Point A on the emission curve indicates a change in slit width from .500 to .700 mm. The exact equivalence of the positions of the absorption and emission bands is at once evident.

The specific bands, and indeed the whole spectrum, become more intense as the temperature is increased. It has been tentatively established that the emission at any given wave length as a function of temperature follows Wien's Law, $J = A \exp(-c/\lambda T)$. However, the constants are different for different wave lengths, since we are far from the black body conditions to which the general law applies.

The emission spectra offer a new means of study of the liquid state and should prove a useful analytical tool. Extension of the method to determining emission bands at room temperature using a cold receiver is an intriguing possibility.

Further data and experimental details are being prepared for publication.

Dropping Device for Cylinder Plate Assay of Penicillin

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The efficacy of the cup-plate method of assay has been widely established, particularly for estimating potencies of antibiotics. It is the official method for the determination of potencies of penicillin products subject to certification under Federal law. Briefly, the method requires a hardened, seeded agar layer in a standard Petri dish upon which sterile cylinders are placed vertically. The solutions under test are pipetted into the cylinders and the Petri dish incubated at the optimum temperature of the test organism for a suitable length of time. The test solution diffuses through the agar surrounding the cylinder, inhibiting the growth of the organism in that area, resulting in a clear zone in an opaque field. The diameters of the clear zones are measured by suitable devices, and, by comparison with zones produced by standard solutions on the same plate, the potencies of the test solutions are computed.

The actual placing of the cylinders upon the agar surface is a procedure of major import in this test. It is imperative that the agar adjacent to the area occupied by the cylinder shall not be broken and that the cylinders fall onto the agar surface from a constant height, since it has been shown that the gravity drop of the cylinder determines the depth through which it sinks into the agar and variations in the depth result in variations in zone diameters. Efficient manual manipulation to control these factors is impossible. Employment of such devices as the plastic cylinder guide (*1*) is impractical from the standpoint of time when large numbers of plates are required.

One of us (R.D.S.) has developed a mechanism which seats four or six sterile cylinders simultaneously upon the agar surface, evenly spaced, from exactly the same height. The Petri dish, containing the hardened, seeded agar layer, from which the porcelain cover has been removed, is set upon the tray (A) of the dispenser as guided by the pins thereon. Lever (B), as shown in Fig. 1, is then depressed, causing the tray and dish to be lifted approximately one inch. At this moment lever (C) is shifted first to the left and then released to discharge the cylinders simultaneously from the metal tubes (D). The cylinders drop approximately one-half inch and seat themselves firmly on the upper surface of the agar. The tray is then lowered, the Petri dish removed, and the porcelain cover replaced. Employing this device, a technician "cups" an average of 10 plates per minute, whereas it requires four times that interval to "cup" the plates manually.

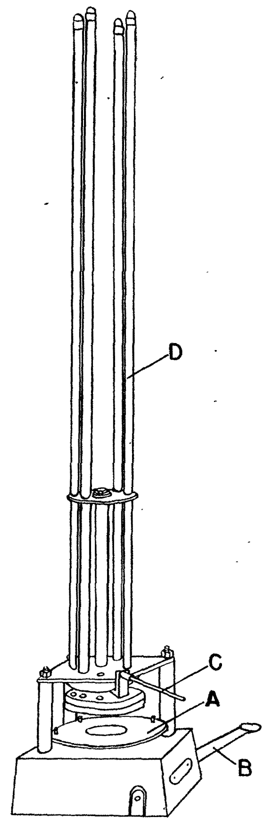

FIG. 1. Penicillin cup-dropping device.

The mechanism is of metal construction, permanently mounted on a heavy metal base five inches square and two inches in height. Over-all height, with the tubes in place, is approximately 30 inches. The distance of the drop of the cylinders is adjustable. The cylinders are stacked in the metal tubes, which hold approximately 60 cylinders each, sterilized and cooled previous to use.

The novel features can be applied in placing other articles or substances on dishes of other forms and sizes. Considerable variation of the mechanism is possible in minor details, proportions, and materials.

Reference

1. OSWALD, ELIZABETH J., and RANDALL, WM. A. *Science*, 1945, **101**, 99–100.