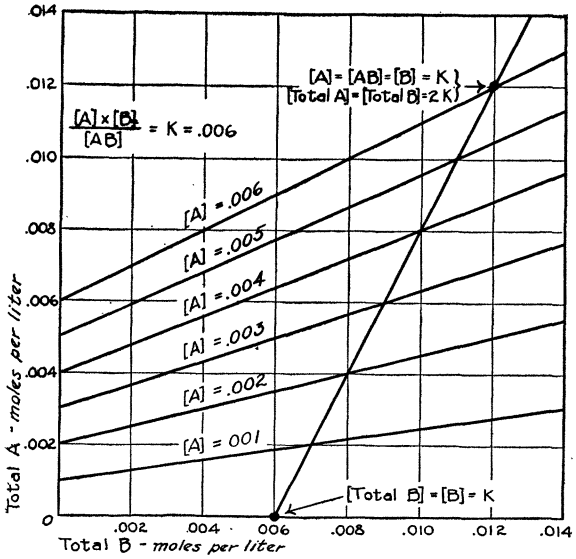

FIG. 1. Cartesian nomogram for law of mass action.

ing all points for [Total A] = n [A], and representing all points at which [B] = (n − 1)K, when n is a number chosen to give a line suitable for the purposes of graphic extrapolation, may be readily located. It follows from Equation 3 that when [A] = [B] = (n − 1)K, [Total A] = [Total B] = $(n-1)K + (n-1)^2K$. A line is drawn through the points [Total B] = (n − 1)K, [Total A] = 0, and [Total A] = [Total B] = $(n-1)K + (n-1)^2K$. The desired points for $[A] = \frac{[\text{Total A}]}{n}$ may be located upon it and connected, by straight lines, with the corresponding points for [A] = [Total A], [Total B] = 0.

The method as described is, of course, applicable only to mass-action equations in which all of the components appear in the first power. A similar, but somewhat more complex nomogram, in which all necessary curves are straight lines, has proved of value in the case of mixtures of two substances when two dissociation constants are involved.

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SEPARATION OF ONE COMPONENT OF POTATO RUGOSE MOSAIC BY pH DIFFERENCE

KOCH[1] showed that certain treatments inactivated one component of potato rugose mosaic without affecting another component ("mottle") which is probably identical with that called "latent mosaic" by Schultz *et al.*[2] In the writer's experiments juice from rugose mosaic potato plants was applied mechanically to tobacco plants after its adjustment to different pH values by means of dilution with citrate or phosphate buffer solutions. With the pH 3.6 or less, no infection occurred. At a range of 4.0 to 5.5, only the latent mosaic appeared. From 5.6 to 7.6 rugose mosaic resulted and at 9.7 only the latent mosaic was transmitted. It was also found that borate ions exhibited a marked toxic effect on the components, while citrate and phosphate ions showed little difference, if any, in their specific toxicity at concentrations less than 0.1 normal. The toxicity was found to vary with the time of contact between the infectious juice and the buffer solutions.

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A SIMPLE METHOD FOR READING FILM-STRIPS

IN a recent communication in SCIENCE[1] Dr. Seidell called attention to the "Biblio Film Service" maintained by the library of the U. S. Department of Agriculture, Washington, and described a magnifier, to cost in the neighborhood of $10, for reading the film-strip. The writer recently obtained some of these film-strips and discovered that they could be read with ease under the low power of the ordinary binocular dissecting microscope. With such magnification about two thirds of the page may be brought into sharp focus, with the added advantage of being able to use both eyes in reading.

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SPECIAL CORRESPONDENCE

BIOLOGY OF SHELL-MOVEMENTS OF THE OYSTER

IN recent work by Nelson,[1] Galtsoff,[2] Marshall Webb[3] and Hopkins[4] on recording graphically and continuously the opening and closing movements of oysters during one or more days, interesting observa-

[1] T. C. Nelson, Report N. J. Exp. Sta., U. S. A., for 1920 (1921).

[2] P. S. Galtsoff, *Bull. Bur. Fish.*, U. S. A., Vol. 44, Doc. No. 1035, 1928.

[3] H. Marshall Webb, *Jour. du Conseil*, 5: 3, 1930, Copenhagen.

[4] A. E. Hopkins, *Bull. Bur. Fish.*, U. S. A., 47: 1, 1931.

[1] Karl Lee Koch, *Phytopath.*, 23: 319–342, 1933.

[2] E. S. Schultz, *et al.*, *Phytopath.*, 24: 116–132, 1934.

[1] SCIENCE, February 15, 1935.