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ELIHU THOMSON¹

ELIHU THOMSON'S INTEREST IN RESEARCH

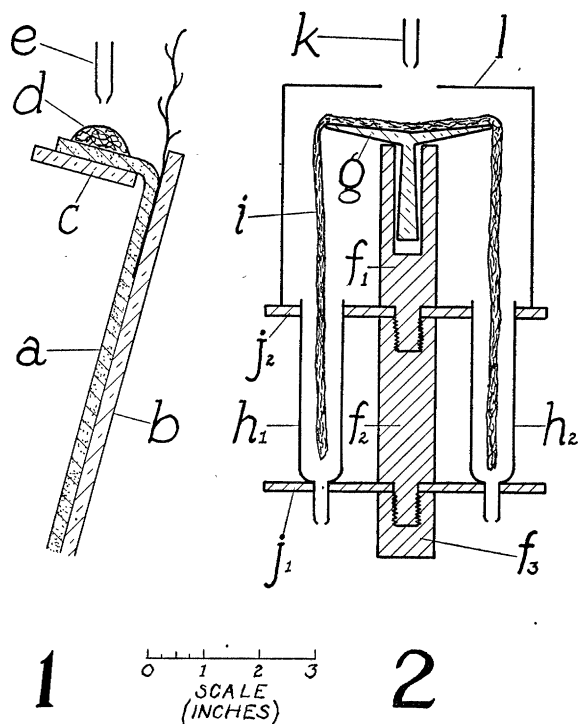
To treat this subject comprehensively would be to write a complete biography of Professor Thomson, for research, both in its broadest sense of a search for knowledge and in its narrower sense of systematic experimentation, was the major interest of his life.

As a young boy we find him studying industrial processes, both mechanical and chemical. At the age of ten or eleven he was constructing small cupola furnaces and attempting to make iron castings. Prepared for high school two years before he reached the required age for entry, and urged to give up his books for a while, he weepingly protested that life would not be worth living if he had to discontinue his studies. He employed the two-year interval in school work

¹ Papers presented at a meeting in commemoration of the life and work of Elihu Thomson under the auspices of the American Philosophical Society, the Franklin Institute of Pennsylvania, the Central High School of Philadelphia, the Massachusetts Institute of Technology and the General Electric Company, held in the halls of the American Philosophical Society and the Franklin Institute on February 16.

in building static machines, Leyden jars, condensers, etc., and was continually making experiments, some of which, as he recognized later, were worthy of publication as original matter. Chemical knowledge he was simultaneously pursuing, through books and by experiment.

Throughout his high-school years he was always "constructing things," but it was after graduation, when at the age of seventeen, he became assistant professor and, two or three years later, full professor of chemistry, that his marvelously productive career as a scientist truly began. It was during this period from the age of seventeen to twenty-seven that he published his first original papers (on chemical subjects); experimented with electromagnetic waves, foreshadowing radio, and produced the first "tuned" circuit; accomplished telephone relaying; studied the fundamentals of dynamo-electric machines and established new and basic principles; suggested high voltage d-c transmission; advanced the novel but now accepted theory of relation between sun-spots, magnetic storms and auroras; studied hysteresis, and advanced precociously



FIGS. 1 and 2 (the scale applies only to Fig. 2.)

Referring to the figure, (f_1), (f_2) and (f_3) are sections of brass rod which screw together to form a single central column. At the two points of junction of the sections are mounted the circular brackets (j_1) and (j_2), in which are holes for holding the funnel tubes (h_1) and (h_2). On the top of the brass column is mounted a shallow glass dish (g)—made from the inverted foot of a wine glass or sherbet glass, with the stem suspended in a deep recess bored in the top of the column. A wick (i), consisting of a strip of glass cloth or tape,⁵ is placed with its central portion resting in the shallow glass dish (g) and its ends suspended in the funnel tubes (h_1) and (h_2). (l) is a glass cover for maintaining the humidity around the upper portion of the wick (i). It is made from a small battery jar, inverted, with a hole bored in the bottom for the inflow tube (k). The apparatus is mounted by means of burette clamps (not shown) on the half-inch rod of a laboratory stand.

In operation of the device, the incoming solution stream, dripping from the inflow tube (k) onto the central portion of the wick (i), is subdivided by the capillary action of this into two outgoing streams dripping from the ends suspended in the funnel tubes

(h_1) and (h_2). From these the solution flows to the wick-culture apparatus below. If the two portions of the wick are closely equal in width and length, then the solution streams dripping from them will also be found to be closely equal (readily within 5 per cent., which is adequate for the purpose in hand). Simultaneous subdivision into four streams has been accomplished without difficulty in this manner.

With regard to the mode of operation of the device, it may be interesting to note that there is a tendency to a pulsation or rhythm in its action. Liquid tends to accumulate in the shallow glass dish, and then to drain out through the ends of the wick. It would seem therefore that, at least in part, the mode of action of the device is that of an intermittent siphon with multiple outlet tubes.

M. A. RAINES

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BOOKS RECEIVED

- BISBY, G. R. and others. *The Fungi of Manitoba and Saskatchewan*. Pp. 189. 13 plates. National Research Council of Canada, Ottawa. \$3.50.
- BRITTON, WILTON E. and BENJAMIN J. KASTON. *Additions to the Check-List of the Insects of Connecticut (First Supplement to Bulletin No. 31)*; *Check-List of the Spiders of Connecticut*; Bulletin No. 60, State Geological and Natural History Survey, 1938. Pp. 201 + v. The State, Hartford.
- Comité National Français de Géodésie et Géophysique; *Assemblée Générale du 21 Décembre, 1937*. Pp. 137. Secrétariat Général du Comité Français, Paris.
- HAGELSTEIN, ROBERT. *Scientific Survey of Porto Rico and the Virgin Islands; Vol. III, Part 3, Botany of Porto Rico and the Virgin Islands—Diatomaceae*. Pp. 313–444. 9 plates. New York Academy of Sciences.
- HELLMAYR, CHARLES E. *Catalogue of Birds of the Americas; Ploceidae-Catamblyrhynchidae-Fringillidae; Vol. XIII, Part XI, Publication No. 430, Zoological Series*. Pp. vi + 662. Field Museum of Natural History. \$5.00.
- HOOTON, EARNEST A. *The American Criminal, an Anthropological Study; Vol. I, The Native White Criminal of Native Parentage*. Harvard University Press. \$10.00.
- HORNEY, KAREN. *New Ways in Psychoanalysis*. Pp. 313. Norton. \$3.00.
- JACKSON, DUGALD C. *Engineering's Part in the Development of Civilization*. Pp. 114. American Society of Mechanical Engineers, New York.
- JUST, ERNEST E. *The Biology of the Cell Surface*. Pp. xi + 392. 42 figures. Blakiston.
- Landmarks in Medicine; Laity Lectures of the New York Academy of Medicine*. Pp. viii + 347. 15 figures. Appleton-Century. \$2.00.
- OULIE, MARTHE. *Charcot of the Antarctic*. Pp. xvi + 235. Illustrated. Dutton. \$3.50.
- RATNER, JOSEPH, Editor. *Intelligence in the Modern World; John Dewey's Philosophy*. Pp. xv + 1077. Modern Library, New York. \$1.25.
- Sir Chandrasekhara Venkata Raman; *Jubilee Volume of Original Papers Presented in Commemoration of his Fiftieth Birthday, 1888–1938*. Pp. 243–565. Illustrated.
- WENTWORTH, CHESTER K. *Ash Formations of the Island Hawaii; Third Special Report of the Hawaiian Volcano Observatory of Hawaii National Park and the Hawaiian Volcano Research Association, 1938*. Pp. viii + 183. Illustrated. The Association, Honolulu.

² SCIENCE, 55: 483–486, 1922.

³ Bot. Gaz., 84: 317–323, 1927.

⁴ SCIENCE, 81: 540–542, 1935.

⁵ Cloths and tapes woven from spun glass may be obtained from the Fibre Products Division of the Corning Glass Works, Corning, N. Y.

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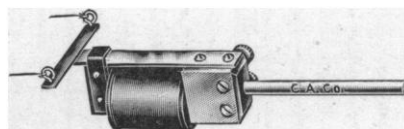
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