movement of the end of the bar (e) and assures a quick and positive movement of the valve when the vessel (d) moves from the "down" to the "up" position. A suitable counter weight is suspended from the bar (e).

As indicated in the diagram, when the vessel (d) is in the "up" position air pressure from the compressed air main forces the culture solution up into the sand containers. As the solution rises in the sand it also rises in tube (b), the height of which is adjusted so that when the solution has almost reached the surface of the sand it overflows and fills vessel (a) until the siphon (c) is started. Vessel (a) then empties into vessel (d) where the weight of solution overcomes the balance weight, causing the rotation of the valve (g), shutting off the compressed air and releasing the air pressure in the carboy. The culture solution from the sand containers drains back into the carboy, while the one-way glass valve in the tube (f) allows the culture solution in the vessel (d) to drain back into the carboy. By constricting this tube the frequency of irrigation can be adjusted. When vessel (d) has emptied it returns to the "up" position and in so doing again turns on the compressed air at the valve (g).

Other sand containers irrigated from the same carboy are attached to the solution line (b) as indicated at (i). When additional culture solutions are to be used their carboys need only be connected to the air line, as shown at (j). Carboys need not be of the same size, but it is essential that the amount of solution in each carboy be so adjusted that when the compressed air is automatically shut off the level of the residual solution in all carboys is the same.

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A SIMPLIFIED TECHNIQUE FOR FORENSIC PRECIPITATION TESTS

FORENSIC precipitation tests for the identification of blood stains or other antigens can be carried out by merely placing small bits (1 sq. mm) of stained fabric, very thin wood shavings or a few particles of scrapings on a clean glass slide and adding one drop of the specific antiserum and control antisera to the test objects. In the presence of the specific antiserum, a macroscopic precipitate appears almost as soon as the object is thoroughly wetted. In normal rabbit sera or heterologous immune sera no precipitate forms. The addition of a small cover slip to each spot flattens the drop and makes it possible to observe the results with a hand lens or microscope. The cover slip is quickly sealed into position by drying of the serum at the margin so that the slides can be examined in any position.

The width of the zone of precipitation affords a rough indication of the relative potency of the extract and the antiserum. A strong antiserum in the presence of weak extract produces precipitate only around the object, while a potent source of extract causes a much wider zone of precipitate.

The method has several advantages other than the small amount of material required and the simplicity of the preparations. The preparation of extracts, and concern for their strength and clarity, is unnecessary. The extraction occurs by diffusion and the extracts are clear and undiluted. The outward diffusion of the antigen creates the different proportions of extract and antiserum which favor maximal precipitation. It has been shown that extracts or antisera which are too weak to give positive tests by the usual methods give positive results under these conditions. Since no extracting fluids are required, such controls can be omitted.

Photographic records of the results can be prepared more readily than in the case of tests prepared in tubes. Serological tests can be made under field conditions where only a lens, slides, cover slips and a few drops of antiserum can be carried with ease.

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BOOKS RECEIVED

Annales de L'A.C.F.A.S.; Vol. 4, 1938. Pp. 359. 1 plate. Association Canadienne-Française pour L'Avancement des Sciences, Montreal.

BURNS, ELMER E. *Radio; A Study of First Principles.* Third edition. Pp. xvi + 293. 236 figures. Van Nostrand. $2.00.

CLARK, W. E. LEGROS and others. *The Hypothalamus; Morphological, Functional, Clinical and Surgical Aspects.* Pp. xii + 211. Illustrated. Oliver and Boyd, Edinburgh and London. 12/6.

GOODMAN, NATHAN G., Editor. *Profile of Genius; Poor Richard Pamphlets: I, Life of Benjamin Franklin Year by Year, 1706–1790,* pp. 58; II, *On Honesty,* pp. 35; *The Way to Wealth and Words of Wisdom, from Poor Richard's Almanack,* pp. 35; *On Peace,* pp. 25; *The Practical Dr. Franklin,* pp. 49; *On Industry, Frugality, and Thrift,* pp. 29; *On Citizenship,* pp. 39; *On the Art of Virtue,* pp. 34; *On Religion,* pp. 39. Franklin Institute, Philadelphia. Set, $2.25.

LEPESCHKIN, W. W. *Wissenschaftliche Forschungsberichte; Band 47, Kolloidchemie des Protoplasmas.* Pp. xii + 248. 7 figures. Theodor Steinkopff, Dresden and Leipzig. 19 RM.

ORNSTEIN, MARTHA. *The Rôle of Scientific Societies in the Seventeenth Century.* Pp. xviii + 308. 14 plates. University of Chicago Press. $3.00.

SAYLES, LEONARD P. *Manual for Comparative Anatomy.* Pp. xi + 214. 55 figures. Macmillan. $1.60.

SCHOCH, EUGENE P. and WILLIAM A. FELSING. *General Chemistry; An Introductory Course of Lessons and Exercises in Chemistry.* Pp. ix + 524. 73 figures. McGraw-Hill. $3.25.

WALTER, HERBERT E. *Genetics; An Introduction to the Study of Heredity.* Fourth edition. Pp. xvii + 412. 150 figures. Macmillan. $3.00.

WILLIAMS, SAMUEL H. *A Laboratory and Field Guide to Biology.* Pp. xxv + 130. Macmillan. $1.25.