A CONVENIENT FORM OF THE NEW SINGING TUBE.

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The new singing tube recently described by the author¹ may be made to take an exceedingly simple and compact form. The tube need not be large, in fact, for this particular purpose, it works best where the various parts are of moderate dimensions, and when blown as a straight-form tube rather than a branch or L-form as originally designed.

The form in question is shown half full size in Fig. 1. The outer tube is of heavy wall thickness, about 1 mm., while the inserted test tube is made out of the thinnest walled tubing that is procurable. The relative length of the inner tube is as shown in the figure. Its dimensions and the manner in which it is mounted within the outer tube are of the greatest importance. It has been found best to support the inner tube by three small glass projections symmetrically placed at its lower end. These are later fused to the outer tube as shown. To lessen the likelihood of the inner tube being broken from its rather frail support by rough handling three small additional projections are fused to the wall of the inner tube at its mid-point. These projections are ground off until the inner tube will just slip into the outer casing. The inner tube must also be perfectly centered. It is well to shrink the outer tube down onto these projections by returning the tube for a moment to the oxygen blast. This latter operation also affords an opportunity for exactly centering the open end of the test tube.

Finally, the outer tube is now closed as shown in Fig. 1. The successful operation of this singing tube depends upon the relative lengths of the inner and outer tubes; upon the annular area between the test tube and the outer casing; and, to a less extent, upon the wall thickness of the inner tube, and also upon the volume enclosed above the lip or open end of the inner tube.

By constructing a second tube, which is exactly similar to that shown in Fig. 1, except that it is a few centimeters shorter,

¹A Possible Standard of Sound, *Phys. Rev. N. S.*, XII, 6, p. 491, Dec. 1918; A Study of Energy of, *Ibid* XV, 2, p 156, Feb. 1920; I, Study of Operating Conditions, II, Study of Wave-Form, *Ibid*, XV, 3, p 244, Mar. 1920; Further Developments Relative to the New Singing Tube, *Ibid*, XV, 4, p 336, Apr. 1920.