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THE ROLE OF PURE SCIENCE[1]

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ONE anecdote has it that, when Gladstone, shown the electromagnetic motor, asked, "What good is it?" Faraday replied, "What good is a baby?" The same question might be asked about science itself, the last great offspring of civilization, sired by intelligence. If no longer a baby, it is at least an obstreperous child, already playing mischievous pranks on its staid mother, and fearsomely regarded by many as irrevocably headed towards a wayward youth and a criminal maturity. Some babies are best unborn; is this such a one? Science, we hear, has warmed our homes but not our hearts, increased our longevity but not our charity, raised our speed but not our hopes, brightened our nights but not our spirit; in short, that it has comforted our flesh but destroyed our soul. Society is sick and science must be poisoning it, for it has been taking great mouthfuls of the bitter stuff; and is it not always something just eaten that is responsible for any ache?

As a physician, I know that a generous portion of peppermint, applied outside or in, neither brings on nor wards off a renal colic; and as a scientist I demand better evidence than "post hoc ergo propter hoc," before agreeing that the social organism is suffering from scientific dyspepsia. But let us clearly understand one another before proceeding.

"Science," as Conklin, retiring president of the American Association for the Advancement of Science, said last week, "is organized knowledge, and knowledge itself is neither good nor bad but only true or false." Pure science is concerned only with understanding, not with using; it might be denounced as valueless, never as harmful. But, comes the cry, this is sophistry; for are not scientists incessantly prating their wares and

[1] An address presented before the American Institute at a symposium on "Some Social Implications of Inventions."

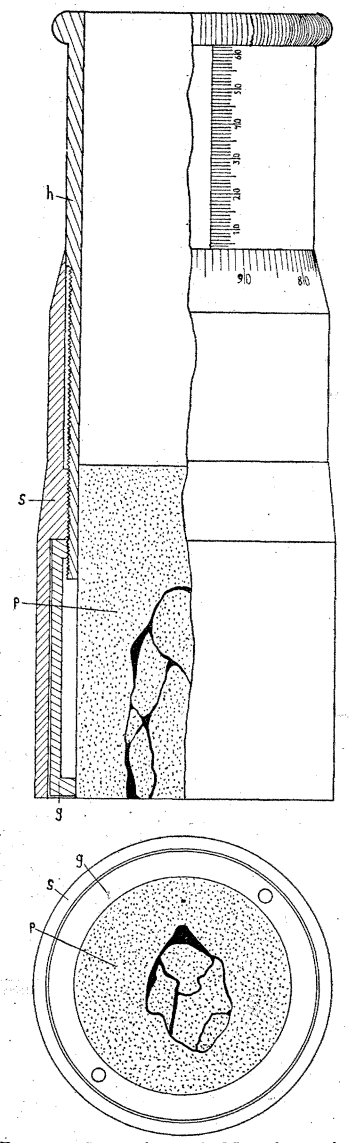

FIG. 1. Improved specimen holder for grinding serial sections. The upper figure represents, to the right, a lateral external view of the apparatus, and, to the left, a longitudinal section. The lower figure represents an end view. Both show a plaster block, with embedded specimen, in place at a stage when a section has just been completed. About one half natural size. g, guide for the plaster block, also serving as set-screw. h, holder. p, plaster block with specimen. s, sleeve.

the cleaning of grinding stone and specimen in order to prevent rust.

OTTO ZDANSKY

A MICRO-CONDUCTIVITY CELL OF SIMPLE DESIGN[1]

IN some recent studies of the rate of elimination of materials by the excretory system of insects, we have made use of the change in electrolytic conductivity of the physiological salt solution bathing the malpighian tubules as an indicator of change in overall salt concentration.

Since the volume of liquid was only about 20λ, it was necessary to use a conductivity cell of 10λ volume or less. While several micro-conductivity cells have been described,[2] they are not easily constructed, and they do not have the advantages of the pipette type in ease of filling and cleaning. Fig. 1 shows the complete cell, right, and a detail of the electrodes, left. For construction, pyrex capillary tubing of about 0.7 mm bore was broken cleanly and one of the cylindrical platinum electrodes with the lead attached was inserted and shaped to fill the tube, using a finely drawn glass rod as a tool. The two pieces of capillary were then reunited in a soft oxygen flame, taking care that the platinum cylinder completely filled the bore of the tube. The tube was then broken again at a second point and the second electrode was inserted in the same manner. Finally, the tip and safety bulb were formed, and the electrodes were ready for platinizing.

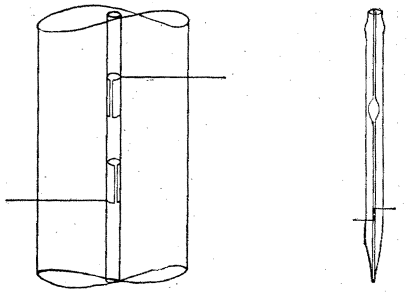

FIG. 1

A cell, as described, will have a resistance of about 2,000 ohms when filled with 1 per cent. NaCl solution. The cell resistance is accurate to 0.1 per cent. at constant temperature.

RODERICK CRAIG
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[1] From the laboratories of insect physiology and toxicology, Division of Entomology and Parasitology, University of California, Berkeley, California.

[2] See, for example, H. L. White, *Jour. Biol. Chem.*, 99: 445, 1933.

BOOKS RECEIVED

CHAPMAN, FRANK M. *Life in an Air Castle; Nature Studies in the Tropics.* Pp. xii + 250. 31 plates. Appleton-Century. $3.00.

CURTIS, WINTERTON C. and MARY J. GUTHRIE. *Textbook of General Zoology.* Third edition. Pp. xvii + 682. 486 figures. Wiley. $3.75.

Der feste Körper. Pp. v + 154. 50 figures. S. Hirzel, Leipzig.

DIETRICH, HAROLD G. and ERWIN B. KELSEY. *Laboratory Manual to Accompany Introductory General Chemistry.* Revised edition. Pp. ix + 218 + 118. 14 figures. Macmillan. $1.90.

GOLDBLATT, L. A. *Readings in Elementary Chemistry.* Pp. v + 150. Illustrated. Appleton-Century.

NOYES, ARTHUR A. and MILES S. SHERRILL. *A Course of Study in Chemical Principles.* Second edition, revised. Pp. xxv + 554. Illustrated. Macmillan. $5.00.

PARENT, O. *Faune de France.* Pp. 720. 1002 figures. Lechevalier, Paris.

WHELPTON, P. K. *Needed Population Research.* Pp. xv + 196. The Science Press Printing Company. $1.00.