A SIMPLE DEVICE FOR SHOWING BY A HYDRAULIC ANALOGUE THE EFFECT PRODUCED ON THE POTENTIAL DIFFERENCE BETWEEN THE TERMINALS OF AN ELECTRIC CELL WHEN THE CIRCUIT IS CLOSED

THE Lodge theoretical paddle wheel device shown by Professor Kimball in Figs. 336 and 337 of his "College Physics" (ed. 1917) suggested to the writer an arrangement which would render possible an actual lecture demonstration.

Into the glass U-tube of Fig. 1 a stream of water is injected at P. The water is removed at the exits E and E', the sizes of which may be controlled by adjustable pinchcocks C and C' on the rubber tubes T and T'. The "current" is controlled by the pinchcock C'' or one's fingers on the rubber tube T." The inflow at I may be controlled by the faucet to which the apparatus is attached. When C'' is closed, h represents the potential difference on open circuit. Upon opening C," level B falls and A rises: $h' < h$ or the potential difference decreases when the circuit is closed.

My friend, Professor F. A. Saunders, has modified the arrangement by placing the water-spout at P' (Fig 2). This is an improvement from the pedagogic standpoint as the source of gross energy in an electric cell lies at the surface of separation between one plate and the electrolyte. He also suggests removing the injected water at but one point, E'' (Fig. 2).

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THE AMERICAN METEOROLOGICAL SOCIETY

THE second meeting of the American Meteorological Society was held at the Weather Bureau, Washington, D. C., on April 22, 1920. The attendance was 40 to 50 at each of the two sessions, held in the morning and in the evening. Professor C. F. Marvin, chief of the U. S. Weather Bureau gave a short address of welcome, which was followed by a program of 15 papers. Brief synopses of the papers and discussions were published in the society's bulletin for May, 1920 (pp. 48–55); and the papers themselves or authors' abstracts are still appearing in the *Monthly Weather Review* (issue shown in parentheses). The program was as follows:

**Temperature scales and thermometer scales:* E. W. WOOLARD. (May.)

Shall we adopt a half-degree absolute centigrade scale instead of the Fahrenheit? CHARLES F. MARVIN. (Not published.)

The physics of the aurora: W. J. HUMPHREYS. (Abstract to be published.)

**The auroras of March 22–25, 1920:* HERBERT LYMAN. (July (?).)

The most intense rainfall on record: B. C. KADEL. (May.)

**New aerological apparatus:* S. P. FERGUSON. (June.)

Temperatures versus pressures as determinants of winds aloft: W. R. GREGG. (Abstract, May.)

**Daily wind charts for stated levels:* C. LEROY MEISINGER. (May.)

Cloud base altitudes as shown by disappearance of balloons and kites: O. L. LEWIS. (July (?).)

**Cloud nomenclature:* CHARLES F. BROOKS. (July(?).)

**Some meteorological observations of a bombing pilot in France:* THOMAS R. REED. (April.)

Project for local forecast studies: R. H. WEIGHTMAN. (March.) (By title.)

Climatic conditions in a greenhouse as measured by plant growth: EARL S. JOHNSTON. (Abstract, April.)

Modifying factors in effective temperature: ANDREW D. HOPKINS. (April.)

Relation of rainfall to the grazing capacity of ranges: J. WARREN SMITH. (June.)

Separates have been or are to be made of those starred, and may be obtained from the U. S. Weather Bureau, Washington, D. C.

The American Meteorological Society, the project of which was announced in SCIENCE, just a year ago (August 22, 1919, pp. 180–181), and of which progress was reported (December 12, 1919, pp. 546–547) and organization in December announced (March 12, 1920, pp. 275–276), has grown with unexpected rapidity to a membership of nearly 1,000. Plans are being made for the organization of a Brazilian division of the society, and it is probable that a Pacific division will be organized when the Pacific section of the American Association for the Advancement of Science meets next summer.

The reaction is not general for the aromatic hydrocarbons, but is specific for those of the *benzene series.* Hydrocarbons with more than one benzene ring, like diphenyl and triphenyl methane, benzidine, naphthalene and anthracene all proved to be inert. Heterocyclic compounds also gave negative results.

We mentioned already that the increase in the number of methyl groups in the benzene ring results in a corresponding decrease of the catalytic activity of the compound. The introduction into the ring of a carboxyl group, an $NHNH_2$ group or of phenol groups renders the hydrocarbon incapable of decomposing hydrogen peroxide. On the other hand, the presence of nitro, amino and aldehyde groups, or of a halogen atom does not prevent the compound from breaking up of hydrogen peroxide, though its power is much less than that of the unsubstituted hydrocarbon. Aniline, nitrobenzene, benzaldehyde and chlorbenzene decompose hydrogen peroxide, but dichlorbenzene, benzylchloride or benzoylchloride, were found inactive. Adrenalin, both the base and the hydrochloride, decompose hydrogen peroxide though very feebly.

A more detailed discussion of the catalase-like reaction of benzene and its homologues is reserved for the near future. Suffice it to say that we have satisfied ourselves that this decomposition is not caused by changes in surface tension.

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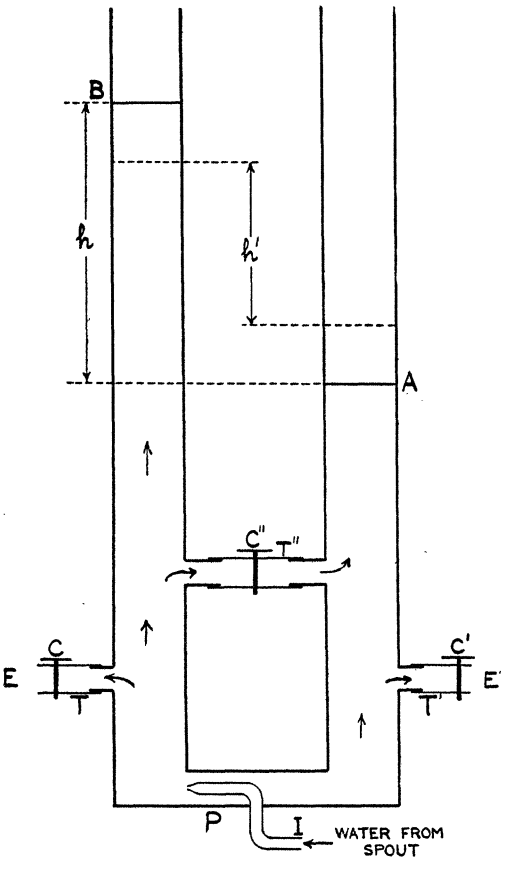

Fig. 1.

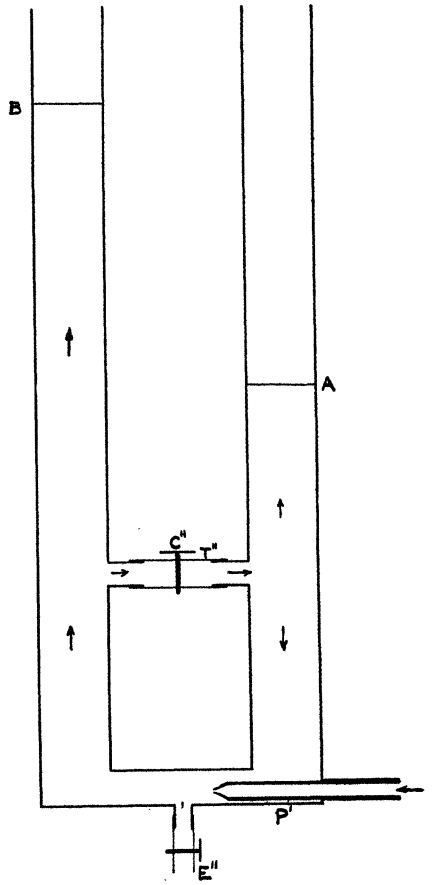

Fig. 2.