The ether used when precipitating the sulphides has the effect of causing the precipitate to settle quite rapidly.

Following are results obtained in duplicate determinations of several preparations. In all of these preparations iron was present in amounts from 3–5 times the amount of manganese.

	1 cc. contains milligram Mn.
1	0.205
	0.243
2	0.1468
	0.1520
3	0. 734
	0. 723
4	0. 588
	0. 606

In order to test the accuracy of the method, 0.6316 gram of crystallized manganous sulphate, free from effloresced portions, was dissolved in 250 cc. of water, 10 cc. of this were taken, and after oxidation diluted to 200 cc.

On comparing with the usual standard, the 200 cc. were found to contain 6.392 mg. of manganese, corresponding to 0.6505 gram of manganous sulphate originally, or 102.9 per cent. To another 10 cc. of the original solution, 1 gram of iron alum was added and the manganese determined as before. In this case 6.178 mg. of manganese were indicated in the 10 cc., corresponding to 99.2 per cent. of theory. Here the concentration of the iron was roughly 20 times that of the manganese.

The method has already been applied to the determination of manganese in rocks,[1] and should prove excellent for determining manganese in waters.

LABORATORY OF SHARP & DOHME.

NOTES.

The Chemical Laboratory of the University of Washington.—The University of Washington on April 16, 1910, formally opened for use a new chemical laboratory which cost when completed a total of $230,000. This building is of concrete and steel construction and is three stories in height. The design of the building was made by the architects of the Alaska-Yukon-Pacific Exposition according to drafts prepared by the writer after his visit to all the modern laboratories of Europe and America. It contains certain features of construction which may be of interest to those chemists who are contemplating erection of buildings or equipment of laboratories. A drawing of the general floor plan of the building accompanies this note.

[1] Hillebrand, *Bull.* 305, U. S. G. S., p. 99 (1907).

It will be observed that the offices and classrooms occupy the central portions of the building and the laboratories the outlying wings. The main laboratories, 12 in number, are separated by a line of flues extending from the basement to a tunnel immediately beneath the roof. These two lines of flues are exhausted by large fans run with a common motor. It will be seen also that this plan involves the use of light from only one end

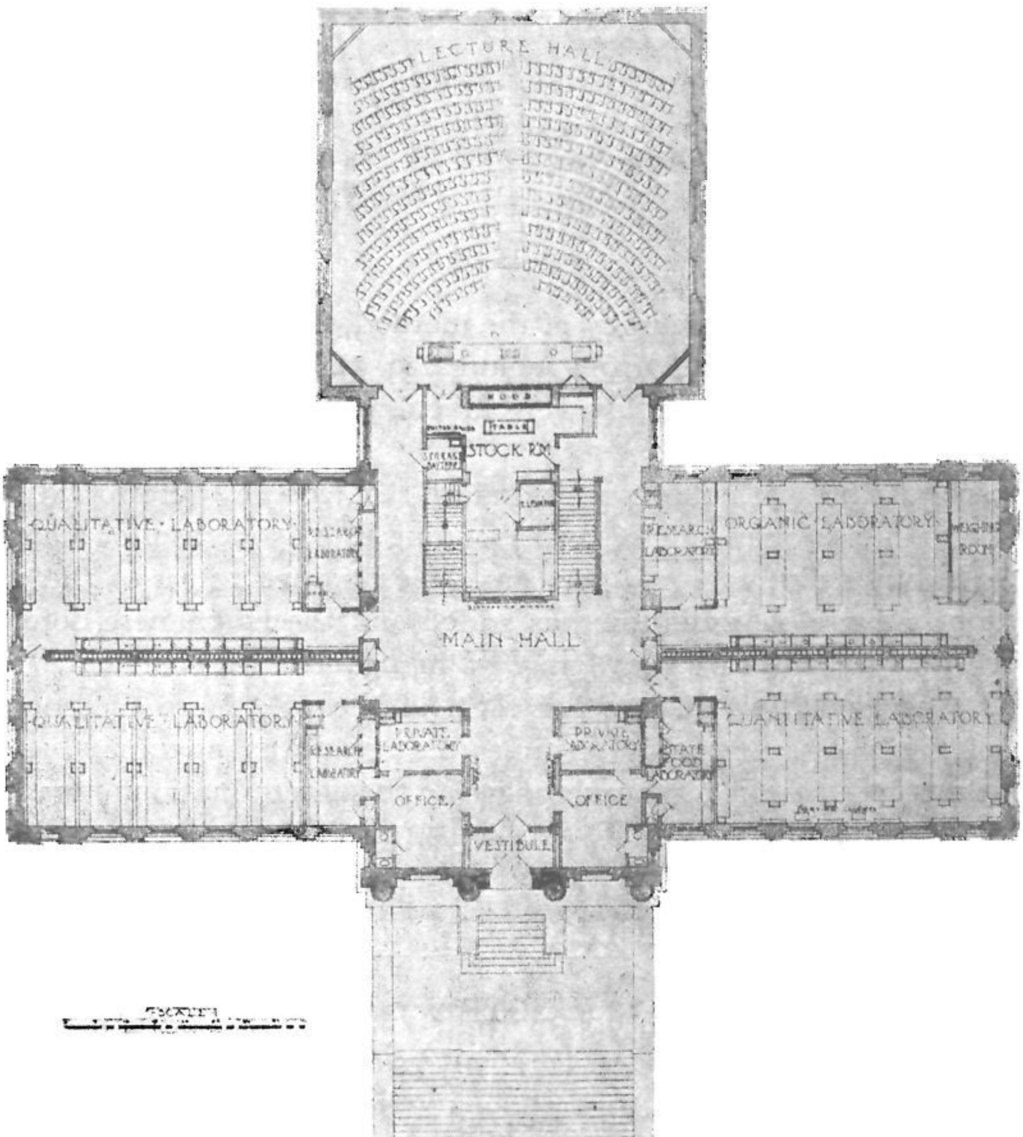

Fig. 1.

and side of each laboratory, the hoods occupying the one long side of each laboratory. This plan would have been attempted with some hesitancy had it not been for the unqualified satisfaction expressed by Professor Witt in Charlottenberg with the side lighted laboratories. It is with considerable satisfaction that we find the result of this construction is an eminently satisfactory lighting and ventilating system—both work admirably.

A second feature of the laboratory is the use of alberene stone, exclusively, for sinks and for the floors of the hoods. Only two types of desks were provided for the laboratory. These desks are primarily, for general chemistry, type 1; and quantitative work, type 2. It is type 2

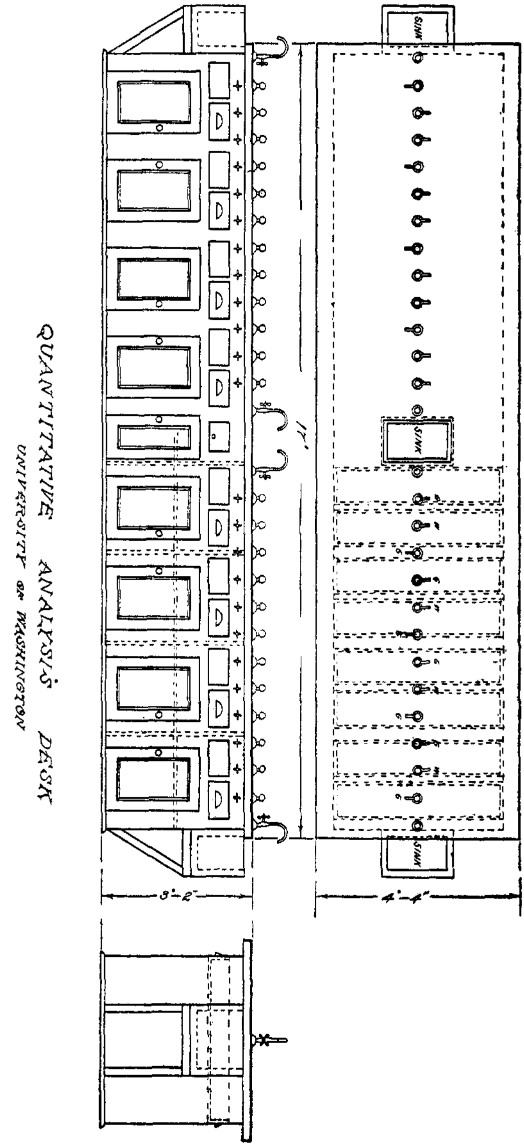

Fig. 2.

which varies most from the common laboratory construction and which has proven the most satisfactory. This is illustrated in Fig. 2. All stopcocks are operated by a long arm control situated immediately beneath the ledge of the desks. No obstruction is therefore placed upon the tables except the gas and water outlets. The table tops are finished with the aniline black finish recommended by the United States Bureau of Chemistry. The table tops are of Washington fir and similar tables have been in use in this university for six years without needing either refinishing or repairing.

The pressure system and the hydrogen-sulphide system reach the hoods only, which also are furnished with gas and water. The hydrogen-sulphide generating apparatus is situated without the building on the roof. It is of the general type used by Professor Fischer, of the University of Berlin, and is not wholly satisfactory. The air-pressure system is automatic and varies between 45 and 15 pounds in the compressor, being delivered into the laboratory at a uniform pressure of 15 pounds. We find this most satisfactory for blast lamps.

One item of construction has proven highly satisfactory. The main lecture room, as shown in Fig. 1, opens directly into the stockroom, the rear half of which is equipped as a preparation room for the lecture. Back of the lecture table is a hood slightly raised above the level of the table, opening both into the stockroom and lecture room, and ventilated by a separate one-horse power motor. This makes the disposition of ill-smelling or poisonous materials extremely easy and effective. The lecture table is practically an exact duplicate of that of Professor Beckmann of the University of Leipsic.

The stock rooms occupy a tier of three rooms, one on each floor, in the exact center of the building and are connected both by an elevator and an internal stairway. An excellent feature is a large room 40 by 60 feet with concrete floor covered with asphalt and brick walls and concrete pillars, which is for the machinery used in the laboratory, such as grinding machines, filter presses, cement testing material, stills, etc.; in general those operations which are carried out on a large scale and are likely to be either dirty or dangerous.

The main hall in two floors of the building is equipped with a very complete "first aid to the injured" set of materials. These cases are always open and have on them simple directions for emergency surgery. These have already shown their great value as time and trouble savers as well as guaranteeing a certain immunity from serious injury.

The department is also equipped with a departmental library, which promises to be eminently satisfactory.

We have made certain mistakes in the construction of the laboratory, of course, and were limited financially and so prevented from putting in certain desirable features, for example, an exhaust system for filtration. Taken all in all, however, the laboratory is a source of great satisfaction and considerable pride on the part of the writer and he will be glad to do whatever he can in assisting others to profit both by our successes and failures.

H. G. BYERS.

A Modified Burette for Standard Alkali Solutions.—Glass stoppered burettes offer serious obstacles to their constant employment for standard solutions of caustic alkalis. The tendency of the stopcock to stick, rapid wear, resulting in leakage, or breaking of the cock or of the shell, and other difficulties constitute serious objections to this form of burette for caustic alkali solutions. The type of burette in which a glass tip is connected to the burette by means of a rubber tube, the flow being controlled by a pinchcock or a glass ball, is an alternative which is still in considerable use, but the objection to this type on the ground of inaccuracy is well understood, and the United States Bureau of Standards will not calibrate such burettes.

It occurred to the writer that the substitution of metal for glass for the movable part of the stopcock might overcome the difficulty and that of the metals adapted to this purpose, silver might perhaps be preferable both because of its fairly good resisting powers towards caustic alkali, as well as on the ground of reasonable cost. Accordingly, a burette fitted with a silver stopcock was tried by filling with half-normal potassium hydroxide solution and allowing to stand for a week. The stopcock did not show the slightest sign of sticking or leakage. The burette was then emptied and filled with 30 per cent. sodium hydroxide solution and in the course of several weeks the stopcock was operated several times nearly every day. The stopcock is still apparently in as good condition as when first received, although it has not been lubricated again since it was first put into use. This stopcock was made for the writer by the Bausch & Lomb Optical Company, of Rochester, New York.

PAUL RUDNICK.

CHEMICAL LABORATORY OF ARMOUR AND COMPANY, CHICAGO, ILL.

The Purification of Mercury.—The accompanying cut is of an apparatus which has been used by the writer in the Harvard laboratory for more than a year, and he believes it possesses several advantages over the original apparatus of L. Meyer,[1] and, perhaps, over a somewhat similar modification of the original by Hildebrand[2] in that large quantities of mercury can be rapidly and thoroughly freed from those substances which are likely to occur in it and which dissolve in dilute nitric acid or in mercurous nitrate.

The method of Meyer is so familiar to every one that details are unnecessary. The writer uses a 5 cm. tube, 1.5 m. long. He finds that 8 per

[1] *Z. anal. Chem.*, 2, 241.

[2] THIS JOURNAL, 31, 933.