

sion angles of the diameters of the various motional-impedance circles remain not far from 45 degrees throughout the series.

*Conclusions.*—The observations indicate that the natural frequency of a telephone receiver is not simply proportional to the diaphragm thickness—for at least one reason: that the thin diaphragms are subject to greater magnetic distortion. The observed sensitiveness passed through a maximum for this particular instrument near to the thickness of 0.23 mm. The resonant range diminished as the thickness increased.

More than fifty motional-impedance circles were measured and computed in the course of the research.

We are indebted to the Western Electric Company for the various samples of diaphragm which were used in the test, and also to Mr. H. A. Affel for his assistance and suggestions.

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**Packing and Plant Handling of Hazardous Chemicals.** N. A. LAURY. (*Metallurgical and Chemical Engineering*, vol. xvii, No. 7, p. 407, October 1, 1917.)—Many attempts have been made to devise a safe and economical package for the transport of the convenient quantity of one or two hundred pounds of acid or other corrosive liquid, but nothing has yet been suggested that equals the standard form of wood-packed glass carboy for general use. The greatest danger in the handling of carboys is the sudden giving away of the bottom or sides of the box, due to the corrosion of the nails or weakening of the wood by acid, especially after long storage. This danger can be satisfactorily eliminated by the use of wood preservative. Untreated boxes last about two years under normal conditions. During this period the box has to be renailed three times and requires one new bottom and one new cover. Carboys treated two years ago are still in service, and very few of them have required renailling and none have had new covers or bottoms. This applies also to the standard lead carboy for the transport of hydrofluoric acid. Steel drums are used for this purpose in Europe and are said to be safer and cheaper, but they are not yet accepted for rail shipments in this country.

There is in current use a stoneware stopper and plaster-of-paris, tied down with cloth, the latter sometimes coated with tar or paraffin. If the plaster is mixed in small quantities and applied fresh, it holds so firmly that the carboy may be moved about by the stopper, but in a few days the acid loosens the grip of the plaster, and the cloth, even when treated, crumbles away. The safest stopper in use consists of a glass or stoneware plate with a tar paper, asbestos, or rubber jacket held on by a wire clip like a fruit jar.