Moissan,* the production of carborundum by Acheson, the production of the various carbides by Moissan, Wilson, Borcher and others are of great interest from both the technical and scientific side. Whether the calcium carbide, which has been so much discussed and seems such a valuable material for the production of acetylene, will at once take and hold the high position assigned to it by its inventors is still an open question. But whether it shall find extended application in the industries or not; whether it will prove too expensive to compete with benzene as an enricher of an illuminating gas, or as a raw material for the synthesis of alcohol or other substances in a commercial way, it will serve as a convenient and sufficiently inexpensive source of acetylene for experimental purposes, and it will therefore without doubt still become the starting point for many valuable investigations. Nikodem Caro† has already applied the method of Berthelot to the syntheses of alcohol with acetylene liberated from calcium carbide and shown that the yields are so far from the theoretical amounts that immediate application in this direction is at least doubtful. But the results illustrate the possibilities of the advancement of the science through these technical or semi-technical methods.

It would be impossible in such a discussion as this to cover more than a few of the manifold ways in which the science of chemistry has been advanced by the industries, their wants and their wastes. The former have led to the establishment of the great systems of technical schools provided with the magnificent library and laboratory equipments, the state and national experiment stations, the various official boards and commissions for the study of those questions which immediately affect the general welfare, and from each and all of these sources come reports of advances which are most gratifying. The latter,* that is, the industrial wastes, gave us new elements and new compounds and so furnished the material for the establishment of new laws. The soap-boiler's lye gave iodine, the wastes of salt gardens gave bromine, the mother liquors from the springs gave caesium and rubidium, the acid chambers selenium and thallium, and the mines and metallurgical works gave gallium and germanium.

Whether we consider this side of the subject of the advancement of our science from one direction or another, we shall find ample encouragement for combination of forces and for closer union of professional and technical workers in our general field of activity. For the benefits from one side must bring reciprocal benefits from the other.† The principle of action and reaction is as true and as applicable here as in the great domain of physics. Necessity is the most natural stimulant to effort, and honest investigation must call to her aid all knowledge whatever its source and all methods however they may be acquired, and where this is the moving spirit progress is most active. Dr. Ostwald says most justly that "the secret of German industrial chemistry is the recognition that science is the best practice." Is it not equally true that practice which leads to the development of truth is the best science?

William McMurtrie.

New York.

* Chemische Industrie, 1895, 231.

† Chem. Industrie, 1895, 226.

* Roscoe and Schorlemmer, Treatise on Chemistry III. pt. III. 15.

† Garo. Ber. d. d. Chem. Gesell. 25, R. 991 Meyer, Geschichte der Chemie, 469–470.

AMERICAN MICROSCOPICAL SOCIETY.

The eighteenth annual meeting was held in the buildings of Cornell University, Ithaca, N. Y., August 21–23. It was characterized by a large and enthusiastic attendance and a very important program

both in papers and discussions. There were seven papers devoted to botanical subjects, ten to zoölogical and histological topics and fifteen to technical subjects relating to the manipulation of the microscope, its accessories and the material to be examined. Titles of some of the more important papers were the flagella of motile bacteria, by Dr. V. A. Moore, of Washington; corky outgrowths of roots, by Herman Schrenk, of St. Louis; the secondary thickenings of the rootstalks of *Spathyema*, by Mary A. Nichols, of Ithaca; the history of the sex cells from the time of segregation to sexual differentiation in *Cymatogaster*, by Professor C. H. Eigenmann, of Bloomington, Ind.; the morphology of the brain of the soft-shelled turtle and the English sparrow compared, by Susanna Phelps Gage, of Ithaca; the lateral line system of sense organs in Amphibia, by B. F. Kingsbury, Ph. D., of Defiance, Ohio; the primitive source of food-supply in the great lakes, by Professor Henry B. Ward, of Lincoln, Nebraska; formalin as a hardening agent for nerve tissue, by Dr. Wm. C. Kraus, of Buffalo, N. Y.; the use of formalin in neurology, by Dr. P. A. Fish, of Ithaca, N. Y.; and a practical method of referring units of length to the wave length of sodium light by Professor Wm. A. Rogers, of Waterville, Me.

The morning sessions (9:30 to 1) were regularly devoted to the reading and discussion of papers. Following these, on Wednesday afternoon the Society inspected the library and other university buildings and witnessed the ruling of micrometers with a Rogers dividing engine in the physical laboratory. In the evening President Gage delivered the annual address before the Society.

On Thursday afternoon the Society was treated to an excursion on Cayuga Lake by the citizens of Ithaca. The enjoyment of this excursion was greatly increased by the kindness of Professors Tarr and Williams, who explained the geological formations met at the various points.

In the business session on Friday afternoon the project for an international bibliographical bureau of zoölogy was brought before the Society by Professor H. B. Ward, and it was unanimously decided to present the bureau with the proceedings of the Society and also to grant a subsidy of $25 for the coming year.

For the coming year the following officers were elected: President, Dr. A. Clifford Mercer, F. R. M. S., of Syracuse, N. Y.; Vice-Presidents, Edward Pennock, of Philadelphia, and Miss V. A. Latham, M. D., of Chicago; Secretary, Dr. Wm. C. Krauss, of Buffalo, N. Y.; Executive Committee, Dr. C. H. Eigenmann, of Bloomington, Ind; Dr. Hermann Schrenk, of St. Louis, Mo., and Miss M. A. Booth, of Longmeadow, Mass.

The following is a complete list of the papers presented:

1. *Some Notes on Alleged Meteoric Dust:* MAGNUS PFLAUM.
2. *Corky Outgrowth of Roots and Their Connection With Respiration:* H. SCHRENK.
3. *A Practical Method of Referring Units of Length to the Wave Length of Sodium Light:* PROFESSOR WM. A. ROGERS.
4. *Some Peculiarities in the structure of the Mouth Parts and Ovipositor of Cicada septendecim:* PROFESSOR J. D. HYATT.
5. *The Lateral Line System of Sense Organs in Amphibia:* DR. B. F. KINGSBURY.
6. *The Chlorophyll Bodies of Chara Coronata:* PROFESSOR W. W. ROWLEE.
7. *Secondary Thickenings of the Rootstalks of Spathyema:* MARY A. NICHOLS.
8. *Comparison of the Fleischel, the Gower and the Specific Gravity Method of Determining the Percentage of Hemoglobin in Blood for Clinical Purposes:* F. C. BUSCH and A. T. KERR, JR.
9. *The History of the Sex-Cells From the Time of Segregation to Sexual Differentiation in Cymatogaster:* PROFESSOR C. H. EIGENMANN.
10. *A Fourth Study of the Blood Showing the Relation of the Colorless Corpuscle to the Strength of the Constitution:* DR. M. L. HOLBROOK.

11. *Two Cases of Intercellular Spaces in Vegetable Embryos:* K. M. WIEGAND.
12. *The Fruits of the Order Umbelliferæ:* DR. E. J. DURAND.
13. *The Action of Strong Currents of Electricity Upon Nervous Tissue:* DR. P. A. FISH.
14. *The Morphology of the Brain of the Soft-Shelled Turtle and the English Sparrow Compared:* SUSANNA P. GAGE.
15. *The Flagella of Motile Bacteria:* DR. V. A. MOORE.
16. *The Primitive Source of Food Supply in the Great Lakes:* PROFESSOR HENRY B. WARD.
17. *Some Experiments in Methods of Plankton Measurements:* PROFESSOR HENRY B. WARD.
18. *The Fruits of the Order Compositæ:* PROFESSOR W. W. ROWLEE and K. M. WIEGAND.
19. *The Spermatheca and Methods of Fertilization in Some American Newts and Salamanders:* DR. B. F. KINGSBURY.
20. *Cocaine in the Study of Pond-Life:* PROFESSOR H. S. CONSER.
21. *Paraffin and Colodion Embedding:* PROFESSOR H. S. CONSER.
22. *Formalin as a Hardening Agent for Nerve Tissue:* DR. WM. C. KRAUSS.
23. *The Use of Formalin in Neurology:* DR. P. A. FISH.
24. *The Lymphatics and the Lymph Circulation With Demonstrations of Specimens and Apparatus:* DR. GRANT S. HOPKINS.
25. *New Points in Photo-Micrographs and Cameras:* W. H. WALMSLEY.
26. *The Question of Correct Naming and Use of Micro-Reagents:* MISS V. A. LATHAM, M. D.
27. *A New Way of Marking Objectives:* DR. WM. C. KRAUSS.
28. *Demonstration of Histological Preparations by the Projection Microscope:* DRS. KRAUSS and MALLONEE.
29. *Improvements in the Collodion Method:* PROFESSOR S. H. GAGE.
30. *The Syracuse Solid Watch Glass:* DR. A. C. MERCER.
31. *A Metal Centering Block:* MAGNUS PFLAUM.
32. *A New Cell and a New Method of Mounting in Glycerin:* MAGNUS PFLAUM.

NOTES ON ENGINEERING.

THE BRITISH INSTITUTE OF MECHANICAL ENGINEERS.

THE Institute held its annual convention the first week in August at Glasgow, Professor A. B. W. Kennedy presiding. The principal papers and discussions related to the economics of gas production and of the water supply of cities as a source of hydraulic power. The list was brief but the papers valuable and purely technical. Mr. Biggart described the application of hydraulic apparatus in the operation of charging retorts and in drawing the coke. The result was the doubling of the output with a stated force of men. Some 200 of the machines described are already in use. If applied to the whole manufacture in Great Britain, the estimated saving would be some $2,000,000 annually on eight millions of tons of coal. Glasgow and other great cities have them in use. The manager of the Glasgow works stated that the machines used in their works on a half-million tons of coal annually are in use night and day and give no trouble whatever.

Mr. Ellington described the existing systems of hydraulic transmission of power in Glasgow and Manchester, where pressures of 1120 pounds per square inch had been adopted; the customary figure being 700 to 800. Their method of transmission was succeeding admirably in intermittent work, and especially for packing presses. This power was in use, here and there, in London for operating dynamos. The charge for water is equivalent to threepence per brake horse power per hour. In South America this method has been applied in extensive drainage.

THE CONGRESS OF SANITARY ENGINEERS AND ARCHITECTS.

REPORTS of the work of Congress held recently in Paris and attended by foreign as well as French professionals indicate that much remains still to be done to complete a modern satisfactory system. More questions were propounded than answered, by far, and many schemes proposed by members were found impracticable by those actually engaged in such work. Much was said of methods of economizing water with-