Charles W. Greene, professor of physiology and pharmacology, University of Missouri, for a study of the physiology of the nervous and reflex control of the coronary circulation through the heart; R. S. Cunningham, professor of anatomy, Vanderbilt University, for investigations on the metabolism of connective tissue cells, and A. T. Rasmussen, professor of neurology, University of Minnesota, for studies of the human hypophysis.

Lee R. Dice, assistant professor of zoology, University of Michigan, for a study of the variability of deer mice, *Peromyscus maniculatum;* E. F. Chidester, professor of zoology, West Virginia University, for investigations on the endocrines of nutrition, and C. A. Barker, Ohio State University, for investigations on the biology of the Miami River near Dayton, Ohio.

Knight Dunlap, professor of experimental psychology, the Johns Hopkins University, for studies on the participation of the muscles of the human body in thought processes, and Forrest L. Dimmick, professor of experimental psychology and research associate, Hobart College, for experimental investigations of auditory experiences.

Only one of the grants so far made has exceeded $1,000 in amount, two grants of this sum having been made, one for $960, one for $600 and four for $500 each. The remaining nine grants were for sums of less than $500. Eight of the eighteen grants were made for the purchase of apparatus; one was for the purchase of supplies; six were for technical assistance, and three for travel and special services.

VERNON KELLOGG,
Permanent Secretary,
National Research Council

GRANTS FROM THE ELIZABETH THOMPSON SCIENCE FUND

PREVIOUS awards from the Elizabeth Thompson Science Fund have been reported in SCIENCE, April 23, 1926, and earlier. Since the last report the following awards have been made:

At the meeting of May 27, 1926

No. 271 to C. E. Mickel, University of Minnesota, $275 toward traveling expenses necessary to visit collections of type specimens for his study of the biology of the Mutillidae.

No. 272 to A. A. Schaeffer, University of Kansas, $200 for aid in the prosecution of his studies on the spiral movement of organisms with special reference to man.

No. 273 to Orland E. White, Brooklyn Botanic Garden, $300 toward the purchase of an eight-row calculating machine for use in working up his studies on inheritance in the genus Pisum.

At the meeting of February 25, 1927

No. 274 to B. Lipschütz, Paltauf's Pathological Institute, Vienna, Austria, $150 for experimental animals and chemical reagents for use in studies on the inclusion diseases of the skin.

No. 275 to Bela Pogeny, Budapest, Hungary, $300 for apparatus necessary for studies on the propagation of light in rotating glass.

At the meeting of November 28, 1927

No. 276 to Homer Smith, department of physiology, University of Virginia, $300 for a study on the evolutionary development of body fluids of higher animal forms.

No. 277 to J. Strohl, Zurich, Switzerland, $200 in support of the Concilium Bibliographicum.

No. 278 to E. Uhlenhuth, University of Maryland, School of Medicine, $300 for aid in conducting a series of experiments on basal metabolism as influenced by certain endocrine glands in cold-blooded animals.

At the meeting of February 6, 1928

No. 279 to E. Witschi, University of Iowa, $300 for aid in constructing an aquarium tank.

No. 280 to B. Lipschütz, Paltauf's Pathological Institute, Vienna, Austria, $150 for experimental animals and other items necessary for his investigations.

At the meeting of May 25, 1928

No. 281 to Norton A. Kent, department of physics, Boston University, one Munroe calculating machine for aid in the reduction of spectrum plates.

No. 282 to Joyet-Lavergne, Paris, France, $360 toward the purchase of a binocular microscope for use in cytological investigations.

No. 283 to H. M. Chadwell, Tufts College, $400 for the purchase of a Zeiss refractometer necessary for the completion of researches on the depression of the freezing-point.

No. 284 to A. A. Schaeffer, University of Kansas, $150 to enable him to continue two phases of his work on spiral movement.

At the meeting of November 27, 1928

No. 285 to William Rowan, University of Alberta, department of zoology, $300 as a contribution toward the cost of his experiments on migration of crows.

No. 286 to Knut Lundmark, Astronomical Observatory, Upsala, Sweden, $150 as aid to his work on spiral nebulae.

At the meeting of February 25, 1929

No. 287 to W. J. Crozier, Laboratory of General Physiology, Harvard University, $250 for furtherance of an investigation of the thermodynamic efficiency of the fixation of atmospheric nitrogen by organisms.

No. 288 to E. Witschi, University of Iowa, $200 for aid in the study of the abnormal development of over-ripe amphibian eggs.

No. 289 to T. J. Königsberger, Mathem.-Physik. Institut, Freiberg, Germany, $200 to aid in the investigation of the electrical conductivity of the earth at different depths.

The trustees of the Elizabeth Thompson Science Fund meet during the last ten days of the months of February, May and November. Applications for grants should be sent in well in advance of the meeting to the secretary of the fund, Dr. Edwin B. Wilson, 55 Van Dyke Street, Boston, Mass.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

METHOD FOR CONCENTRATING AND SECTIONING PROTOZOA

DIFFICULTY in securing sufficient concentration and satisfactory orientation of protozoa for making paraffin sections is frequently encountered. Partial control of the degree of concentration of the protozoa in one area of the block which is to be sectioned as well as a "natural" or "self-orientation" of the individuals is to be desired. By the use of the method described below the protozoa may be satisfactorily prepared for sectioning.

For the best results in the final step (sectioning) every trace of the fixative used must be removed. Iodine may be used to remove mercuric bichloride or lithium carbonate to remove picric acid if either has been employed in the fixative.[1]

It is convenient to use a vial with a wide mouth and a round bottom for the entire procedure of infiltration, as described by Wenrich.[2] The lowest fourth cut from an ordinary sized test-tube is satisfactory for the purpose. The vial is placed in a mound of molding clay or in a hollowed cork which will serve as a base. A pipette with a rather large mouth is best for removing the fluids.

Following each change of fluids the protozoa are allowed to settle to the bottom of the vial, after which the next change is made by pipetting off the fluid to within 4 mm of the level of the protozoan mass. This method requires more frequent changes of the fluids, for as in the case of alcohol, the fluid remaining each time lowers the percentage of the newly added alcohol. This gradual change, however, prevents a great loss of specimens.

The protozoan mass may be carried through the entire process of dehydration and clearing in the same vial. A mixture of absolute alcohol and xylol and finally pure xylol is used to clear the specimens. After pipetting off most of the xylol, melted paraffin is quickly added. During several changes of melted paraffin the vial is kept under a heat bulb attached to a suspended light socket with a shade, to insure infiltration and complete removal of the xylol.

When infiltration is finished most of the paraffin may be removed by the use of a warm pipette, leaving only enough in the vial to cover the specimens completely. The vial is removed from under the lamp and the remaining paraffin containing the protozoa is allowed to solidify on the tip of a large dissecting needle. This is accomplished by moving the needle about gently in the mass as the paraffin cools. The result is, therefore, that the solid paraffin mass containing all the protozoa which were in the vial is now on the needle tip. This step may be referred to as the "temporary imbedding." This last step should be accomplished with the use of as little paraffin as is possible. The mass is now ready for permanent imbedding.

A small paper box of the size desired for the final block (4–10 mm) is made according to the diagram

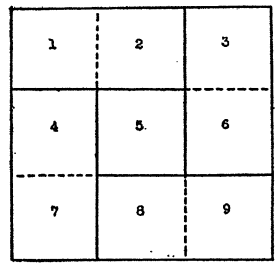

Fig. A

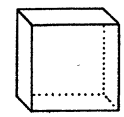

Fig. B

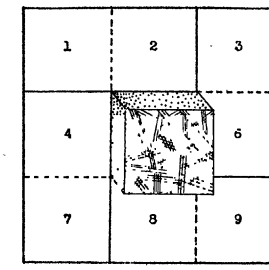

Fig. C

and accompanying directions and submerged in a watch crystal of melted paraffin, also under the heat bulb. The "temporary block" is now lowered into the paper box. The paraffin is allowed to melt and fuse completely with the surrounding paraffin and the specimens are allowed to settle to the bottom of the box. If the "temporary imbedding" has sufficiently concentrated the protozoa they fall from the block as it melts, into one small spot at the bottom of the box. Excess heat from the lamp will cause rapid diffusion of the protozoa and defeat the purpose. The box is lifted from the watch crystal, held long enough in the

[1] An alcoholic solution of iodine may be added drop by drop to the specimens in 70 per cent. alcohol until an amber color will persist for an hour. One drop of a saturated aqueous solution of lithium carbonate may be added to each 10 cc of alcohol containing specimens.

[2] D. H. Wenrich, "McClung's Handbook of Microscopical Technique," Hoeber, New York, 1929, p. 403.