elected for the forthcoming year: *President,* Edward Bartow, State University of Iowa; *Vice-president,* R. E. Buchanan, Iowa State College; *Secretary-Treasurer* and *American Association for the Advancement of Science Representative,* J. C. Gilman, of Iowa State College; *Editor,* Mrs. F. W. Nichols, Ames; *Botany and bacteriology,* Louisa Sargent, Grinnell College; *chemistry, general and physical,* Ben H. Peterson, Coe College; *chemistry, organic and biological,* L. Chas. Raiford, State University of Iowa; *geology,* J. J. Runner, State University of Iowa; *mathematics,* M. E. Graber, Morningside College; *physics,* A. W. Meyer, Coe College; *psychology,* George D. Stoddard, State University of Iowa; *Zoology,* R. L. King, State University of Iowa.

J. C. GILMAN,
Secretary

THE KANSAS ACADEMY OF SCIENCE

THE sixty-sixth annual meeting of the Kansas Academy of Science was held at the Municipal University of Wichita and Wichita High School East from April 26 to 28. The program consisted of approximately 123 papers, given in the general sessions on the forenoons of April 27 and 28, and in sectional programs. The biology, chemistry, physics, psychology and Junior Academy sectional meetings were held in the afternoon of April 27. The entomology sectional program was held in the afternoon of April 28, under the auspices of the Kansas Entomological Society. The registered attendance at the programs was 218, and the total attendance at the sectional meetings was estimated at about 300. Four lectures were delivered during the course of the meetings. Mr. S. D. Flora, of the U. S. Weather Bureau, lectured on "Kansas Weather and its Effects on Crops"; Dr. F. L. Duley, of the U. S. Department of the Interior, gave a lecture on the "Kansas Soil Erosion Demonstration"; Dr. R. C. Moore, state geologist of Kansas, gave an illustrated lecture on "A Boat Trip through the Grand Canyon of Colorado." The presidential address was delivered at the annual banquet by Dr. J. Willard Hershey, of McPherson College. His subject was "The Historical Development of the Relationship of Gases to Animal Life."

The officers elected for 1934–35 are: *President,* Wm. H. Matthews, Kansas State Teachers College, Pittsburg; *First Vice-president,* E. A. Marten, University of Wichita, Wichita; *Second Vice-president,* W. J. Baumgartner, University of Kansas, Lawrence; *Secretary,* George E. Johnson, Kansas State College, Manhattan; *Treasurer,* Harvey A. Zinszer, Fort Hays Kansas State College, Hays. The following chairmen of sections were elected: *Biology,* L. E. Melchers, Kansas State College, Manhattan, and (*Vice-chairman*) C. E. Burt, Southwestern College, Winfield; *chemistry,* L. Oncley, Southwestern College, Winfield; *physics,* G. W. Maxwell, Kansas State College, Manhattan; *psychology,* Paul Murphy, Kansas State Teachers College, Pittsburg; *entomology,* H. R. Bryson, Kansas State College, Manhattan. Additional members of the executive council are: J. W. Hershey, McPherson College, McPherson; J. B. Stroud, Kansas State Teachers College, Emporia; R. H. Beamer, University of Kansas, Lawrence. Dr. F. C. Gates, of Kansas State College at Manhattan, was reappointed editor. The 1935 meeting will probably be held either at Topeka or Lawrence.

GEORGE E. JOHNSON,
Secretary

THE PENNSYLVANIA ACADEMY OF SCIENCE

THE tenth annual meeting of the Pennsylvania Academy of Science was held on March 30 and 31 at Albright College, Reading, Pa. Dr. John C. Johnson, State Teachers College, West Chester, Pennsylvania, presided. Sixty-four papers were read at the meeting. One hundred and ten members registered.

A junior academy was organized and sponsored by the senior organization. This young organization was well attended, and the program was enthusiastically received. Mr. Karl F. Oerlein, Upper Darby Senior High School, Upper Darby, Pa., was elected president of the junior body.

In the senior body the following officers were elected: *President,* Dr. S. H. Derickson, Lebanon Valley College, Annville, Pa.; *Vice-president,* Dr. Edgar T. Wherry, University of Pennsylvania, Philadelphia, Pa.; *Treasurer,* Dr. H. W. Thurston, Pennsylvania State College, State College, Pa.; *Secretary,* Dr. T. L. Guyton, Department of Agriculture, Harrisburg, Pa.; *Assistant secretary,* Dr. V. Earl Light, Lebanon Valley College, Annville, Pa.; *Editor,* Mr. R. W. Stone, Pennsylvania Geological Survey, Harrisburg, Pa.

The place for the summer meeting was fixed for the Mount Gretna district in Lebanon County.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

AVIAN MALARIAL INFECTIONS AS CLASSROOM MATERIAL[1]

IT is often a problem to secure suitable material for the study of important types of parasites in courses in zoology, protozoology and parasitology. The malarial parasites illustrate this, for although human malaria is a disease of great importance, it

[1] From the Department of Zoology, Syracuse University.

nevertheless has a relatively restricted distribution. That the malarial parasites of birds offer an excellent and easily available substitute is not generally known.

Infected birds may be secured almost anywhere. Most small birds are probably susceptible, but of all the common types English sparrows are perhaps the most easily caught and kept in the laboratory. For methods of trapping Farmers' Bulletin No. 493[2] may be consulted. Diagnosis of malarial infection can be made either by finding the parasites in stained blood smears, or by subinoculation of blood into clean birds. When the incidence of infection is low, as seems usually to be the case, chronic infections may be often detected by dividing the birds into pairs, and then injecting at least 300 cmm of blood from each bird into the other, together with enough isotonic citrated salt solution to prevent clotting. Full directions for doing this may be found in an article by the author cited below.[3] Even the larger birds may be infected. The author has found the common starling (*Sturnus vulgaris*) and the purple grackle (*Quiscalus quiscula*) occasionally infected with a strain resembling *Plasmodium praecox,* although these birds have apparently not previously been reported as hosts.[4]

Malarial infections in birds may be used in a number of ways. Since they undergo exactly the same stages as the human malarial parasites they furnish excellent material for life-history studies, and *Plasmodium cathemerium,* with a clearly defined asexual cycle of twenty-four hours, illustrates periodicity very well. Since three of the six (or seven) species of avian malaria differ among themselves very much as the human malarias do, they may also be used to illustrate the specific differences of the latter. Descriptions of all these species are given in the papers cited below.[5, 6, 7, 8, 9]

One of the most interesting phenomena in all parasitology is the formation of microgametes from microgametocytes, and this can be very readily observed if a drop of heavily infected blood is mixed with a little physiological saline solution and watched for fifteen or twenty minutes under the oil immersion.

For the study of the course and pathology of a malarial infection canaries are very suitable, since they are virtually always free from such infection to begin with. The effect of quinine and plasmochin treatment is also interesting to follow, and the protection which a chronic infection confers against superinfection is easily demonstrated. In all these respects malarial infection in birds closely resembles that in man.

There is also the further advantage that study of the avian malarias might interest more students in using them as research material, if it could be widely carried out, and that as a result our knowledge of both bird and human malaria might be increased.

REGINALD D. MANWELL
SYRACUSE UNIVERSITY

DEVICE FOR CONSTANT FLOW OF LIQUIDS

RECENTLY I found it necessary to evolve some sort of mechanism which would give me a constant flow of liquid from a container.

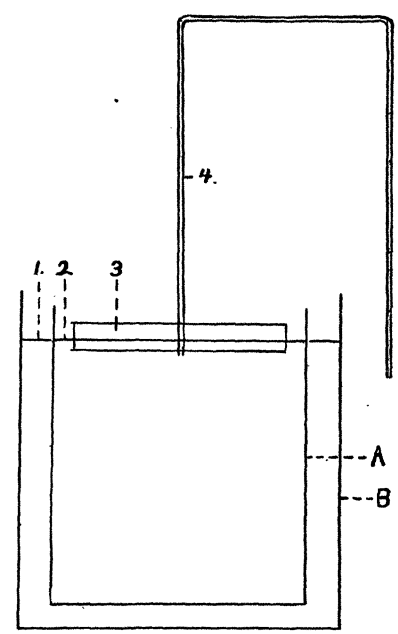

FIG. 1. A, container; B, container; 1, surface of water in container (B); 2, surface of water in container (A); 3, float; 4, siphon.

[2] Ned Dearborn, "The English Sparrow as a Pest," Farmers' Bulletin No. 493, Government Printing Office, 1927.

[3] Reginald D. Manwell, "Experiments in Bird Malaria," Chap. 37, "Problems and Methods of Research in Protozoology" (edited by Hegner and Andrews), Macmillan, 1930.

[4] C. M. Wenyon, "Protozoology," Wm. Wood & Co., 1926.

[5] Ed. et Et. Sergent and A. Catanei, "Sur un parasite nouveau du paludisme des oiseaux," *Comptes rendus de l'Acad. des Sci.,* 186: 809–810, 1928.

[6] Clay G. Huff, "*Plasmodium elongatum,* n. sp., an Avian Malarial Organism with an Elongate Gametocyte," *Amer. Jour. Hyg.,* 11: 385–391, 1930.

[7] W. Kikuth, "Immunobiologische und chemotherapeutische Studien an verschiedenen Stämmen von Vogelmalaria," *Zentralbl. f. Bakt.,* 121: 401–409, 1931.

[8] F. G. Novy and W. J. MacNeal, "Trypanosomes and Bird Malaria," *Amer. Med.,* 8: 932–934, 1904.

[9] Paul F. Russell, "Avian Malaria Studies, *V. Plasmodium capistrani,* n. sp., an Avian Malarial Parasite of the Philippines," *Phil. Jour. Sci.,* 48: 269–287, 1932.