tion to remove waxy and oily films, and provided the four or five perforations in each bulb are approximately the same size. The glass tubing used for the main water lines should be about 9 mm outside diameter, while leads to the individual towers may be smaller in diameter or about 7 mm outside diameter.

The bulbs, one of which is described at K, can be made easily without special technique in glass blowing. The following procedure is suggested: Heat the end of a five-inch glass tube which is approximately 7 mm in diameter until it has sealed; remove from the flame and blow immediately a bulb on the end, which is about one half inch in diameter. Allow to cool; heat again one side of the bulb and blow a pimple. Heat another side at a right angle to the first; blow another pimple and with a file gently file two holes at these points. The last two or three holes can be made quickly by inserting a rigid wire through the first holes and pushing out pimples on individually heated sides of the bulb, as shown at E. These pimples are filed off and the holes fire-polished.

Sometimes difficulty is encountered with loss of solution by bubbling over the tops of the towers, especially when about two drops of n-butyl alcohol[5] have been added to every 100 cc of alkali solution to increase the number of bubbles and decrease their individual size. When the solution in a tower threatens to overflow at the beginning of a run, this may be checked by removing the rubber tubing at 0 and with a medicine dropper allowing about two drops of capryl alcohol to settle to the base of the bulb. Capryl alcohol has the reverse effect of butyl alcohol on surface tension. When a mass of bubbles strikes the bulb, the foam immediately falls back.

The diagram at Q demonstrates how the rubber tubing on the two arms of a flask may be sealed from outside air before and after it is attached to the apparatus. This eliminates the expense and awkwardness of pinch-clamps. The three-inch glass tube, R, should be inserted further in the rubber tubing of arm 1 than arm 2. It thus will consistently, pull out of arm 2 more easily than arm 1, and will be ready for the rubber connection, S.

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A NEW CULTURE MEDIUM FOR PARAMECIA

VARIOUS devices have been suggested for slowing down and entangling Paramecia for microscopic study. The most satisfactory appears to be the addition of a small amount of fine cultural debris to the drop of medium on the slide. Cultures made up of hay infusions contain relatively little fine material. In order to increase the amount of fine debris we use the following method of raising Paramecia. 0.2 gram "Pablum" (an infant food manufactured by Mead Johnson and Company) is added to 400 cc of tap water in a wide mouth pint jar. This is covered by an inverted glass coaster and autoclaved at 15–20 pounds steam pressure for 30 minutes. After the mixture has cooled it is inoculated with Paramecia and allowed to stand at room temperature. In a week's time a dense culture of Paramecia is obtained. The "Pablum" concentration given above seems to be optimum.

To dispense the Paramecia to students we usually stir up the contents of a culture jar for a uniform distribution of Paramecia and fine cultural debris. On microscopic examination we find that most of the Paramecia are feeding and therefore easier to study. When greater concentrations of Paramecia are desired on a slide an unagitated drop of medium from the surface where the Paramecia aggregate, together with a small amount of debris from the bottom, may be used. Ordinarily one such culture as described above suffices for a hundred or more students.

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[5] M. D. Thomas, *Ind. Eng. Chem., Anal. Ed.*, 5: 193–8, 1933.

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