his doctor's degree with Professor Gorham at Brown University this spring.

DR. O. D. VON ENGELN has been promoted to an assistant professorship of geography at Cornell University.

DR. GRAHAM EDGAR has been promoted to be associate professor of chemistry at the University of Virginia.

PROFESSOR J. L. GILLIN, of the State University of Iowa, who has been teaching sociology there for the past five years, has accepted a call to the University of Wisconsin, service to begin with the opening of the next school year. The work of Professor Gillin at the University of Wisconsin will be to teach courses in sociology during one semester of the year and the remainder of his time will be spent as secretary of the department of general information and welfare, one of the four departments in the extension division of the university.

MR. M. POWER, lecturer in mathematics at Dublin, has been appointed professor of mathematics at Galway.

PROFESSOR F. G. DONNAN, Muspratt professor of physical chemistry at Liverpool, has declined the chair of chemistry at University College, London, vacant by the retirement of Sir William Ramsay, K.C.B.

DISCUSSION AND CORRESPONDENCE

THE NATURE OF THE INHERITANCE OF HORNS IN SHEEP

To our communication in SCIENCE of March 8 Professor Castle has offered[1] a vigorous critique. A wordy continuation of the discussion of a matter most of whose points can be easily settled by experiments now under way would be to imitate the methods of an old continent and a past epoch in biology. We may add only that the simple Batesonian formula which Dr. Castle seems to find sufficient appears from the context no more fully satisfactory to the formulator than to ourselves. As to the effect of castration in eliminating horns in males, this is, apparently, a special result in Merinos and other races possessing horns typically or prevailingly in the males only. Darwin has discussed this matter in the "Descent of Man," Chap. XVII.; and correspondence recently had with breeders of Merinos confirms Darwin's (and Castle's) statements. In Dorset Horns, on the other hand, as in reindeer and cattle, castration has only a modifying effect.

Finally, we wish to acknowledge kind suggestions (in letters) from Professor T. H. Morgan and Mr. A. H. Sturtevant, and we trust they will publish their formula, which differs in several respects from ours. The principal difficulty they find with our formula is that it does not account for a race in which, in successive generations, all males are horned and all females are hornless. Such a race of Merinos there may be; but there is much evidence that in many long and carefully bred strains of Merinos the standard of hornlessness in the ewes is maintained only by hurrying the horned ewe lambs to the butcher.

T. R. ARKELL
C. B. DAVENPORT

May 8, 1912

[1] SCIENCE, April 12.

AGRICULTURE IN SCHOOLS

TO THE EDITOR OF SCIENCE: I note in the issue of SCIENCE dated April 27, 1912, an announcement concerning the signing of the Harte bill providing for the establishment of a New York State School of Agriculture on Long Island. The memorandum by the governor appended to this bill, as quoted in SCIENCE, might mislead the reader in regard to the status of the teaching of agriculture in New York.

The Cortland State Normal School has had in operation for nearly a year a course for training teachers of agriculture. This course is open only to graduates of approved high schools who have had practical farm experience. The course is for two years' work. It may be that the fact that the governor has not been called upon to sign a bill of special appropriation for the establishment of this course has been the cause of his overlooking it.

In regard to the high school situation I wish to call attention to the fact that seven-

teen schools have a full four-year high-school course in agriculture and will therefore receive $500 each in accordance with Article 22, Education Law of 1910. In addition to these special vocational courses in established high schools twenty-three high schools give some instruction in agriculture.

L. S. Hawkins

Cortland, N. Y.

SCIENTIFIC BOOKS

The Absorption Spectra of Solutions of Comparatively Rare Salts Including those of Gadolinium, Dysprosium and Samarium, the Spectrophotography of Certain Chemical Reactions and the Effect of High Temperature on the Absorption Spectra of Non-aqueous Solutions. By Harry C. Jones and W. W. Strong. Publication No. 160 of the Carnegie Institution of Washington.

In this monograph the authors present the results of their recent spectrochemical investigations carried out along the three following distinct lines: (1) The mapping of the absorption spectra of certain comparatively rare substances, (2) the spectrophotography of some oxidation reactions, and (3) the effect of relatively high temperatures on the absorption spectra of alcoholic solutions.

In an introductory chapter a brief review is given of some important spectrochemical investigations of the last decade concerning the nature of the emission and absorption centers of light; the connection between these centers and molecular and atomic structures; the effect of ionization and recombination on these centers, and the effects that can be produced by physical and chemical agents upon the constitution of the emission and absorption centers.

The general method of experiment was similar to that employed by Jones and his coworkers in their previous investigations. For experiments at high temperatures a new form of absorption cell was devised, for a description of which the original monograph must be consulted. Through the kindness of Professor Urbain sufficient quantities of the oxides of samarium, dysprosium and gadolinium were loaned the authors to enable them to prepare the various salts whose solutions they wished to study.

An examination of the spectrograms in this and the preceding monographs shows that in general the absorption spectra of various salts of the same element are very similar. With high dispersion the minute structure of the bands and groups of bands is shown to be very different for different salts of the same element, this being especially true of the salts of neodymium. Beers's law has been shown to hold approximately for nearly all solutions of a single neutral salt in a single solvent. Each solvent is characterized by a definite absorption spectrum, and when a salt is dissolved in a mixture of varying proportions of two solvents only two definite absorption spectra appear, a result which the authors interpret as an indication of the formation of definite compounds of solvent and solute or "solvates."

In their study of oxidation phenomena uranous salts were subjected to the action of both weak and strong oxidizing agents, the salts being dissolved in single and mixed solvents. On dissolving uranous chloride in a mixture of alcohol and water, the bands characteristic of both solvents appear simultaneously. A mild oxidizing agent was found to oxidize the "hydrated" salts and leave the "alcoholated" salts unchanged, while with a strong oxidizing agent both "hydrated" and "alcoholated" salts were oxidized to the uranyl condition.

Rise of temperature has been shown to cause a widening of the bands in solutions of a pure salt in a single solvent, the edges of the bands becoming hazy. When several salts are dissolved in the same solvent the bands become weaker as the temperature rises. In general the center of intensity of the single bands remains unaltered with rise in temperature.

This recent publication of Jones and his associates is another valuable contribution to the literature of spectrochemistry and will undoubtedly find a place on the book-shelves of those engaged in spectroscopic investigations. No little credit is due the printer for the ex-