

By successive applications of the formula, curves were constructed for negative amphiboles on rectangular coordinates, in which the ordinate indicates the value of the extinction-angle on (010), and the abscissa the amount of rotation of the 'plan mobile,' out of the plane of symmetry toward the orthopinacoid. These curves were plotted for amphiboles in which the optical angle is  $50^\circ$ ,  $60^\circ$ ,  $70^\circ$ ,  $80^\circ$ , and the extinction-angle on (010), in each case,  $10^\circ$ ,  $15^\circ$  or  $20^\circ$ . To these were added the analogous curves for  $2V=90^\circ$ . The last were unlike the former in that they showed no maximum value of extinction between (010) and (100). When the optical angle is small, the maximum extinction may be found to be in a plane far removed from (010), contrary to the statement of Zirkel that the maximum must always lie in the plane of symmetry.

Secondly, a method for determining the extinction-angle of amphiboles and pyroxenes (010) was proposed. The object of this new method is to avoid cutting oriented sections, as this operation is manifestly impossible with many rock-forming varieties.

'Two Remarkable Explosions in the New York Oil District' were described by Mr. L. LaForge. On March 1, 1898, three hundred quarts of nitro-glycerine exploded in a magazine, about one mile east of Wellsville, N. Y. Structures in that village suffered much damage; chimney-tops fell and windows were broken inward. One week later, six hundred quarts of nitro-glycerine exploded in the new magazine on the same spot. In this case no serious damage to buildings in the village resulted, although the report and shock of the explosion extended much farther. When the former explosion took place the ground was frozen, but before the latter occurred it had thawed out. It is to this fact that the people of Wellsville attribute the difference between the results of the two explosions.

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THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of the Academy of Science of St. Louis on the evening of December 5, 1898, Mr. H. von Schrenk presented by title a

paper 'On the Mode of Dissemination of *Usnea barbata*,' and Professor L. H. Pammel presented by title a paper on 'The Histology of the Caryopsis and Endosperm of some Grasses.'

Dr. Theo. Kodis presented the results of some experiments on overcooling animal and vegetable tissues, in which it was shown that, as water may, under favorable conditions, be cooled to some distance below zero, Centigrade, without freezing—the temperature immediately rising to the freezing point the moment that freezing begins, and remaining there until the water is entirely solidified, then beginning once more to drop—so, when animal and vegetable tissues are experimented on, they may be cooled to a temperature decidedly lower than the freezing point, under favorable conditions, before freezing begins, but that, when it begins, the temperature at once rises to the freezing point (which is always somewhat lower than that of pure water), remaining there until the process of freezing is complete, when it once more begins to fall. The speaker gave a short account of the current theories as to the mechanical constitution of protoplasm, and discussed the bearing on them of the phenomena when the solidification of overcooled tissues began.

WILLIAM TRELEASE,  
Recording Secretary.

#### NEW BOOKS.

- Aperçus de taxonomie générale.* J. P. DURAND. Paris, Felix Alcan. 1899. Pp. 265. 5 fr.
- Natalité et Démocratie.* ARSÈNE DUMONT. Paris, Schleicher Frères. 1898. Pp. 230.
- Catalogus Mammaleum tam viventium quam fossilium.* E. L. TROUSSART. Berlin, R. Friedländer und Sohn. 1898. Fasciculus IV. and V. Pp. 665–1264. 26 Marks.
- Principles of Biology.* HERBERT SPENCER. New York, D. Appleton & Co. 1898. Revised and Enlarged Edition. Vol. I. Pp. x + 706. \$2.00.
- Degeneracy.* EUGENE S. TALBOT. London, Walter Scott, Ltd.; New York, Charles Scribner's Sons. 1898. Pp. xvi + 37. \$1.50
- Psychologie der Veränderungsauffassung.* L. WILLIAM STERN. Breslau, Preuss und Yünger. 1898. Pp. viii + 264.