The 'architectural' method is in fact the only method by which we can reasonably hope to make progress in the synthesis of the various complex products found in nature; experience has shown that when the architecture of a definite chemical compound, no matter how complex, has once been thoroughly worked out, it is then often a comparatively simple matter to accomplish its synthesis—whereas the preliminary work may require decades of time.

The plant, which is the great synthetic agent in nature, manufactures at ordinary temperatures under comparatively simple conditions from the carbon dioxide of the air and from the material found in the soil—water, phosphates, nitrates, potassium and ammonium salts, etc.—a vast variety of complex carbon compounds which subsequently undergo various chemical changes in the animal world. There is abundant justification for the conclusion that when the conditions under which these various chemical processes take place are better understood we may reasonably hope to accomplish all these transformations in the laboratory. Much of the faithful and laborious work carried on by investigators in the field of carbon chemistry during the past seventy or more years must in fact be considered preliminary to the accomplishment of this great end.

Baeyer has always shown an unusually great interest in this direction; his indigo work, all his condensation work with aldehydes, alcohols, phthalic anhydride and various benzene derivatives, as well as his synthetic work in the pyrrol, indol, pyridine and quinoline series —all were undertaken with this end in view. He has emphasized the important rôle which formaldehyde must play in the conversion of the carbon dioxide of the air by plants into sugar and starch and has also in this connection discussed theoretically, in 1870, the chemistry of fermentation.

His very important work on the constitution of benzene from 1866–73 and from 1885–94, although fruitless in the main point at issue, led to a thorough and systematical development of the chemistry of di-, tetra- and hexahydro-benzene compounds; this work naturally led him into the field of terpentine chemistry, on which he has spent eight years, from 1893–1901, working out the 'architecture' of many of these important vegetable products as well as synthesizing some of the simplest representatives of the series.

His most recent work has dealt with peroxides, with dibenzalacetone and triphenylmethane and with the basic properties of oxygen. The fact that all carbon compounds containing oxygen, except the peroxides, are capable of forming oxonium salts, containing quadrivalent oxygen, was established by Baeyer on the basis of Collie and Tickle's work on dimethylpyrone; this discovery has excited very general interest.

J. U. NEF.

SOCIETIES AND ACADEMIES.

THE IOWA ACADEMY OF SCIENCE.

THE twentieth annual meeting of the Iowa Academy of Science was held on April 20–21, 1906, in the botanical rooms of the Iowa State College, Ames, Ia. The magnificent new Central Hall was placed at the disposal of the academy. The meetings were all held in the botanical rooms with the exception of the Friday afternoon meeting, which was held in the physics lecture room of Engineering Hall.

Friday afternoon Dr. Hermann von Schrenk, of the U. S. Department of Agriculture, gave an address on the work of the 'Division of Pathology.' On Friday evening Professor Charles R. Barnes, of the University of Chicago, gave an illustrated lecture on 'How Plants breathe.' On Saturday forenoon Professor Charles E. Bessey, of the University of Nebraska, formerly of Iowa State College, gave an address on 'The Forest Trees of Eastern Nebraska.' The meeting of 1906 was probably the most enjoyable in the history of the academy.

The officers for the coming year are:

President—Professor C. O. Bates, of Coe College, Cedar Rapids.

First Vice-president—Professor G. E. Finch, Marion.

Second Vice-president—Professor A. A. Bennett, Iowa State College, Ames.

Treasurer—Professor H. E. Summers, of Iowa State College, Ames.

Secretary—Professor L. S. Ross, of Drake University, Des Moines.

The meeting in 1907 will be held at Drake University.

The following program was presented:

M. F. Arey: 'A Review of the Development of Mineralogy.'

H. W. Norris: 'The Carotid Arteries and their Relation to the Circle of Willis in the Cat.'

N. Knight: 'A Study of Dolomite and Magnesite with special reference to the Separation of Calcium and Magnesium.'

Bruce Fink: 'Ecological Notes from an Illinois Esker.'

J. Fred Clark: 'The Disparity between Age and Development in the Human Family.' (Illustrated by pronounced cases due to thyroid malformations.)

L. H. Pammel: 'Some Diseases of Rocky Mountain Plants.'

John L. Tilton: 'An Attempt to illustrate Tides and Tidal Action.'

J. E. Todd: (*a*) 'More Light on the Origin of the Missouri River Loess,' (*b*) 'Some Variant Conclusions in Iowa Geology.'

W. S. Hendrixson: (*a*) 'The Action of Bromic Acid on Metals,' (*b*) 'Logarithmic Factors for Use in Water Analysis,' (*c*) 'A List of Chemical Periodicals in Iowa.'

T. J. Fitzpatrick: 'The Liliaceæ of Iowa.'

L. Begeman: 'Mutual Induction and Internal Resistance of a Battery.'

Bruce Fink: 'Lichens and Recent Conceptions of Species.'

T. E. Savage: 'Some Unusual Features of the Maquoketa Shale in Jackson County, Iowa.'

A. T. Erwin: '*Amelanchier alnifolia* and its Cultivated Forms.'

Paul Bartsch: 'The Iowa Ornithological Literature of the Nineteenth Century.'

Walter J. Meek: 'A Study of the Choroid Plexus.'

Frank F. Almy: (*a*) 'The Effect of Pressure on Lines in the Spectrum of Iron,' (*b*) 'A Simple Demonstration of the Doppler Effect in Sound,' (*c*) 'The Physical Laboratory of Iowa College.'

G. E. Finch: 'A Portion of the Iowan Drift Border in Fayette County, Iowa.'

B. A. Place: 'The Relation of the Motor Nerve Endings to Voluntary Muscle in Amphibia.'

Fred J. Seaver: 'Notes on the Discomycete Flora of Iowa.'

Charles R. Keyes: (*a*) 'Lime Creek Fauna of Iowa in Southwestern United States and Northern Mexican Region.' (*b*) 'Geology of the Corinth Canal Zone.' (*c*) 'Alternation of Fossil Faunas.'

J. E. Guthrie: 'The Collembolan Eye.'

J. M. Lindly: 'Flowering Plants of Calcasieu Parish, Louisiana.'

F. A. Brown: 'Some Contributions to Madison County Geology.'

O. M. Oleson and M. P. Somes: 'Flora of Webster County, Iowa.'

K. E. Guthe: 'Electrical Units.'

H. P. Baker: 'The Holding and Reclamation of Sand Dunes by Tree Planting.'

L. S. Ross: (*a*) 'The Food of Subterranean Crustacea,' (*b*) 'Number of Bacteria in Des Moines School Buildings.'

B. O. Gammon: 'Cladocera in the Vicinity of Des Moines.' Presented by L. S. Ross.

D. W. Morehouse: 'Photographic Accessories of Drake University Equatorial.' Introduced by L. S. Ross.

C. O. Bates: 'Municipal Hygiene—Part II., Milk.'

B. Shimek: (*a*) 'Notes on Certain Iowa Trees and Shrubs,' (*b*) 'The Loess of the Missouri Bluffs.'

J. A. Udden: 'Cyclonic Distribution of Precipitation.'

L. S. Ross,
Secretary.

DISCUSSION AND CORRESPONDENCE.

THE MUTATION THEORY AGAIN.

Certain objections to the mutation theory of de Vries have called forth the wrath of Professor C. S. Gager, and he emphatically demands that this theory should be thoroughly understood before we discuss it.[1] With more zeal than discretion he affirms that this lack of understanding is shown in two recent articles published in Science, one of which has the present writer for its author;[2] he calls these articles a display of mental density, claiming that the views of de Vries have been misrepresented; but with reference to my own paper he only succeeds in demonstrating that he in turn has entirely failed to grasp the

[1] De Vries and his critics, in Science, July 20, 1906, p. 81 ff.

[2] Science, May 11, 1906, p. 746 ff.