and that ideas of the life activities of plants are among the most valuable in the subject-matter of botany, the case seems fairly complete for a course dominated by physiology.

In mentioning this seeming corollary I would not have it confounded with the principle which is here advanced. The principle should hold at all events. If a given teacher finds his classes to be most interested and to work hardest in morphology, then morphological problems should claim the laboratory time. The principle is to make any needful sacrifice in order to achieve the main object, to keep the student at his maximum of interest and independent effort.

CHARLES H. SHAW

SOCIETIES AND ACADEMIES

THE NEW YORK ACADEMY OF SCIENCES, SECTION OF GEOLOGY AND MINERALOGY

AT the regular monthly meeting of February 3, 1908, the following program was presented:

On Determination of Mineral Constitution through Recasting of Analyses: ALEXIS A. JULIEN.

The results of investigations continued along the line of complex mineral micro-aggregates, brought before the academy at the January meeting, were shown in a series of charts. It appears certain in the case of very complex mineral analyses, after giving due weight to the physical characters and origin of the substances, together with the readiness with which these analyses yield to the process of recasting, that many so-called mineral species are in reality very complex micro-aggregates. One illustration, taken from the complete paper, which is to be issued in the *Annals* of the New York Academy of Sciences, Vol. XVIII., Part II., No. 3, is here given as a suggestive case.

Diabantite, from Farmington Hills, Conn.: Mean of two analyses by G. W. HAWES.

		Per Cent
Silica	SiO_2	33.46
Alumina	Al_2O_3	10.96
Ferric oxide	Fe_2O_3	2.56
Ferrous oxide	FeO	24.72
Manganous oxide	MnO	.39
Lime	CaO	.92
Magnesia	MgO	16.52
Soda	Na_2O	.29
Water	H_2O	9.96
Total		99.78

This is said, by the analyst, to be "a unisilicate of the pyrosclerite group, with the formula,

$$(\tfrac{2}{3}\dot{R}_3 + \tfrac{1}{3}\ddot{A}\dot{l})\ddot{S}i_3 + 3\dot{H}.$$

Dana states that the figures "correspond to the formula $R_{12}(R_2)_2Si_9O_{36} + 9aq$, which is near to that of pyrosclerite," and also

"*Comp.* $H_{18}(FeMg)_{12}Al_4Si_9O_{45}$, or

$$12(FeMg)O\ 2Al_2O_3\ 9SiO_3\ 9H_2O."$$

In the recalculation Dr. Julien assumes for the residual pyroxene the same composition as was determined by Hawes for that mineral from an outcrop of diabase in the same region. On this basis the following hypothetical constituents are indicated:

	Per Cent.
Pyroxene (residual)	6.78
Enstatite (residual)	10.45
Prochlorite	54.45
Ekmanite	16.33
Deweylite	8.42
Limonite	2.99
Periclase (magnesia)	0.36

It is apparent by making further comparison that diabantite is not identical with diabantachronyn, and it is not at all likely that any specimens of either mixture are ever identical.

The Annual Meeting of the Geological Society of America, Albuquerque, N. M., December 30–31, 1907: E. O. HOVEY.

An account of the chief points of interest in connection with the meeting was given.

A Revised Cross-section of the Rondout Valley along the Line of the Catskill Aqueduct: CHARLES P. BERKEY.

Explorations of the Board of Water Supply of New York City are now almost completed across the Rondout Valley. There are twelve distinct formations of stratified rock involved, all of which will be cut by the projected pressure tunnel. One unconformity in the series separates the Ordovician Hudson River slates from the overlying conglomerates, shales, sandstones and limestones of Silurian and Devonian age. There are three faults of considerable displacement, together with smaller ones and minor foldings. In the effort to determine the variations of these formations as to thickness, depth from surface, displacements, physical conditions, water content and capacity, the presence of caves or relative solubility, and the position and depth of the buried channels beneath the drift cover, the available figures are

so abundant that the cross-section may be considered accurate within a few feet for a considerable proportion of the whole width of the valley, a distance of four miles, and to a depth of 300 to 500 feet. Several drawings illustrating these features in detail, originally prepared for the chief engineer of the Board of Water Supply, were shown by permission, and the successive stages in interpretation of results were pointed out.

Present Trend of Investigation on Underground Waters: James F. Kemp.

Within a few years there has been a marked change of views upon the sources, distribution and extent of underground waters. As recently as 1900, in one of the most important discussions, they were believed to be practically continuous from the groundwater level to the depth of possible cavities and to be almost, if not quite, solely of meteoric origin. Whereas now a very large number of geologists have come to regard the underground water as limited to a comparatively shallow zone; to refer uprising heated waters from deeper zones to magmatic sources in cooling and consolidating bodies of igneous rock; and to attribute some part of the underground waters to the same place of origin. In the interpretation of ore-bodies magmatic waters have been found to be much more reasonable agents of deposition, in many cases, than are the meteoric.

In 1901, on the basis of experience in mines, Professor Kemp made the argument that the groundwater only extended to depths of 1,000 to 2,000 feet. Recently this has had strong corroboration in a paper by M. L. Fuller, of the U. S. Geological Survey (Water Supply and Irrigation Papers, No. 160, pp. 61, 62, 72). Delesse, in 1861, estimated the groundwater as equal to a layer over the globe 7,500 feet deep; Schlichter, in 1902, as equal to one 3,000 to 3,500 feet; Van Hise, in 1904, 226 feet; Chamberlin and Salisbury, in 1904, 800 to 1,600 feet; Fuller, with the completest data of all, to one of only 96 feet. If we assign to the rocks an average of 5 per cent. of cavities, 96 feet of water would just about extend to 2,000 feet, and if 10 per cent. of voids, to 1,000 feet depths, strongly corroborative of the original argument and per cents. used in previous discussions.

From this we are forced to conclude that meteoric sources and underground amounts have been much overestimated.

Chas. P. Berkey,
Secretary of Section

The Texas Academy of Science

At the regular meeting of the Texas Academy of Science, held in the Engineering Building of the University of Texas, February 21, 1908, Miss May Jarvis, B.A., tutor in zoology in the university, presented a paper on "Lord Monboddo, a Precursor of the Darwins"; Professor T. U. Taylor, dean of the department of engineering, followed with "Notes on City Surveying," and Dr. William T. Mather, professor of physics, gave a brief sketch of the life and work of Lord Kelvin.

On Friday, March 13, Dr. J. W. McLaughlin, of Austin, a regent of the university and former member of the medical faculty, read a carefully prepared paper entitled "A New Theory of Ferments" which, with the discussion that followed, occupied the entire session.

At the meeting of the academy held April 11, Dr. G. S. Fraps, state chemist, College Station, Texas, discussed "Soil Fertility and Phosphoric Acid."

The program of the meeting for May 8 included "The Law of Fall of Rivers and the Value of the Deduced Curve in River Improvements," by Mr. F. Oppikoffer, U. S. Engineer, Department of Texas, Tarpon, Texas, and a lecture "On Apoidal Stars," by Dr. H. Y. Benedict, professor of applied mathematics in the university.

At the formal meeting, held June 8, papers entitled "Some Figures on the Cost of Freight and Passenger Train Service," by Mr. R. A. Thompson, expert engineer for the Railroad Commission of Texas, and "Fossil Tracks in the Del Rio Clay," by Professor J. A. Udden, of Rock Island, Illinois, were read by title. The ballots having been duly counted the following officers for the year 1908–9 were declared elected:

President—Dr. Eugene P. Schoch, University of Texas, Austin.

Vice-President—Dr. G. S. Fraps, A. and M. College of Texas, College Station.

Treasurer—Mr. R. A. Thompson, C.E., Austin.

Secretary—Dr. Frederic W. Simonds, University of Texas, Austin.

Librarian—Mr. P. L. Windsor, librarian of the university, Austin.

Members of the Council—Hon. A. E. Wilkinson, Austin; Dr. Homer Hill, Austin; Professor O. C. Charlton, Bryan, Texas.

Frederic W. Simonds,
Secretary

Austin, Texas,
July 15, 1908