'Artificial Plant Food Requirements of Soils,' by B. W. Kilgore. (See 'Proceedings of the Fifteenth Annual Convention of the Association of American Colleges and Experiment Stations,' pp. 73–75.)

'Methods for the Determination of Total Phosphoric Acid and Potash in Solids,' by C. B. Williams.

The method devised for the determination of total phosphoric acid in soils was simply, after igniting five grams of soil in a platinum dish, treat three times with hydrofluoric acid, evaporating to dryness each time, followed by fusion with ten grams of a mixture of equal parts of sodium and potassium carbonate. The cake thus obtained, after cooling, was transferred to a beaker and digested with about 30 to 40 c.c. (1 to 1) hydrochloric acid, after which the solution was evaporated to dryness on a water-bath, being subsequently heated four or five hours in an air-bath, to 110° C. to dehydrate the silica present. It was then taken up with dilute hydrochloric acid, filtered and washed. The filtrate and washings thus obtained, after adding sufficient nitric acid to liberate all hydrochloric acid present, are placed together and reduced to a volume of about 40 c.c. by boiling. The excess of nitric acid is then neutralized with ammonia, and ten to twelve grams ammonium nitrate is added. After cooling, 30 c.c. recently filtered molybdic solution is added and the phosphoric acid is precipitated by shaking in a Wagner machine, and determined volumetrically (*Jour. Am. Chem. Sc.*, Vol. 23, No. 1, pp. 8–12).

Total potash is brought into solution by treating four grams of soil in a platinum dish on water-bath, after saturating with dilute (1 to 1) sulphuric acid and igniting, with from 2 to 3 c.c. hydrofluoric acid for five times, adding 1 c.c. dilute (1 to 1) sulphuric acid just before going to dryness the last time. After the last traces of hydrofluoric acid have been liberated the dish is removed from water-bath and heated gently over small flame until evolution of sulphur trioxide ceases. The soil is then taken up with 20 c.c. distilled water slightly acidified with hydrochloric acid, and digested on water-bath until the solution has been reduced to about one third of its orginal volume, after which it is transferred to a 200-c.c. graduated flask and heated on water-bath to near boiling, when ammonia and ammonium oxalate are added in sufficient quantity to precipitate all iron, alumina and lime present. After cooling, the volume is made up to 200 c.c., and an aliquot corresponding to two grams is filtered off into a porcelain dish. From this point on the procedure is the same as that prescribed in the regular Lindo-Gladding method.

There being no further business, the section adjourned, subject to the call of the Executive Committee.

C. B. WILLIAMS.
Secretary.

DISCUSSION AND CORRESPONDENCE.

PRESIDENT SCHURMAN ON THE EDUCATIONAL REQUIREMENTS FOR PROFESSIONAL STUDY.

TO THE EDITOR OF SCIENCE: In the issue of SCIENCE of November 21, on page 816, is published an excerpt from the annual report of President Schurman of Cornell University, containing statements bearing upon the question of collegiate work as a requirement for admission to professional schools. It is not my function to discuss or criticize the policy of the President of Cornell University. The report, however, contains several statements upon which comment seems necessary.

"At Cornell University at any rate [runs the report] the established policy is to admit students to any course who are able to pass the examinations qualifying them to pursue that course. And such preliminary tests, it is generally conceded by the members of the profession concerned, do not exceed the requirements for graduation at the best high schools."

I cannot speak for the lawyer, the engineer or the architect, but in the name of the profession of medicine I beg in the most respectful manner to protest. With the matter of culture-studies we need have no concern here. I believe it may be stated as an established fact that a proper education in modern

medicine can not be acquired upon the basis of a high-school preparation. For the adequate study of modern medicine collegiate training in physics, chemistry and biology is essential; to use an academic term, they are prerequisites. How much collegiate training in these branches is necessary is open to discussion; the most general opinion among teachers of medicine is that two years are sufficient. I beg to state that, in my opinion, the majority of the members of the medical profession of this country, as represented in the recognized societies, do not believe that the tests preliminary to medical education need not exceed the requirements for graduation at the best high schools. The teachers of medicine may be said to be almost unanimous in the belief that collegiate preparation in the sciences is necessary for the study of medicine. The majority of the high-grade medical schools have already either inaugurated or announced collegiate requirements for admission; with other institutions the maintenance of the older system is purely a matter of present financial conditions and does not reflect the real policy. These changes have not been made in spite of the profession, but rather with the sympathy and support of the best elements in the profession. In any event, ought it not to be the function of the universities to lead and not to follow the professions?

There is a quite current confusion of two movements. One is the culture requirement for entrance upon professional study; the other is the training requirement. Knowledge of Greek literature, of esthetics, of political science, may be advantageous to the physician, but it is not essential to the study of medicine; knowledge of and training in physics, chemistry and biology of the collegiate type and quality are necessary for the proper study of medicine as it is taught to-day in our best institutions. Departments of medicine are requiring collegiate preparation; in a few instances it may be partly upon the basis of a veneration for general culture, in all instances from the realization of the direct necessity of that training in the natural sciences which colleges alone are able to give. With this adjustment of the prerequisites in science deemed necessary to the study of medicine, the matter of democracy in educational policy, alluded to by both President Schurman and President Hadley, has no concern. The science of medicine has developed to such an extent that it can not be so mastered in four years following a high-school education as to adequately prepare the physician for his duties in life. To extend this course, by prerequisite collegiate work, until it fulfills its obligations to the student and its duty to the public, can not be stigmatized as undemocratic.

Alonzo Englebert Taylor.
The University of California,
December 1, 1902.

Illex illecebrosus (Lesueur), the 'Squid from Onondaga Lake, N. Y.'

The specimen of squid, the capture of which in Onondaga Lake has been described by Dr. John M. Clarke in a previous number of Science,* has been sent to the present writer for examination. It proves to belong to the well-known species of our northern Atlantic coast, the 'cold water' or 'short-finned squid.' The specimen has been compared with the description of *Ommastrephes illecebrosus* given by Verrill,† and with two well-preserved individuals (male and female) of this species from Provincetown, Mass., preserved in the collections of the Museum of Biology, J. C. Green School of Science, Princeton University. The result of this comparison is as follows:

Total length of our specimen, from tip of tail to tip of third pair of sessile arms, upward of thirteen inches. Since the largest figure for this dimension given by Verrill is a little over fourteen inches, our individual

* December 12, 1902, p. 947.

† *Ommastrephes illecebrosus* (Lesueur): Verrill, A. E., 'North American Cephalopods,' in *Trans. Connect. Acad.*, Vol. 5, 1880, p. 268, pl. 28. According to the 'Synopsis of Recent Cephalopoda' given by Hoyle, W. E., in 'Voy. *Challenger* Zool.,' Vol. 16, 1886, p. 34, the name of this species stands now as *Illex illecebrosus* (Les.).