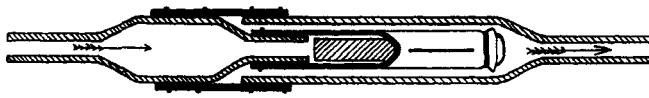
substances analyzed, uniformly satisfactory determinations can readily be obtained. For substances of unknown structure, however, the results furnished by the Kjeldahl process should not be accepted without verification by other methods.[1]

NOTES.

A Back Pressure Valve for Use with Filter Pumps.—The body of the valve is constructed of two pieces of glass tubing of fairly heavy gauge, drawn out as in sketch. The valve itself is an improvement on the old Bunsen valve, with a glass rod of slightly smaller diameter than the rubber tubing, wired on, to prevent collapse. Soft rubber tubing works best. The device has



given excellent service and can be made at little expense of time and material. It was originally devised for use with condensers in a laboratory where the water pressure sometimes gave out and the water ran back. It gives equally good service for both purposes. R. N. KOFOID.

The Conversion of Calcium Oxalate to the Sulphate.—The customary process of reducing a calcium oxalate precipitate to a sulphate by applying a flame directly to a platinum crucible, after saturating the precipitate with sulphuric acid, is a slow one at best, and there is great danger of losing a portion of the contents of the crucible on account of boiling over or spattering.

These difficulties may be avoided by the following method: The precipitate is placed into a platinum crucible and saturated with concentrated sulphuric acid in the usual manner. A porcelain crucible about one-half inch larger in diameter than the platinum crucible is then filled about half full with powdered asbestos, or calcium sulphate, and the platinum crucible is sunk into the asbestos until it clears the porcelain crucible by about one-fourth inch at the bottom. After covering the platinum crucible loosely,

[1] Since the above was written, an article by Sörensen and Pedersen (*Ztschr. physiol. Chem.*, **39**, 513 (1903)) has appeared with reference to Kutscher and Steudel's work. For a further criticism cf. also Schöndorff: *Arch. f. d. ges. Physiol.*, **98**, 130 (1903).

the porcelain crucible is set in a pipe-stem triangle and placed over the full flame of a Bunsen lamp. The top portion of the platinum crucible is heated first and remains hotter than the bottom so that the excess of sulphuric acid boils out from the top of the precipitate, instead of from the bottom. The excess of acid is driven off in about one minute, the platinum crucible is then removed from the porcelain crucible and set over the flame until it is brought to a red heat. This method has been used successfully in over one hundred determinations of calcium.

ALFRED N. CLARK.

NEW BOOKS.

LABORATORY PHYSICS. A Student's Manual for Colleges and Scientific Schools. BY DAYTON CLARENCE MILLER, D.Sc., Professor of Physics in Case School of Applied Science. Ginn and Co. 1903. 403 pp. Price, $2.15.

This laboratory manual, in the author's words, is meant "to be a student's hand-book for the performance of experimental problems in physics; the grade of work is that of the course in general physics in colleges and technical schools."

In Mechanics, we have general measurements, length, mass, time, acceleration, elasticity and density; under Sound, experimental problems are given in the measurement of the frequency of vibration, the velocity and wave-length of sound, etc.; under Expansion, thermometry and calorimetry. The subject of Heat Energy is considered, while a large part of the work is devoted to Light and Electricity. Under the former, photometry, mirrors and lenses, goniometry, index of refraction, wave-length of light, the interferometer and spectroscope are taken up.

The chapter on Electricity and Magnetism is probably the most important in the whole work. Resistance, current strength, electromotive force, capacity, induction and magnetic quantities are all studied at length.

The above synopsis will give a fair idea of the scope of this work. The book is written with unusual clearness, and the experiments are described in simple and concise language. The work will undoubtedly prove to be valuable to students of physics in the college stage of their work. HARRY C. JONES.