SCIENCE

VOL. 99 FRIDAY, JANUARY 14, 1944 No. 2559

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. MCKEEN CATTELL; WARE CATTELL, assistant editor. Published every Friday by

THE SCIENCE PRESS

Lancaster, Pennsylvania

Annual Subscription, $6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary in the Smithsonian Institution Building, Washington 25, D. C.

WHAT SCIENCE REQUIRES OF THE NEW WORLD[1]

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Fellow Americans:

PERMIT me to say a word first to the members and affiliates of the American Association for the Advancement of Science, whose number approaches a million.

Once more, because of the rigors of war, we have found it impossible to hold the annual meeting that has been our tradition for almost a century. My own colleagues, as typical members of our association, are this afternoon in their laboratories, engaged as devotedly as any member of the armed forces in the effort to preserve our country's freedom. Yet the world comes to us as representatives of science with searching questions. We must pause to give a considered answer. "This is a war of science and technology," they tell us. "Do the forces of freedom have the knowledge, skill and technical resources needed to bring victory?" "After the war is over how will science have changed our world?" The nation asks us, "What of the night, and what of the day that is to dawn?"

Unconditional answers to these questions can not be given. Yet it is possible to say something about the present balance of scientific power and to point the direction in which science makes it necessary for the world to move.

I have accordingly chosen as my subject for to-day, "What Science Requires of the New World." For science is not only a servant; it also gives orders. There is a legend that Daedalus, the Greek hero who first learned how to work with steel, toiled long and hard with his forge and anvil to fashion a sword. This he presented to King Minas to replace his old one made of bronze. The citizens of Crete came to him in consternation. "This sword will not bring us happiness," they complained, "it will bring us strife."

[1] Address of the retiring president of the American Association for the Advancement of Science, January 1, 1944.

sampling devices, since they may retain some of the material to be collected. Furthermore, they are expensive and fragile and their design is not adapted for sampling in locations difficult of access, such as air ducts.

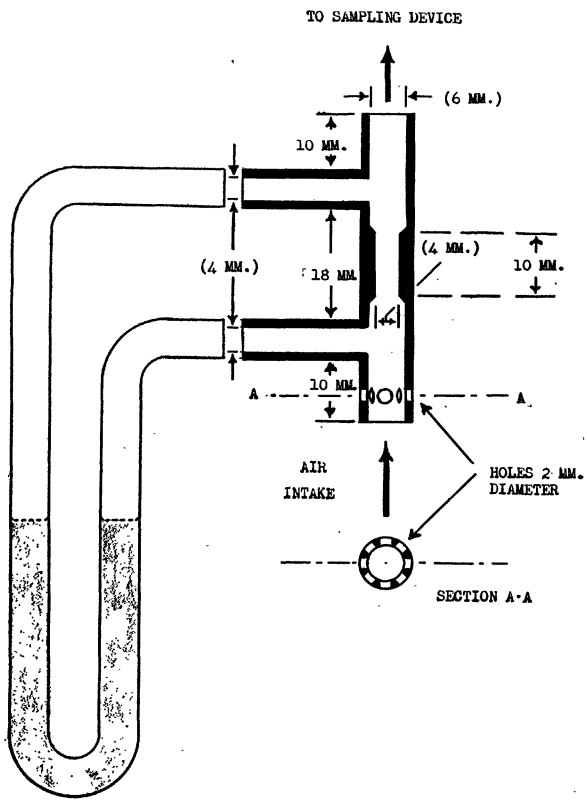

FIG. 1.

To avoid these objections the small flowmeter shown in Fig. 1 was developed. It is designed to be attached to the upstream end of any sampling device. A constricting orifice of 4 mm inside diameter and 10 mm length in a tube of 6 mm inside diameter and 48 mm in length will give a satisfactory change in static pressures for air-flows between 0.33 and 1.30 cu. ft. per minute. This change in static pressure is measured by a glass manometer (4–5 mm inside diameter and 120–150 mm long) filled either with water or a 1 per cent. solution of a suitable detergent with a few drops of phenol red added for coloring; the latter solution inhibits mold growth and improves the wetting of the glass. Graph paper ruled in millimeters backed by a wooden tongue depressor blade and bound to the manometer with transparent cellulose tape provides a simple scale. Any non-corroding metal or chemically inert plastic, such as Plexiglas, may be used in the construction of the flowmeter.

For calibration the flowmeter should be attached upstream to a standard wet-gas meter or a previously calibrated Venturi meter. The calibration curve shown in Fig. 2 has been reproducible within ±5 per cent. by either calibration method.

The eight 2-mm holes drilled 45° apart into the intake end of the meter maintain the static pressure

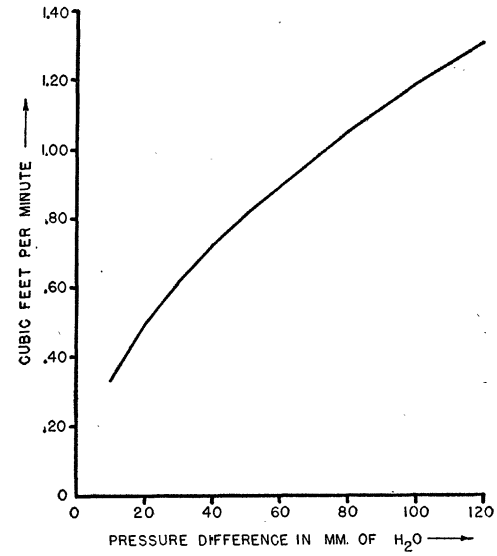

FIG. 2. Calibration curve for flowmeter (mean of 120 determinations) maximum deviation ±5 per cent.

difference within 1–2 mm of water for a given airflow when the flowmeter is transferred from still to rapidly moving air;[6] without these holes a drop in pressure of 5–10 mm of water occurs.

It is especially designed for accurately measuring air-flows through the Moulton atomizer sampler and Folin aeration tube. Since it is readily cleaned, it does not interfere with determination of air-suspended microorganisms or glycol vapors. It is sufficiently compact and durable so that air samples may be taken in a wide variety of locations.

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[6] Velocities up to 2,500 ft./min.

BOOKS RECEIVED

CLARK, E. P. *Semimicro Quantitative Organic Analysis.* Illustrated. Pp. v + 135. Academic Press, Inc. $2.50.

FEIGL, FRITZ. *Laboratory Manual of Spot Tests.* Translated from the German Manuscript by Ralph E. Oesper. Illustrated. Pp. xii + 276. Academic Press, Inc. $3.90.

SIGERIST, HENRY E. *Civilization and Disease.* Illustrated. Pp. xi + 255. Cornell University Press. $3.75.

SOPER, FRED L., D. BRUCE WILSON, SERVULO LIMA and WALDEMAR SA ANTUNES. *The Organization of Permanent Nation-Wide Anti-Aedes Aegypti Measures in Brazil.* Illustrated. Pp. 137. The Rockefeller Foundation.