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THE CONCEPT OF INTERNATIONALISM[1]

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To all men of good-will, the thought of peace on earth must occur, and to many through the centuries it has been a compelling preoccupation. At no time in the world's history can it have presented itself more forcibly than now when the war in Europe is in its final stage, and arrangements for an adequate peace settlement have become imminent. As an important part of the historian's task is to illuminate the present by explaining the past, it is both fitting and highly desirable to consider here the pertinent events of the past that bear on this most important question of a better world order, and thus aid, no matter how slightly, toward a better comprehension and solution of the problems involved.

In 1933 this section held a Symposium on Nationalism[2]; I feel that it is significant that to-day it seems desirable to contemplate the concept of internationalism. As your chairman, charged with the responsibility of addressing the section, I have ventured to go out of my own field to consider the subject—not claiming any special knowledge and even admitting to the scholar's sin of utilizing some secondary sources, but with an amateur's enthusiasm and a lively sense of the importance of an informed public's opinion, especially while the course of legislative and administrative action is being shaped. I was further spurred to learn what I could from a considerable "literature" on the subject, in spare moments spread over several months, by the recent appearance of Hans Kohn's book on "The Idea of Nationalism."[3] My surprise at his view that the idea of "nationalism" only began with the French Revolution was equalled by the discovery that a real concept of internationalism had cropped up not infrequently since the ancient Greeks and Hebrews, even though the word did not appear in dictionaries

1 Vice-presidential address, Section L—History and Philosophy of Science, American Association for the Advancement of Science, Cleveland, Ohio, September 12, 1944.

2 W. G. Leland, "Nationalism," Papers presented at the 1933 meeting of the American Association for the Advancement of Science.

3 Hans Kohn, "The Idea of Nationalism," New York: Macmillan, 1944.

the lathe and centered and to this board the Plexiglas was held by wood screws inserted through the holes previously bored. The Plexiglas was then turned on the lathe to the proper dimensions for the outside diameter and undercut and the holes enlarged to the dimensions given in Fig. 1.

While glass cylinders have been and are to some extent still used, most of the cylinders now being used in this laboratory are made of high-strength aluminum alloy tubing, No. 24ST, outside diameter 5/16 inch, wall thickness 0.035 inch, inside diameter 0.242 inch. This tubing is cut in 1 cm lengths, beveled at one end on the outside and the beveled end ground smooth. It has recently come to our attention that stainless steel cylinders are now available. These should prove to be more durable than aluminum.

The arrangement of the six apertures, which allow free passage of the cylinders and at the same time direct them to positions properly spaced, permits the latitude desired in setting up various forms of the assay. In one type of assay procedure used in this laboratory five cylinders are filled on each plate, using four plates for each assay. On each plate two cylinders are filled with standard penicillin diluted to one unit per cc with 1 per cent. phosphate buffer and to three cups is added the unknown solution diluted with phosphate buffer to approximately 1 unit per cc. The ampuls or vials submitted to this laboratory are quite consistently labeled as containing 100,000 units. A primary dilution to 40 units per cc is made with pyrogen-free distilled water, after which further dilution is made with phosphate buffer to the 1 unit per cc level. In this procedure the potency is calculated using a standard curve. Numerous assays have been conducted in which the potency is interpreted statistically.[1] In the latter method four cups are utilized, two dose levels of standard and unknown being placed on each plate. When the guide is used in this procedure one of the periphery cups is simply omitted.

When large numbers of assays are to be calculated, some time may elapse before the results can be tabulated. In order to obtain a potency figure while the statistical results are being calculated, it has been the practice to use five cups on each plate in setting up the assay. Two dose levels, one at 0.25 unit per cc and another at 1 unit per cc are employed and in the fifth cup is placed an additional unknown at a concentration level of 1 unit per cc. In a four-plate assay this gives four standards and eight unknowns. The potency can be calculated by using a standard curve and the value corrected, if necessary, when the result of the statistical analysis is available.

The center aperture is seldom used, but there are occasions which call for the assay of crude extracts, filtrates, etc., when a rough estimate of activity suffices. In such instances a one-cup assay may be run, permitting five assays on one plate with the standard in the center cup.

The use of the guide offers several advantages. It is simple to make, easy to clean and virtually indestructible. The cylinders fall the same distance onto the agar, insuring a good seal between the agar and all cups and providing for accurate and uniform spacing on all the plates. The guide should prove helpful for inexperienced operators who often have difficulty in evenly spacing the cylinders and who may drop them in such manner that they fail to remain upright. Assayists who have had nearly a year's experience in testing penicillin have found that the guide expedites placing the cylinders in position and that the operation requires less concentration on the part of the assayist.

[1] The statistical method used in calculating the potency and its error has been submitted for publication.

SUMMARY

A guide or template is described which facilitates placing the cylinders on the agar surface in the plate assay of penicillin.

The general plan of conducting the assay is discussed and several advantages of the use of the guide are noted.

We wish to thank Mr. Albert G. Sterling, instrument maker, for fabricating the guide and the aluminum cylinders.

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