

the sake of distinguishing between the two, let us call the figure of intersecting lines a thwart, and reserve the word cross for its original significance, viz., a martyr instrument. The old cross, the Roman martyr instrument for capital punishment by exposure to the inclemency of the weather, Latin *crux*, Greek *staurus*, had sometimes the form of an irregular thwart, but not necessarily so. Whether or not Christ's cross was a thwart is doubtful; it is possible, however, since he is reported to have borne his cross, which obviously means the *patibulum*. Christianity adopted the thwart as the form of Christ's cross because the thwart was an old religious symbol of deep significance. Thwarts were used in all countries—Egypt, Assyria, India, among the Teutons, the Indians, etc. Their significance varies, and is frequently obliterated. By promiscuously calling all thwarts crosses, we are surprised at finding the Christian symbol universally adopted by pre-Christian religions. The fact is the reverse. Thwarts were used in different meanings by almost all the nations of the world, and then the thwart was identified with the cross to such an extent that, at present, cross has come to mean any figure of intersecting lines. How misleading this identification may be we can see in the Dakota story of the Susbeca, which is a thwart and like the Latin cross in shape, but which means dragon-fly. A missionary mistook the word in the Christian sense, so he gloried in his sermons with St. Paul in the susbeca of Christ. Translations of the New Testament and the Creed in the Dakota language, according to which Christ was crucified on a dragon-fly, are still extant. To the Dakotas the susbeca is a sacred religious symbol, and the missionary's mistake may have helped to recommend to them the Christian faith; but undoubtedly the confusion served to render more mysterious to them

the mystery of the cross. The two papers by Dr. Carus were both fully illustrated, and will be published in *The Open Court*.

On Wednesday and Thursday mornings, the Section met with the American Folk-Lore Society, which, like Section H, is one of the Societies affiliated with the American Society of Naturalists.

GEORGE GRANT MACCURDY,
Secretary.

THE AMERICAN CHEMICAL SOCIETY.

THE annual winter meeting of the American Chemical Society, the twenty-fifth general meeting of the Society, was held in Philadelphia on the thirtieth and thirty-first of December, the assembly place being the University of Pennsylvania. The opening session was in Houston Hall at half past nine on Monday morning, when the usual felicitous words of welcome on behalf of the city, the university and the Philadelphia Section of the Society were spoken and duly responded to. The reports of the officers of the Society were read, those of the secretary and treasurer being particularly gratifying, showing large increase in membership and a considerable balance in the treasury. Including the members elected at the present meeting, the membership of the Society has passed the two thousand mark; with a very few exceptions, all the prominent chemists of the country are enrolled, and no inconsiderable number of foreigners as well. The value of the *Journal* of the Society is being more and more appreciated. Thirteen Sections of the Society are already established, and a fourteenth is now being formed on the Pacific slope.

Owing to the fact that most of the business is transacted through the Council, little came before the general meeting, but a resolution was passed memorializing the United States Government to pass a law making compulsory the use of the metric

system of weights and measures in all the departments except the Land Office. As is well known, its use is now optional, but outside of the scientific departments it is little used. In the Post Office and Treasury Departments its use is particularly desirable.

The remainder of the forenoon and the next morning were devoted to the reading of papers. The time for this was unfortunately so limited that hardly more than half of those on the program could find a place, and many of these were given only in abstract. The most interesting paper was of the nature of a lecture by Dr. Charles F. Chandler, of New York, on the 'Electrochemical Industries at Niagara Falls.' This was illustrated by a copious supply of specimens of the products of these industries, a very considerable portion of which was afterward presented to the museum of the chemical department of the University of Pennsylvania. Another paper which attracted much attention was by Professor Louis Kahlenberg, of the University of Wisconsin, on 'Instantaneous Chemical Reactions, and the Theory of Electrolytic Dissociation,' with experiments. The experiments illustrated facts brought to light by Dr. Kahlenberg which seem to controvert the ordinarily accepted theory of electrolytic dissociation, and no little interest was aroused by them. A list of the papers read is appended to this report.

At the close of each morning session a bountiful lunch was provided by the university authorities, after which the time till dark was occupied by excursions to various places of interest to chemists. There is no city in the country where there are so many industries in which chemistry plays an important part, and the time was well used by the visiting chemists. Indeed there was such a superfluity of trips that the members had to be grouped in six or seven sections each afternoon. The following list

of places visited gives an idea of the wealth of opportunities for the study of industrial chemistry:

Baldwin Locomotive Works.
United States Mint.
City Filtration Experiment Station.
Bergner & Engel's Brewery.
Midvale Steel Company's Works.
Barrett Manufacturing Co., Working up of Coal-tar Oils.
United States Arsenal, Special Laboratory Equipment and Testing House.
John B. Stetson Company, Manufacturers of Hats.
Dungan & Hood, Glazed Kid and Morocco Works.
C. H. Masland & Sons, Carpet Mills.
Cramp's Shipyard.
Harrison Bros. & Company, Inc., Manufacturers of Chemicals and Paints, Electrolytic Method for the Production of Sodium.
Philadelphia Navy Yard.
United Gas Improvement Co., Works, Point Breeze.
Gillinder & Sons, Glass Works.
Quaker City Dye Works.
Wetherill & Bro., White Lead.
J. Eavenson & Son, Soap Works.
Girard College.

On Monday evening the address of the retiring president, Dr. F. W. Clarke, of Washington, was delivered at the rooms of the Acorn Club. His subject was 'The Development of Chemistry.' A rapid and graphic review of the past of chemistry gave indications of the lines along which chemistry may be expected to progress in the immediate future. The speaker dwelt particularly upon the desirability of co-operation in chemical research, rather than the present plan where every chemist works in his own field independent of the work of all others. Especially in inorganic chemistry are there many problems, too large for solution by single workers, which might be successfully attacked by the co-operative efforts of a number of chemists. Dr. Clarke also called attention to the mutual benefits accruing between technical

chemistry and pure chemistry, research work in each helping the other.

Immediately after the address, a reception was tendered by the Club to the members of the Society and their wives. A little later in the evening a smoker was held at the University Club where memories of German student life were renewed. On Tuesday evening the annual banquet was held at the Bingham House, the decorations and the *ménu* having a decided flavor of the laboratory. Dr. H. W. Wiley, of Washington, acted as Master of the Feast, and toasts were responded to by the mayor of the city, Theodore C. Search of the School of Industrial Art, and by several members of the Society. According to one of his colleagues, Professor Chandler had the honor of making the longest speech on record. He began in 1901 and did not close till the next year!

Dr. Ira Remsen, president of Johns Hopkins University, was elected president of the Society for the ensuing year.

A meeting of the Council of the Society was held on Tuesday afternoon, at which the resignation of Dr. Edward Hart as editor of the Society's *Journal* was regretfully accepted, and Dr. W. A. Noyes, of Rose Polytechnic Institute, was elected to succeed him.

Nearly two hundred were enrolled at the meeting, and probably not less than two hundred and fifty were present, making this the largest general meeting the Society has ever held. It was in every respect one of the most successful.

The following is a list of the papers read at the meeting:

Review of Metallography: HENRY FAY.

A résumé of the recent work which has been done on alloys, especially of those using the methods of physical chemistry and the microscope.

Naturally Occurring Tellurid of Gold: VICTOR LEHNER.

The only occurrence of gold in nature combined with another element is the tellurid. A crystallographical and chemical study of these tellurids throws much doubt upon their being anything other than a mixture of the elements.

Action of Selenic Acid on Gold: VICTOR LEHNER.

Doubt has been cast upon the oft repeated text-book statement that gold dissolves in selenic acid. It was found that gold does dissolve with considerable readiness in concentrated selenic acid at 230°–300°, forming an auric selenate. This is the only single acid, as far as known, in which gold is soluble.

The Quantitative Blowpipe Assay of Tellurid Gold Ores: JOSEPH W. RICHARDS.

Contrary to the general opinion, this assay presents no difficulty. In the muffle assay, however, if much tellurium is present, the gold 'spits' and often sinks completely into the cupel. This may be obviated by adding antimony.

A New Blowpipe Reaction for Germanium: JOSEPH W. RICHARDS.

Argyrodite gives a white sublimate like molybdenum, which becomes an intense blue when heated with cobalt nitrate.

Contributions to the Chemistry of the Rare Earths of the Yttrium Group: L. M. DENNIS and BENTON DALES.

A review of the various methods of separation of the rare earths, and the announcement of several new ones, which promise well.

Preliminary Note on a New Separation of Thorium: F. J. METZGER.

Thorium may be separated from the other rare earths almost quantitatively by

fumaric acid. This reaction seems to be connected in some way with the molecular asymmetry of the acid molecule.

Sodium: J. D. DARLING.

Description of the electrolytic method in use at the works of Harrison Bros. & Co., for the production of sodium. This method was introduced primarily for the manufacture of nitric acid. A diaphragm four inches thick, made of magnesite and Portland cement, separates the two electrolytes. On the outside of this, fused sodium nitrate is at the anode, while the inner electrolyte surrounding the kathode is sodium hydroxid. As the current passes, this soon becomes sodium oxid, and then metallic sodium is formed. A current of about six hundred amperes at seven volts is used. The supply of metallic sodium on hand in storage is now so great that the city authorities have had the operation of the process stopped, fearing accident.

The Determination of Silica: W. F. HILLEBRAND.

The results of the analyses of a set of cement samples by a large number of chemists revealed great discrepancies in the amount of silica. This is chiefly due to the fact that one evaporation is not sufficient to render the silica insoluble. Further, the silica must be heated by a blast lamp before weighing.

Electro-Chemical Industries at Niagara Falls: C. F. CHANDLER.

A review of the history and a description of the processes used, illustrated by a large number of specimens. The manufacture of sodium, aluminum and carborundum was most fully considered.

Instantaneous Chemical Reactions, and the Theory of Electrolytic Dissociation (with experiments): LOUIS KAHLBERG.

The oleates of the metals are soluble in perfectly dry benzene, and from these solu-

tions the anhydrous chlorids are instantly precipitated by a dry benzene solution of hydrochloric acid. These solutions in benzene are practically non-conductors of electricity, consequently electrolytic dissociation cannot be supposed to have taken place; yet the reactions appear to be exactly parallel to those in aqueous solutions, to account for which the electrolytic dissociation theory is invoked.

What are the Requirements of a Course to Train Men for Work in Industrial Chemistry? W. A. NOYES.

It cannot be generally told what line of industrial chemistry a student will follow after graduation, and there are so many different fields that it would be impossible to train a man in the special technical requirements of every industry, and there should be no attempt to do this. Students should be thoroughly grounded in the general fundamental principles and have extended practice along several different lines of practical work. The special minutiae of any branch the student may enter will then be readily learned after graduation.

The Volumetric Estimation of Alumina, and Free and Combined Sulfuric Acid in Alums: ALFRED H. WHITE.

A method depending upon the proper choice of indicators.

Aqua Ammonia: Its Impurities and Methods of Analysis: J. D. PENNICK and D. A. MORTON.

A Method of Analyzing Oil Varnishes: PARKER C. MCILHINEY.

The Oxygen Bases: A Review: JAS. LEWIS HOWE.

An outline of the recent work of Collie, Baeyer, Kehrman, Werner and others, on compounds in which oxygen appears to be quadrivalent, forming salts with acids, as do ammonia and its derivatives.

Electrolytic Deposition of Lead from P_2O_5

Solution: A. F. LINN.

Lead can be deposited electrolytically in a form suitable for weighing from a solution containing free phosphoric acid.

Latest Types of Formaldehyde Regenerators (with demonstration): WM.

DREYFUS.

An exhibition of the various types of apparatus with a discussion of their relative merits.

Some Pyridin Derivatives: J. ARTHUR HAYES.*Report of Committee on Atomic Weights:*

F. W. CLARKE, Chairman.

Attention was called to the atomic weight determinations which have been made during 1901.

Sixteen other papers on the program were omitted from lack of time for presentation; most of these will be later published.

J. L. H.

THE ASSOCIATION OF AMERICAN ANATOMISTS.

THE fifteenth session of the Association, meeting with the American Society of Naturalists and affiliated societies, was held at Chicago, Ill., December 31, 1901, to January 2, 1902. The Association met in the Hull Laboratory of Anatomy, Chicago University.

The following extracts are made from the report of the secretary for 1900-01:

There are copies of the printed proceedings on hand from the 6th to the 14th volumes, inclusive, which are available to those who request them, and are especially so for presentation to libraries. A republication of the first five proceedings under one cover is being made.

At the last report there were 125 mem-

bers, 116 of whom were active and nine honorary. During the year twelve active members were elected, two died, one resigned, and three have been dropped for non-payment of dues. The present number is 131 total members, 122 active, 9 honorary.

Dr. Frederick John Brockway, assistant demonstrator of anatomy, Columbia University, New York, died April 21, and Dr. Geo. Wm. West, late professor of anatomy and physiology, medical department, National University, Washington, D. C., died July 24.

The following new members were elected:

Dr. R. R. Bensley, Asst. Prof. Anat., University of Chicago.

Dr. John L. Bremer, Harvard University.

Benson A. Cohoe, A.B., M.D., Asst. in Anat., Cornell University.

Henry H. Donaldson, Prof. Neurology, University of Chicago.

Dr. W. T. Eckley, Prof. Anatomy, College Physicians and Surgeons, Chicago, and Dr. Corinne B. Eckley, Demonstrator of Anatomy, same college.

Albert C. Eycleshymer, Instructor in Anat., University of Chicago.

Irving Hardesty, Ph.D., Instructor in Anat., University of California.

J. Ralph Harris, M.D., Asst. in Anat., Cornell University.

Basil C. Harvey, Asst. in Anat., University of Chicago.

Dr. Arthur E. Hertzler, Halstead, Kansas.

Dr. C. M. Jackson, Prof. Anat., University of Missouri.

Dean D. Lewis, Asst. in Anat., Univ. Chicago.

Dr. Warren H. Lewis, Instructor in Anat., Johns Hopkins.

Andrew H. Montgomery, A.B., M.B., Associate in Anat., Cornell.

Charles Aubery Parker, Instructor in Anat., Rush Med. College.

Daniel G. Revell, Associate in Anat., University of Chicago.

Dr. Fredrick C. Waite, Prof. Histology, Western Reserve University.

Dr. J. Clarence Webster, Prof. Obstetrics, Rush Med. College.

Dr. F. A. Woods, Harvard University.