PIPING

Modern piping for water is made of white pine. If the water carries in suspension abrasive solids, such as fine coal dust, hard maple is used and has been found to have about ten times the life of cast iron. For solutions of chemicals where white pine would be unsuitable, other more suitable

FIG. 10

woods could undoubtedly be used. Wood pipe is made either by boring out a solid log, or with stave construction. An example of the former is given in Fig. 7 which is a type suitable for laying directly on the floor of the plant, the flat sides preventing rolling. The wood stave pipe is made up as shown in Fig. 8. The staves are held together by a tightly wound steel band (copper is sometimes used for chemical work) and the whole pipe is then given a protective coating of asphaltic composition. The pipes are made with mortise (B) and tenon (A) joints, as shown in Fig. 9, and connection is made by driving the ends together, giving a joint of extreme tightness when swelled. Fittings for water are usually cast iron, but for chemical uses the wooden fittings are better. A typical tee is shown in Fig. 10.

TOWERS AND COLUMNS

Wooden towers and columns can be used advantageously for handling gases and vapors containing acid or other corrosive substances. The writer has seen an ordinary wooden silo filled with coke in very satisfactory use as a scrubber for furnace gases containing large amounts of sulfurous and sulfuric acids. Fig. 11 shows some acid towers of wood 60 ft. high by 6 ft. in diameter, at a paper mill.

FILTER PRESSES

Modern box filters are in common use in chemical plants and manufacturers of plate and frame filter presses supply

FIG. 11

presses of suitable woods for handling difficult liquors. Yellow pine plates resist alum solutions for from 6 to 10 mo.

PROTECTIVE COATINGS

Wooden apparatus is used successfully with corrosive liquids when protected with resistant materials. The most popular coating at the present time for acids is asphalt or pitch which has been thoroughly air-blown, applied in a layer at least 0.25 in. thick. Asphaltic paints and similar coatings are usually too thin to be of lasting value. Some concerns line wooden tanks with pure Para rubber with hard rubber fittings to withstand concentrated hydrochloric acid. Such tanks have lasted for 25 yrs. Lead lined wooden tanks are used for dilute sulfuric acid. As a general rule, however, it is better, except in difficult cases, as noted above, to leave the inside of the tank uncoated and unpainted.

ACKNOWLEDGMENT

The writer wishes to acknowledge the generosity of a number of the manufacturers of wooden equipment in furnishing data for the preparation of this article.

Apparatus of Transparent Bakelite for Measuring Hydrofluoric Acid¹

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GRADUATE

HAVING experimentally demonstrated that 48 per cent hydrofluoric acid was without appreciable action on transparent bakelite, the writer had a number of 10-cc. graduates made from this material. They have proved very serviceable in analytical work. Their shape is less flaring than the old style conical graduate but more so than the cylindrical graduate, in order to facilitate pouring hydrofluoric acid from the usual wax containers.

The advantages possessed by these graduates are:

- 1—They are not attacked by hydrofluoric acid.
- 2—They are transparent and hence permit the measurement of hydrofluoric acid.
- 3—They are less brittle than glass.
- 4—They are noninflammable.
- 5—They will not soften or become distorted.
- 6—They can be readily cleaned with hot water.

MEDICINE DROPPER

A medicine dropper made of transparent bakelite has been found vastly superior to the improvised lead tubes which have been used heretofore in carrying out one of the best qualitative tests for silica and silicates.² The transparent dropper enables one to see the quantity of hydrofluoric acid in the tube and thus to control the amount of acid to be transferred. It has the additional advantage over the lead or hard rubber tubes of being easily cleaned.

The graduate and dropper will soon be manufactured in quantity and will be offered for sale by dealers in chemical apparatus.

¹ Received April 29, 1922.

² See A. A. Noyes, "Qualitative Analysis," 8th edition, 48.

Science Building at Tulane University

Construction has been begun on a new building at Tulane University which will accommodate the departments of botany, zoölogy, pharmacology, and physiologic chemistry. The building is to cost about \$180,000, of which \$125,000 have been subscribed by the General Education Board. The laboratory will be equipped at a cost of \$30,000, and it is expected that the building will be completed in December.