located the traditional "Garden of Eden," and proceeds with commensurate accounts of the results of German, English, French and other hybridizers, until 1902. The author's ability to translate the several languages—he is an accomplished linguist—immeasurably facilitated his thorough search of the literature, which extended over several years and through many libraries in a number of countries. Many of the pertinent facts are stated in lucid translations from, or if in English in, the actual words of the hybridizers themselves. These quotations are introduced with an adroitness and smoothness that would do credit even to the literati.

As already indicated, the work greatly transcends its title in giving a succinct account, probably the best extant, of the rediscovery in 1900 of Mendel's paper, independently by DeVries, Correns and von Tschermak, and the contribution of the late Wm. Bateson in the introduction of Mendelism to the world. The author was aided in the preparation of this account as well as in the production of the rest of the book by a mutually cordial friendship with DeVries, who spent more than two weeks in 1906 in Professor Roberts's home in Manhattan, Kansas, while preparing and revising lectures. The author also spent some time in DeVries's home in Holland. The latter as well as both Correns and von Tschermak have contributed valuable and interesting special letters of personal reminiscences which are included.

The amount of material in the book exceeds the expectations of the only vii + 374 pages, because of the fine, clear print of the extensive though very apposite quotations. This book should go into the hands of all persons interested in either pure or applied biology. The language, including the translated quotations, is such that the general reader may peruse it with facility and keen interest.

ROBERT K. NABOURS

CARNEGIE INSTITUTION,
COLD SPRING HARBOR

# SCIENTIFIC APPARATUS AND LABORATORY METHODS

## A SIMPLE METHOD FOR STAINING SPIROCHETES

THE methods usually employed for the staining of spirochetes in many cases require specially prepared solutions and a mastery of expert technique. A simple, rapid and effective stain based on the method proposed by Kliewe[1] has been used in this laboratory for two years. The solutions are easily prepared in any laboratory and do not deteriorate. The modified method is as follows.

A film of the material to be examined is prepared as usual, air-dried and fixed by passing several times through a Bunsen flame. It is mordanted with a 0.5 to 1 per cent. aqueous solution of potassium permanganate, washed in water, stained with a 2 per cent. aqueous solution of methyl violet and finally washed in water. The time allowed for the action of the mordant is from eight to ten minutes, while the stain is permitted to act for the same period. In staining *Treponema pallidum* it is often desirable to warm the mordant gently on the slide. It is never necessary to warm the stain. For the coarser more easily stained spirochetes a shorter staining time is required, two to three minutes being quite sufficient. The longer period is preferred for the more delicate organisms. With this method the spirochetes are stained bluish-black and the delicate forms stand out clearly. There is a marked contrast on the slide, and the organisms stained by this method have been photographed without difficulty. Good stained specimens have been obtained of various spirochetes, including *Treponema pallidum, Spironema novyi, Spironema obermeieri, Spironema duttoni, Leptospira icterohemmorhagiae, Treponema vincenti,* water leptospira and spirochetes from birds.

[1] *Centralbl. f. Bakt.*, 1924, Ref. 76, 232.

MINNIE B. K. HARRIS

DEPARTMENT OF BACTERIOLOGY,
SCHOOL OF HYGIENE AND PUBLIC HEALTH,
THE JOHNS HOPKINS UNIVERSITY

## ARCUATE MOUNTAINS PRODUCED BY MODIFICATION OF STONE'S STRUCTURE MACHINE

THE machine described by Stone, in the accompanying article, lends itself to certain modifications. In addition to its use in producing thrust normal to the face of the thrust block it can easily be modified so as to transmit a thrust by means of a thrust block the face of which may be at any angle to the direction of thrust. This can be accomplished by using an additional board ($X$) separated from the movable

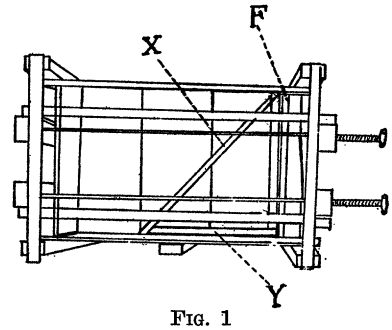


FIG. 1