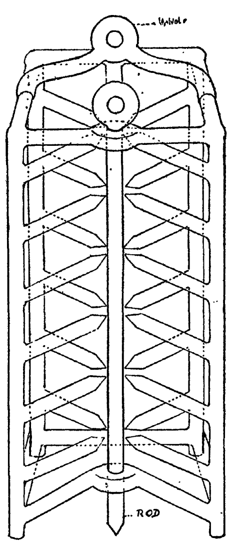
A COVER-SLIP CARRIER

THE apparatus described below has been used for some time by the author for carrying numerous cover-slips through the fixing, dehydrating and staining fluids. Its advantages are: (1) It carries many cover-slips at the same time. (2) It is easy to move from solution to solution. (3) It necessitates much less material in the end. (4) It gives a like treatment to every piece of tissue on the cover-slip.

It is a small glass cage with one side open for the slip to be inserted. This opening is closed by a glass rod. The shelves are made of glass prongs that do not quite reach the middle and are slightly tilted so as to drain to the main bars. A small handle surmounts the entire structure.

In moving from one solution to another the cage was rested on absorbent paper, thus allowing excess fluid to drain off. Small glass tumblers with ground glass tops were used for reagents.



Mr. Morgan, of Eimer and Amend, was extremely helpful in changing my design for a metal cage to a glass one and can give any necessary information.

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SPECIAL ARTICLES

ON THE CHANGE FROM THE CONVECTIVE TO THE SPARK DISCHARGE OF THE MUCRONATE ELECTRODE

Apparatus. This is the same as described in my last paper,[1] E E' being the electrode discs (2 cm. in diam.) of the spark gap x of a small electrostatic machine. E' is provided with an axial tube leading to the interferometer U-gauge beyond U, for measuring the pressure of the electric wind from the needle point y protruding a little beyond E. S is the head of the micrometer screw by which y may be set in length until the pressure at U just vanishes and the convective discharge from E to E' (wind) breaks up into the pressureless spark discharge. If thereafter y increases but .1 mm., the pressure at U instantly becomes a maximum, and relatively enormous, as heretofore explained (see graph A). Hence the particular position of S in question may be called the critical set.

Observations. With the apparatus in this condition, I noticed (in the dark) that if the finger touched the set screw s of the post P, the strong electric wind E to E' immediately broke up into a hollow cylinder of sparks implying absence of all pressure at U. A faint brush was also usually seen at s' of the post P'. Removing the finger restored the wind and its pressure at U. At such times the cathode needle point, only, is faintly luminous. The experiment may, of course, be indefinitely repeated. On touching the anode at s' the behavior is similar, but much less marked. Sparking is apt to persist for the fraction of a second after withdrawing the finger, evidencing a kind of inertia.

It seemed probable that the cause of this occurrence would be the increased capacity of the electrode E and I therefore installed apparatus hoping to detect a relation between the extrusion y of the needle point, and the capacity increment in question. This I was unable to do consistently, as all capacities from 3×10^{-6} m.f. to about 10^{-3} m.f. often seemed to be equally effective in changing the wind into a spark succession. The larger capacities, however, admitted of a larger range of needle extrusion y. After long sparking the phenomena often seemed to tire.

As very small capacities were needed, I provided a set of rectangular proof planes p all about $b = 6$ cm. long and of varying width a (see figure). These were made to touch the set screw s in succession.

The effect of this contact for $a = 2$, 4, 5, 6 cm. was merely to produce momentary initial sparking, after which the wind pressure reappeared in spite of the presence of the plane. With $a = 7$ cm., however, the plane in contact at s was able to hold the spark succession permanently, provided the z distance (see figure) exceeded about 5 cm. For small z, pressure again appeared. For a = 8, 9 cm., etc., the plane became more and more dominating, and for $a = 10$ cm.

[1] SCIENCE, XLV, 1927, p. 448.