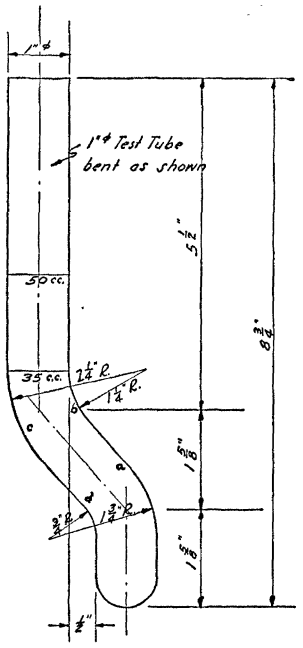
This is especially true of the protein determination of cerebrospinal fluid, a process associated with so much foaming and bumping that, for clinical purposes, the results are often not as acceptable as they should be. The Kjeldahl method is exact, but its use necessitates a nitrogen distillation system and accurate burettes for back-titrations. The apparatus is expensive and the technique time-consuming.

We have designed and constructed a new digestion tube by means of which the loss of material due to foaming and bumping can be eliminated. The tube



DIGESTION TUBE
FIG. 1

is designed so that a drop of boiling solution can not be shot directly outwards. When thrown upwards, it must necessarily strike the wall of the tube along the lines "a" and "b" and flow back into the solution. Foam also will rise up between the points "a" and "b" and descend by points "c" and "d." Seldom does it rise beyond the point "b."

By the use of the tube described, the more difficult types of digestion can be performed with ease and accuracy. There is no loss of solution and much saving of time. The most ordinary technique will furnish exact results. The new digestion tube is especially suitable for those methods for which the N.P.N. tube is, at present, used.

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A TECHNIQUE FOR CONTINUOUS OR INTERMITTENT OBSERVATION OF THE CONTRACTILE VACUOLES OF PARAMECIUM

THE methods commonly used for demonstrating and studying the contractile vacuoles of Paramecium have the serious disadvantage of not permitting the observer to view the animals intermittently over a period of several days. In the technique described below, continuous observation is made possible by studying the animals on the surfaces of agar plates.

PREPARATION AND USE OF THE AGAR PLATES

Filter 1,000 cc of culture medium which has supported a vigorous growth of Paramecium through coarse filter paper. The medium should be clear and transparent. Bring the filtrate to a boil and add, while stirring, 10 gms of agar-agar. Boil slowly until all the agar is dissolved. The agar is then poured, while hot, into Syracuse watch glasses to a depth of approximately 5 mm. The agar is then allowed to cool, without agitation, until it is firmly set.

When the agar is set, one drop of a rich culture of Paramecium is placed in the center of the dish, which is then tilted from side to side to spread the drop. Within a few minutes enough water has evaporated from the surface to impede locomotion. The animals may then be studied at leisure.

For prolonged observation of the same preparation it is necessary to prevent undue evaporation from the surface of the agar. This is best accomplished by inverting the dish over another watch glass partly filled with water. In this way we have kept and observed animals in the same preparation for as long as ten days. Temporary preparations may be made with distilled water, but the animals do not survive on the surface of agar so prepared.

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