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SOME MODERN CONCEPTIONS OF AMEBIASIS[1]

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INTRODUCTION

IN 1875 a Russian physician, F. Lösch, first observed and described the active stage of *Endamoeba histolytica* in the dysenteric stools of a patient, and at necropsy found motile amebae in material obtained from ulcers of the colon. Moreover, he succeeded in infecting one of four dogs inoculated with amebae present in the bloody-mucous exudate of the patient. Yet Lösch failed to appreciate the role which his "Amoeba coli" played in the disease with which it was associated. The studies of Koch[2] and of Kartulis[3a,b] in Egypt, of Hlava[4] in Prague, of Osler,[5] Stengel,[6] Musser[7] and Dock[8] in the United States provided uncontestable evidence that the ameba discharged in dysenteric stools was causally related to amebic colitis, while Quincke and Roos,[9] Huber[10] and Schaudinn[11] demonstrated a cystic stage of the parasite. Meanwhile Councilman and Lafleur[12] had provided a basic pathological study of amebiasis and in 1913 Walker and Sellards demonstrated experimentally in human volunteers in the Philippines that the disease was produced by feeding cysts of *Endamoeba histolytica,* while infection without disease resulted from feeding cysts of *Endamoeba coli.* By 1924

[1] Alvarenga Prize Lecture of the College of Physicians of Philadelphia, delivered on October 13, 1943.

[2] R. Koch, *Wien. Med. Wochenschr.,* 33: 1248–1252; 1548–1551, 1883.

[3a] S. Kartulis, *Arch. f. path. Anat.,* 105: 521–531, 1886; b. *Centralbl. f. Bakt. u. Parasitenkde.,* 2: 745–748, 1887.

[4] O. Hlava, *Zeitschr. d. böhm. Aerzte in Prag.,* 1887.

[5] Wm. Osler, *Johns Hopkins Hosp. Reports,* 1: 53–54, 1890.

[6] A. Stengel, *Med. News, Phila.,* 57: 500–503, 1890.

[7] J. H. Musser, *Univ. Med. Mag.,* Phila. 9 pp., 1890.

[8] G. Dock, *Med. Record,* N. Y., 40: 7–8, 1891.

[9] H. Quincke and E. Roos, *Berlin klin. Wochenschr.,* 30: 1089–1094, 1893.

[10] J. C. Huber, *Deutsch. Med. Wochenschr.,* 29 (Beih.): 267, 1903.

[11] F. Schaudinn, *Arb. aus d. kaiserl. Gesundh.-Amte,* 19: 547–576, 1903.

[12] W. T. Councilman and H. A. Lafleur, *Johns Hopkins Hosp. Reports,* 2: 395–548, 1891.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A METHOD OF OPENING LYOPHILE TUBES

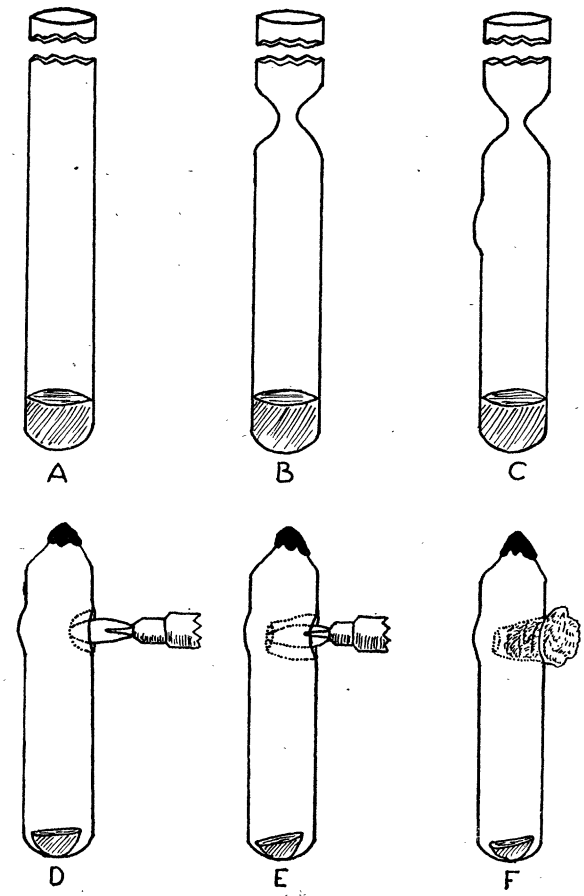
THE difficulty of conveniently and cleanly breaking open vacuum-sealed tubes of dried material led to the development of the following method of preparing, sealing and opening tubes having a diameter of 1.5 cm. The method is undoubtedly applicable to tubes of other dimensions.

The material to be dried is placed in a sterile Pyrex test-tube, 15 cm by 1.5 cm (A), and the cotton plug is pushed about one inch into the tube. The tube is then heated and constricted about 7 cm from the bottom (B). Using a spot flame, a small cup is blown about 2 cm below the constriction (C), and the tube is then attached to the lyophile apparatus. After the material has been thoroughly dried, the tube is sealed at the constriction and the tip is dipped in sealing-wax to prevent entrance of air if scoring of the sealed tip should occur.

When it is desired to open the tube, a spot flame (gas-oxygen) is applied opposite the cup (D) and the vacuum causes atmospheric pressure to force an inverted bubble into the lumen of the tube. The size of this bubble is controlled by rotating the flame. When a suitable diameter has been obtained, the flame is directed toward the point where the break is desired. With proper direction of the flame, the bubble elongates and finally breaks toward the cup (E). The flame is then removed, and a sterile cotton plug is inserted into the "funnel" (F). This procedure for opening the tube requires about ten seconds.

Theoretically, the air which rushes into the tube through the break is sterile, since, at that time, the walls of the funnel are very hot and the flame is still in place. To test this, the following trials were run.

Five tubes, each containing a small agar slant, were treated by this procedure and, after opening, were plugged with cotton and placed in an incubator at 37.5° C. No growth had occurred at the end of one week. Five tubes containing a suspension of a rapidly growing bacillus, and two tubes containing a suspension of *Mycobacterium tuberculosis avium* were all lyophiled and opened as above. Sterile distilled water was pipetted through the funnels into the tubes and the dried material resuspended. The tubes were then tilted horizontally so that the suspension flowed into the cups, and a loop of material was removed from each tube and streaked on agar slants. Growth without contamination occurred on all slants. Two series of ten tubes each, one containing anti-bovine-brucellosis-serum and the other containing anti-swine-brucellosis-serum, both antisera being of known titer, were lyophiled and sealed. Half of the tubes in each series were opened by the regular method of scoring and breaking, and the other half were opened by the method herein described. Upon determining the agglutination titers of the redissolved material, no difference was noted among the various samples.



A noticeable advantage is the fact that the cotton plug is protected by the glass walls of the funnel, and only unusual handling will cause the fluid in the tube to come in contact with the cotton.

A. APPLEBY

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BOOKS RECEIVED

DAVSON HUGH and JAMES FREDERIC DANIELLI. *The Permeability of Natural Membranes.* Illustrated. Pp. x + 361. Cambridge University Press. $4.75.

HARNED, HERBERT S. and BENTON B. OWEN. *The Physical Chemistry of Electrolytic Solutions.* Illustrated. Pp. xi + 611. Reinhold Publishing Corporation. $10.00.

JENKINS, GLENN L. and WALTER H. HARTUNG. *The Chemistry of Organic Medicinal Products.* Illustrated. Pp. vi + 675. John Wiley and Sons. $6.50.

MATHER, K. *Statistical Analysis in Biology.* Illustrated. Pp. 247. Interscience Publishers, Inc. $4.50.