of every subject in which advance has been made within four years. To give one other example, on pages 384–5 of the later edition the evidence concerning the movements of the upper air currents around cyclones which has been obtained by means of *ballons-sondes* is added to what was included in the first issue. The most important additions naturally concern the results obtained in the free air with balloons and kites, and all the important results obtained up to the time of printing the book are discussed, including the newer investigations of Bigelow, Shaw and Hildebrandsson. The recent Antarctic expeditions have contributed towards making this volume thoroughly complete up to date.

The second edition differs from the first in having larger type for the main portion of the text, which improves the book decidedly, and in the omission of a good many of the fine-print passages which rather clogged the first edition so far as easy reading was concerned, although they contained much valuable matter. There have been added a useful table of monthly and annual mean temperatures for about 140 different stations scattered over the world, many of these means having been newly determined by the author; a small table of monthly rainfalls for some of the more important stations; a vapor-pressure table, and a table for the convenient calculation of differences of altitude from barometer readings. The first edition had 805 pages; the second has 642. There is thus a considerable reduction, brought about by the omissions just referred to, but in spite of this shortening, the new book is extraordinarily complete, and for all ordinary purposes will serve as the authority beyond which there is no need of going. For detailed investigations of special points, however, it will be necessary to refer to the fuller bibliographical notes of the earlier edition. For the working meteorologist both books are needed. The climatologist also, in spite of the extraordinary richness of the material in the same author's 'Handbuch der Klimatologie,' will find many of the data and discussions in the 'Lehrbuch' invaluable as supplementary to the 'Handbuch.'

Meteorologists may well congratulate themselves on having the 'Lehrbuch' in its new form. Their fellow workers in other sciences may well envy them. For it does not happen to every scientist that the master mind in his subject produces a volume so wholly beyond the possibility of unfavorable criticism; so indispensable; so sure to last for years as the undisputed authority.

R. DEC. W.

SOCIETIES AND ACADEMIES.

THE TORREY BOTANICAL CLUB.

THE meeting of November 14, 1905, was called to order by President Rusby in the American Museum of Natural History. Twenty persons were in attendance.

Dr. C. Stuart Gager was elected recording secretary to succeed Mr. Edward W. Berry, resigned.

The first number on the scientific program was a paper by Dr. D. T. MacDougal on 'Bud Sports.'

The speaker gave an outline of the subject of bud sports and described some illustrative cases. Three striking examples from the cultures of the evening primroses in the New York Botanical Garden in 1905 were discussed. In one, a hybrid gave a flowering branch which sported into the characters of a sister hybrid; in the second, a fixed hybrid produced a branch constituting a reversion to one of the parents, a third, a mutant of the common evening primrose, produced a branch which resembled the parental form. Attention was called to the fact that all mutations are essentially vegetative and, therefore, a greater terminology would necessitate the use of the terms 'bud sport' or 'bud mutant,' or 'seed sport' or 'seed mutant.' While seed mutants may theoretically be traced to one cell, it seems difficult to do this in the case of bud sports. The action of the growing point in the protection of buds was illustrated with diagrams, and an enlarged photograph of one of the bud sports was exhibited.

Dr. Tracy Hazen exhibited a hybrid between *Asplenium murrare* and *A. trichomenes* from Vermont.

The meeting of January 31, 1906, was held at the New York Botanical Garden. President Rusby presided, and twenty-seven persons were present.

Dr. Britton exhibited the photographic reproduction of the 'Dioscurides Codex Aniciæ Julianæ picturis illustratus, nunc Vindobonensis Med. gr. I phototypice editus,' recently acquired by the Library of the New York Botanical Garden.

This work is of the utmost importance in the study of the history of botany, on account of the large number of pictures of plants which were for the most part based on originals presumably of the fifth century, and are now here reproduced in facsimile for the first time. The original manuscript is one of the treasures of the Imperial Library of Vienna. It is said to date from 512 A.D., and was written and the miniatures painted for the Princess Anicia Juliana, of Byzantium, and is the basis of all the early herbals. The work is Vol. 10 of the 'Codices Græci et Latini Photographici Depicti,' a series of reproductions of valuable manuscripts issued under the editorial supervision of Dr. de Vries, the librarian of the University of Leyden. It consists of two folio volumes bound in heavy oak boards and is a faithful facsimile of the celebrated original, reproducing it down to the smallest fragment. The plates are of great beauty and remarkable for a certain vigorous distinction and decorative character that illustrators of the present day would do well to study. Not the least interesting are the miniatures showing groups of physicians and botanists in conclave, painters at work on plant pictures, the portrait of the lady Juliana, herself, and lastly a most beautiful ornamental title page. Historical, prefatory and descriptive matter are by Anton von Premerstein, Carl Wessely, and Joseph Mantauni.

Previous to the present reproduction, plates of this manuscript were prepared under the supervision of Jacquin, two impressions of which are known to be in existence, the one having been in the possession of Linnæus is now in the library of the Linnæan Society of London; the other was sent to Sibthorpe to be used in the compiling of his 'Flora Græca.' This last copy is now preserved at Oxford.

The first paper on the program as announced was by Professor L. M. Underwood, on 'Six New Fern Genera in the United States.' Professor Underwood gave a brief account of the additions to the fern flora of the United States since the year 1900. Six genera and over forty species are included in the list which also includes several species new to science. The list will appear in the *Bulletin* for March. The genera new to the country, and some of the more interesting species were exhibited. The paper was discussed by President Rusby and Dr. Murrill.

The second paper was by Mr. H. A. Gleason, entitled, 'Notes on the Flora of Southern Illinois.' The southern portion of Illinois is crossed by an eastern prolongation of the Ozark Mountains, which have a marked influence on the rainfall. The flora is characterized by the presence of about four hundred species of distinctively southern plants, constituting three separate floras, each of which has entered the state from a different direction. Of these, the most sharply defined is the coastal plain flora which has entered the region by migrating up the Mississippi River from the south. The extensive cypress swamps are largely composed of coastal species. An Alleghenian element has crossed the highland region of Kentucky and southern Indiana, and is well represented in Illinois in the area of heavy rainfall along the Ozark hills. The third is a southwestern flora, characterized mainly by xerophilous species. They have migrated along the Ozark uplift through Missouri, but in Illinois they have for the most part left the hills for the arid region just to the north. The three migration routes all follow ecological isotones and the three floras are never associated.

The last paper was by Mr. R. S. Williams, on 'Plant Collecting in the Philippines.' The speaker gave an account of his recent botanical journey to the islands, describing briefly the country and its inhabitants, and some of his experiences in collecting.

Professor Underwood was asked to act as

delegate to the council of the Scientific Alliance for 1906. C. STUART GAGER,
Secretary.

THE AMERICAN CHEMICAL SOCIETY. NEW YORK SECTION.

THE fourth regular meeting of the season was held at the Chemists' Club on Friday, January 5, at 8:15 P.M. The vice-chairman, Dr. A. A. Breneman, presided. The following papers were presented.

Is the Optical Rotatory Power an Additive Property of Asymmetric Carbon Atoms? M. A. ROSANOFF.

In the memoir founding the science of stereo-chemistry in 1875, van't Hoff made the well-known assumption that when two or more asymmetric carbon atoms are associated in a molecule, the rotation due to each is independent of the rotations due to the others. The assumption was made the subject of extensive experimental inquiry, carried on between 1893 and 1896, on the one hand by Guye (of Geneva) and his pupils, on the other hand by Walden (of Riga). The results seemed to establish the correctness of the assumption beyond possibility of doubt, and the verified assumption was incorporated in stereo-chemistry as 'The Principal of Optical Superposition.' The author now demonstrates that Guye's and Walden's experimental method was theoretically faulty, so that the results fail to serve the object of the experiments. Having thus reopened the question as to the correctness of van't Hoff's assumption, he considers it in the light of facts that do have a bearing on it, and comes to the conclusion that van't Hoff's principle is wrong and should be replaced by a new principle, provisionally formulated as follows: The rotatory power of an asymmetric carbon atom depends upon the composition, constitution and configuration of each of its four groups.

On 5-Amino-4-ketodihydroquinazoline and 5-Amino-2-methyl-4-ketodihydroquinazoline: VICTOR JOHN CHAMBERS and MARSTON TAYLOR BOGERT.

The authors prepared the above quinazolines by reducing the corresponding nitro compounds. Of the 5-amino-4-ketodihydroquinazoline, its hydrochloride, chlorplatinate; bibrom, acetyl, benzoyl and phenyluramino derivatives were investigated; as well as its reactions with nitrous acid, chloroform and potassium hydroxide, and with benzaldehyde. Of the 5-amino-2-methyl-4-ketodihydroquinazoline, beside the free base, only the hydrochloride and chloraplatinate were prepared.

On Phosphotungstates of Amino Acids: P. A. LEVENE.

In the course of a study of the products of tryptic digestion of gelatine the author made the observation that glycocol formed a crystalline precipitate on treatment with phosphotungstic acid. This observation led to an investigation into the conditions required for the formation of this phosphotungstate as well as for the formation of insoluble phosphotungstates of other acids.

It was noted that insoluble phosphotungstate could be formed with glycocol, alanin, leucine, glutanic and aspartic acids. Further it was observed that the physical properties, and the solubilities of the phosphotungstates differ to such an extent as to make possible a separation of the individual acids by means of their phosphotungstates.

Dr. Beatty and the author at present are engaged in an effort to apply the method to the study of the products of hydrolysis of proteids. While this work was in progress there appeared a publication by Skraup in which mention is made of the property of glycocol of analin to form crystalline phosphotungstates.

THE section held its fifth regular meeting of the season at the Chemists' Club, on Friday evening, February 9.

The president of the American Chemical Society, Dr. W. F. Hillebrand, presented to Professor Marston Taylor Bogert, of Columbia University, the Nichols medal, which was awarded to him for his researches on the quinazolines.

The regular program of the evening was then taken up and the following papers read:

The Osazone Test for Glucose and Fructose, as influenced by Dilution, and by the Presence of other Sugars: H. C. SHERMAN and R. H. WILLIAMS.

In pure glucose solutions tested at constant volume with fixed amounts of phenylhydrazine hydrochloride and sodium acetate, the time required for the precipitation of osazone varies with the amount of glucose present and is nearly constant for any given dilution. Pure solutions of fructose show similar variations with concentration, but always yield a precipitate of osazone in about one third the time required by the same amount of glucose. Invert-sugar reacts almost as readily as fructose. Maltose retards precipitation of glucosazone, interfering much more seriously with glucose than with fructose. Lactose interferes in a similar manner and to a greater degree than maltose.

Some Derivatives of Citronellal: F. D. Dodge.

The paper is a continuation of the author's previous work on citronellal (*American Chemical Journal,* XI., XII.). The preparation and properties of the so-called citronellal-phosphonic acid and a number of its salts are described.

The decomposition of the sodium salt by heat yielded a secondary alcohol, apparently identical with the iso-pulegol of Tiemann. This reaction, together with the general properties of the acid indicates that it is really a derivative of iso-pulegol, and should properly be called iso-pulegol-phosphonic, analogous to the phosphonic acids of the aromatic series.

The formation of this acid may be utilized for the identification of citronellal, when the latter is present in large amount, and even small quantities of the acid can be detected by means of the characteristic silver salt. The author was unable, however, to confirm the alleged occurrence of citronellal in oil of lemon by means of this reaction.

F. H. Pough,
Secretary.

THE SOCIETY OF GEOHYDROLOGISTS, WASHINGTON.

A special meeting of the society was held on January 29 for the purpose of discussing the significance of the term 'artesian' and of adopting definitions covering its use. As a result of the discussion the following definitions were provisionally adopted, subject to such changes in wording as may be necessary:

DEFINITIONS OF 'ARTESIAN.'

Artesian Principle.—The artesian principle, which may be considered as identical with what is often known as the hydrostatic principle, is defined as the principle in virtue of which water confined in the materials of the earth's crust tends to rise to the level of the water surface at the highest point from which pressure is transmitted. Gas as an agent in causing the water to rise is expressly excluded from the definition.

Artesian Pressure.—Artesian pressure is defined as the pressure exhibited by water confined in the earth's crust at a level lower than its static head.

Artesian Water.—Artesian water is defined as that portion of the underground water which is under artesian pressure and will rise if encountered by a well or other passage affording an outlet.

Artesian System.—An artesian system is any combination of geologic structures, such as basins, joints, faults, etc., in which waters are confined under artesian pressure.

Artesian Basin.—An artesian basin is defined as a basin of porous bedded rock in which, as a result of the synclinal structure, the water is confined under artesian pressure.

Artesian Slope.—An artesian slope is defined as a monoclinal slope of bedded rocks in which water is confined beneath relatively impervious covers owing to the obstruction to its downward passage by the pinching out of the porous beds, by their change from a pervious to an impervious character, by internal friction, or by dikes or other obstructions.

Artesian Area.—An artesian area is an area underlain by water under artesian pressure.

Artesian Well.—An artesian well is any well in which the water rises under artesian pressure when encountered.

M. L. Fuller,
Secretary.

DISCUSSION AND CORRESPONDENCE.

THE KELEP EXCUSED.

If Dr. Cook will revert to my paper published in Science, Vol. XX., 1904, pp. 766–768, he will notice that I did not promise to keep silence till the Greek Kalends, but merely expressed my willingness to wait till that date for the extermination of the cotton boll-weevil by the keleps he had introduced from Guatemala. And I am still waiting. I did, indeed, promise to let the insect rest, as I supposed