulfid and filtered. The precipitate is dried and thoroughly mixed with one gram each of sodium carbonate, potassium carbonate and sulfur, fused for one-half hour in a covered porcelain crucible, digested in water and filtered. The insoluble portion contains copper and lead. It is dissolved in nitric acid, and divided into

two equal portions, in one of which the lead is precipitated as chromate and in the other copper is determined by titration with potassium cyanid. The filtrate from the fused sulfids is acidified with acetic acid, filtered and the precipitate thoroughly washed and transferred together with the filter paper to a solution of ferric chlorid, which is heated to the boiling point and titrated with potassium bichromate. Zinc is precipitated as sulfid in the filtrate from the original sulfid precipitate, after adding acetic acid and neutralizing the mineral acid with sodium hydroxid.

The second paper of the evening was read by Dr. Fireman and was entitled: 'The Action of Ammonium Chlorid upon Tetra- and Penta-Chlorides, Preliminary Communication,' by P. Fireman and E. G. Portner.

The last paper of the evening was read by Mr. J. D. Tinsley and was entitled, 'On the Estimation of the Water Soluble Constituents of Soils,' by J. D. Tinsley and F. K. Cameron.

Dr. Seaman spoke on the size of medicine droppers found in the market. He had found them variable, giving drops of different sizes. He showed that the size of the drop depends on the external diameter of the orifice and not on the thickness of the walls.

WM. H. KRUG,
Secretary.

DISCUSSION AND CORRESPONDENCE.

PREVENTION OF HAIL.

BUT little notice has been taken in the United States of the remarkable progress made in northern Italy in the establishment of stations for the protection against injury from hailstorms, by means of the *Wetterschiessen*—one of the old 'superstitions' which has come to honor again in our enlightened age. Shooting and ringing of church bells has for ages been popularly supposed to be efficacious against the effects of thunder-storms, especially of lightning. But the belief found no scientific support, and statistics seemed to prove that the rains supposed to follow the heavy cannonading of great battles are, like the weather changes following those of the moon, quite as much the exception as the rule. Now, however, the matter has taken the practical shape, in the form of stations located at intervals of not more than a kilometer apart in regions subject to hailstorms, and provided with a small cannon placed vertically and surmounted by a six-foot, narrow-conical trumpet, which transmits the vortex and concussion of a 2–3 ounce charge of black powder to the threatening cloud, preventing the formation of hail, and apparently also diminishing the electrical discharges. The idea originated with Burgomeister Moritz Stigel, of Styria, where after three years' experience complete exemption from hail-injury seems to have been secured, so that the inhabitants have abandoned hail insurance, finding the new method cheaper.

In the last semi-annual volume of Proceedings of the Academy of Georgifili, Florence, the subject is once more extensively discussed. A new style of breech-loading rapid-fire gun has been substituted for the original Stigel pattern, and 800 of these anti-hail stations have been and are being established in the region of Brescia, for the protection of vineyards. Small bombs with time fuses have been added to the equipment, and it is stated that the vortex, outlined by means of the dust, reaches the height of two kilometers, and that its low, whistling noise is heard from fourteen to seventeen seconds after the discharge.

E. W. HILGARD.

ELECTRICAL ANÆSTHESIA.

EDITOR OF SCIENCE: My attention has been called to an account in a New York paper of the method of producing anæsthesia by electricity, now being tried experimentally in the Yale Psychological Laboratory. Permit me to say that this account was entirely unauthorized. The demonstration of what had been accomplished was made informally at the recent meeting in New Haven of Section H of the American Association for the Advancement of Science, and no permission was given for any publication of the results. The last authorized statement in regard to the matter appeared in SCIENCE for March 10, 1899; unless there is some reason for the contrary, all future statements will appear first in the columns of SCIENCE.

E. W. SCRIPTURE.