Thelma Bardwell, Montreat College, for her essay entitled "Mental Hygiene." The prize was an excellent set of books on scientific subjects. The contest will be continued in 1935 in the fields of chemistry and physics.

The officers elected for 1935 are:

GENERAL ACADEMY

President, W. L. Porter, Davidson College.
Vice-President, F. W. Sherwood, State College.
Secretary-Treasurer, H. L. Blomquist, Duke University.
Executive Committee: The above officers and E. T. Browne, The University of North Carolina; W. E. Speas, Wake Forest College; H. R. Totten, The University of North Carolina.
Representative to the American Association for the Advancement of Science, Bert Cunningham, Duke University.

CHEMISTRY SECTION

Chairman, R. W. Bost, The University of North Carolina.
Vice-chairman, A. M. White, The University of North Carolina.
Secretary-Treasurer, W. C. Vosburgh, Duke University.
Councillor, L. A. Bigelow, Duke University.
Executive Committee: The officers and H. D. Sherwood, State College; H. D. Crockford, The University of North Carolina; J. S. Black, Wake Forest College.

MATHEMATICS SECTION

Chairman, W. N. Mebane, Jr., Davidson College.
Secretary, V. A. Hoyle, The University of North Carolina.

PHYSICS SECTION

Chairman, C. C. Hatley, Duke University.
Secretary, J. S. Meares, State College.

The thirty-fifth annual meeting of the North Carolina Academy of Science will be held in 1936 at Duke University, Durham, North Carolina.

H. L. BLOMQUIST,
Secretary

REPORTS

REPORT OF THE SUB-COMMITTEE ON SCIENTIFIC INVESTIGATIONS OF THE FISHERIES ADVISORY BOARD

THE fundamental contributions of science have aided materially in the development of the fishing industry and the conservation of the fish supply. Further researches and investigations and the application of the fundamental facts are necessary for the continued progress of the industry.

The committee recognizes the need of a better organization of scientific research and a more complete application of the technical knowledge so gained to the practical problems of fishery management and development. It is essential that all agencies define their objectives and prepare broad plans of research, into which may be fitted investigation of temporary or immediate problems in contradistinction to the haphazard development of unrelated projects. Coordination of these research programs of the several agencies is essential.

The economic prosperity of the commercial fisheries depends upon accurate continuous knowledge of the fluctuations and supply of raw materials of the industry, that can be obtained only through a systematic program of technical observation. These data will enable adjustment of the fishery business to the supply.

The conservation of game fish production depends upon management that implies intensive stream and lake surveys, the improvement of the environment especially through the abatement of destructive pollution, the stocking to maximum carrying capacity of artificially impounded waters and those restored to their natural state on submarginal land, and, lastly, the proper regulation of the use of such fish stocks.

FEDERAL FISHERY RESEARCH

The Federal Government should concern itself primarily with investigations of a fundamental nature having the widest application both scientifically and in a geographic sense. Variation in abundance of commercial fishes, migratory habits of fishes, particularly in interstate waters, and the accumulation of data upon which the prediction of future runs may be based; the prevention of the destruction of migratory fish on federal reclamation projects; the survey and improvement of streams and lakes in national parks and forests; studies of the means of abating water pollution and the development of rational plans for restocking waters are suggested as types of research especially suitable for federal consideration.

Projects supported by emergency appropriations have their merit, but can not be substituted for a long-time program of scientific fishery research. A well-trained and experienced personnel, adequately compensated and reasonably sure of tenure of office, is necessary to carry out a continuing program of research.

The committee deplores the recent tendency to economize in the direction of reducing expenditures for research of such types which are vital to the national welfare. The "White Act," approved on May 21, 1930, authorized progressive increases in the federal appropriation for biological fishery research, amounting to $60,000 annually for five years, and for

technological and economic fishery research, amounting to $35,000 annually for five years. The purpose of such a program was to develop research of the type outlined by this committee. Failure to secure the authorized appropriation, however, has nullified the purpose of the act. The committee strongly urges the early resumption of the authorized plan of development.

Another authorization by Congress, approved June 21, 1934, which has failed of realization provides for the construction of a marine research vessel, without which many of the fundamental problems of the marine fisheries can not be solved. The United States is the only first-class maritime nation without such a research vessel. Such facilities should be furnished as soon as possible.

Fishery Research by State Agencies

The problems best handled by state research agencies are those of more local significance that will guide the enactment and enforcement of protective regulations, or that will result in the promotion and extension of the local fishing industries and game fish supply. The program of research should be integrated with the programs of the Federal Government and coordinated with those of the neighboring states. States may meet this need for investigation by the establishment of research units in their conservation commission, or by the utilization of existing state agencies. Such units should be staffed by trained personnel to be appointed on the basis of merit, with reasonable assurance of tenure of office. Close cooperation between state-supported educational institutions and conservation officials is urged.

Stimulation of Research by Private Agencies

In contrast with conditions in Europe and Japan, where progress in aquatic biology comes chiefly from university men, few scholars in this country are devoting themselves to aquatic biology. Universities, scientific foundations and private institutions and associations should be encouraged to devote more attention to the biological problems involved in conservation of natural resources through the creation or allocation of grants in aid, fellowships and professorships in existing institutions. The Federal Government, state conservation departments, research foundations and sportsmen's organizations should cooperate in this program by allocating funds for such purposes.

Finally, the committee recommends that in order to make the results of scientific investigations available and practically applicable, adequate funds for the prompt publication of technical reports resulting from such studies should be made available by all agencies concerned.

R. V. Truitt, *Chairman*

SPECIAL ARTICLES

FURTHER DATA ON THE EXISTENCE OF EXTRA-CHROMOSOMAL INFLUENCE ON THE INCIDENCE OF MAMMARY TUMORS IN MICE

In 1933 the writers[1] included the result of two crosses among the data advanced by the staff of the Jackson Memorial Laboratory to demonstrate extra-chromosomal influence on the incidence of mammary tumors in mice.

These crosses were between an inbred strain of dilute brown mice (dba) high in incidence of mammary tumors and another inbred strain (C57 black) in which no such tumors have been recorded.

The F_1 generation produced by dilute brown females × C57 black males gave mammary tumors in 39.82 per cent. of the 113 virgin females which lived to reach "cancer age." The 664 F_2 generation animals, descended from similarly constituted F_1 females crossed with their brothers, gave 35.29 per cent. mammary tumors.

The reciprocal F_1 generation derived from C57 black females × dilute brown males gave 6.06 per cent. mammary tumors in 379 mice, while the 688 F_2 females obtained from inbreeding these F_1 animals gave 5.96 per cent. with mammary tumors. The detailed results of these completed experiments will be published in the September, 1935, number of *Genetics*.

So striking was the difference between the reciprocal crosses that it seemed desirable to produce and study certain back-cross generations. While most of the animals produced for this purpose are still alive, the preliminary results so far obtained are sufficiently interesting to justify publication.[2]

In order to understand the plan of the experiment it will be desirable to use the following symbols to designate the genetic contribution of the different strains:

C = chromosomal material derived from high mammary tumor strain—dba.

c = chromosomal material derived from non-mammary-tumor strain—C57 black.

E = extra-chromosomal influence derived from high mammary tumor strain—dba.

[1] Science, 78: 465–466.

[2] The population of virgin females from which the final data are to be derived consists of 250 mice in each of four crosses.