closely related or moderately related to his civilian job. In the other one case out of three there was no relation between Civilian Occupation and Military Specialty.

The range of nonuse of civilian backgrounds is striking. As shown in Table 1, it varies from 2 to 72 per cent.

Practically everyone who has worked with Army classification must be familiar with the fact that the rigidity of school quotas was one big cause of failure to use civilian skills thoroughly. One Reception Center or Replacement Training Center would be forced to fill within a short time its quota of men to be sent for training as military specialists. The housing facilities of the centers were not sufficiently great to hold men for a considerable period of time waiting for quotas more related to their civilian backgrounds. Undoubtedly such school quotas constituted an explanation of many of the failures to use civilian backgrounds that are reflected in Table 1. As a matter of fact, the rosters that were used show which school was attended in the Army. A preliminary tabulation of such data has been made.

Civilian tabulating machine operators were employed by the AAF in the highest percentage of cases among the occupations studied. Next in percentage of utilization are civilian clerk-typists. The former worked under administrative officers who were closely connected with those supervising the AAF Classification and Assignment Program. For clerk-typists, though they were assigned in almost every AAF organization, the situation was frequently similar. Statistics such as those in Table 1 cannot prove why one civilian skill would be neglected in only 2 per cent of the cases while another skill would be neglected in 72 per cent of the cases. These data do indicate that where, for some reason, sufficient pressures exist, civilian skills can be utilized almost perfectly.

The Cooperative Committee on the Teaching of Science and Mathematics:

Its Organization and Program

THE COOPERATIVE COMMITTEE ON Science Teaching was created in 1941 by representatives of several scientific societies to work on educational problems the solution of which can be attained better by cooperative action than by any single scientific group working alone.[1] Subsequently the Committee published a "Preliminary Report on the Preparation of High School Science Teachers," which has been used by a number of university and college faculty committees. Another problem attacked by the Committee—that of using high school science and mathematics to meet manpower needs during the war—resulted in a report on "High School Science and Mathematics in Relation to the Manpower Problem," which was published in 1943 and distributed to more than 12,000 individuals.

A further function of the Cooperative Committee has been to serve as a forum in which representatives of the scientific societies have been able to state the views of their own groups and to learn those of other groups on science teaching at the secondary and elementary levels.

The Committee has an advisory relation to its parent organizations and reports to them regularly through their representatives.

The Committee, as organized in 1941, consisted of the following representatives of scientific societies:

American Association of Physics Teachers: K. Larkin-Horovitz, Purdue University, and Glen W. Warner, Wilson Junior College, Chicago.

Union of Biological Societies: Oscar Riddle, Department of Genetics, Carnegie Institution, and Walter F. Loehwing, State University of Iowa.

Mathematical Association of America: A. A. Bennett, Brown University, and Raleigh Schorling, University of Michigan.

American Chemical Society: B. S. Hopkins, University of Illinois, and Martin V. McGill, Lorain High School, Lorain, Ohio.

National Association for Research in Science Teaching: G. P. Cahoon, Ohio State University, and Robert J. Havighurst, University of Chicago.

The initial financial needs of this Committee were met by grants totaling $3,000 from the Carnegie Foundation for the Advancement of Teaching.

The original Committee served for three years without change of personnel and was then reorganized as a committee of the AAAS.

Invitations to associations to be represented on the Committee originate from the Executive Committee of the AAAS, each organization then submitting its choice to the Committee for confirmation and final appointment. In making selections, particular attention has been given to adequate representation of the teaching profession of secondary schools, colleges, and universities. The Committee selects its own chairman and secretary.

[1] The Committee is indebted to President Emeritus E. C. Elliott, of Purdue University, who supported its early activities in every way.

As presently consituted, the Committee's chairman is K. Lark-Horovitz, Purdue University, and the secretary, R. W. Lefler, Purdue University. The following societies are represented:

American Association of Physics Teachers: K. Lark-Horovitz, Purdue University, and Glen W. Warner, Chicago City College.

American Astronomical Society: Oliver J. Lee, Northwestern University.

American Chemical Society: B. S. Hopkins, University of Illinois (recently resigned and to be replaced).

American Institute of Physics: Lloyd W. Taylor, Oberlin College.

American Society of Zoologists: L. V. Domm, University of Chicago.

Botanical Society of America: Glenn W. Blaydes, Ohio State University.

Central Association of Science and Mathematics Teachers: Arthur O. Baker, Cleveland Board of Education.

Division of Chemical Education, American Chemical Society: Laurence L. Quill, Michigan State College.

Executive Committee, AAAS: E. C. Stakman, University of Minnesota.

Geological Society of America: George A. Thiel, University of Minnesota.

Mathematical Association of America: Raleigh W. Schorling, University of Michigan.

National Association of Biology Teachers: Prevo L. Whitaker, Indiana University.

National Council of Teachers of Mathematics: E. H. C. Hildebrandt, Northwestern University.

National Science Teachers Association: Morris Meister, Bronx High School of Science.

The expenses of meetings, held at least twice a year, are now borne by the parent organizations, who pay the travel expenses of their respective representatives. Should the Committee engage in special projects requiring money for research or for publication, such funds are secured from interested sources. Thus, the parent organizations are not obligated beyond providing for the attendance of their own representatives at meetings.[2]

In order to preserve continuity of both interest and attendance, it is desirable that the parent organizations name their representatives for terms of several years, with different termination dates in cases of more than one member, and that they name representatives who are willing and able to attend all meetings of the Committee.

Committee Activities 1945–1947

Recently the Committee prepared and distributed a report on "The Preparation of High School Science and Mathematics Teachers," in which the following concrete proposals were made:

(1) A policy of certification in closely related subjects within the broad area of the sciences and mathematics should be established and put into practice.

(2) Approximately one-half of the prospective teacher's four-year college program should be devoted to courses in the sciences.

(3) Certificates to teach general science at the 7th-, 8th-, or 9th-grade level should be granted on the basis of not less than 42 semester hours of college courses in the subjects covered in general science.

(4) Colleges and certification authorities should work toward a five-year program for the preparation of high school teachers.

(5) Curriculum improvements in the small high school should go hand in hand with improvement in teacher preparation.

During the last year the Committee worked with the NSTA in the preparation of a report on American science education. The Scientific Apparatus Makers of America provided funds for the preparation of this report, which has now been submitted to UNESCO.

The Committee cooperated with the NSTA in a program on science education at the AAAS meeting in St. Louis, where it also sponsored a scientific exhibit. At the Boston meeting of the AAAS the Committee again participated in the NSTA program with a series of contributed papers and, in addition, arranged for a forum on "Problems of the Science Teacher."

At the present time the Committee is engaged in a study of the effectiveness of science teaching at all levels. A report of this study will be prepared for submission to the President's Scientific Research Board.

Future Plans of the Committee

(1) The problem of licensing or certification of secondary school science teachers, with its associated problem of combinations of subjects to be taught by the beginning teacher in the small high school, is generally recognized as a serious one. Most teachers begin their work in small high schools of 200 or fewer students. In such schools one person must teach three or four different subjects. Therefore, a college graduate with highly specialized training in a single science is at a disadvantage in securing a position or in his teaching if he is appointed. The Committee hopes to formulate recommendations regarding certification requirements with which all the scientific societies can agree and which suit the realities of the teaching situation.

(2) The Committee, recognizing the difficulty of preparing science teachers for such broad teaching assignments as are given to most new teachers, has been making a careful study of these problems and will release soon a proposal for a college program of study for the prospective teacher which will secure the necessary breadth of science

[2] The Committee is indebted to President F. L. Hovde and Prof. C. W. Beese, director of the Division of Technical Extension, both of Purdue University, for making available the services of R. W. Lefler as secretary.

training, give reasonable opportunity for specializing in one science, and provide for professional courses in education as well as a sufficient number of courses for general education.

(3) The Committee hopes to stimulate the science departments of a number of colleges and universities to bring secondary school teachers to their campuses for cooperative work on their educational problems. Out of workshops and conferences held at colleges and universities would probably come plans for improved science courses. These activities would provide good in-service training for science teachers and would enable the secondary school teachers to make their problems and their points of view evident to the college scientist.

(4) The Committee offers its services as a consultant to state or local agencies working on problems pertaining to science teaching. In this way, direct connection may be provided between such agencies and the societies represented on the Committee. For example, the Committee might become associated in a curriculum study in some state, cooperating with the state department of education and the college and secondary school science teachers. The results of such a project might prove valuable to other states. On the other hand, the Committee plans to call in consultants from the teaching profession to obtain expert advice on problems related to the science curriculum in secondary schools and questions of teacher training.

The time is ripe for important developments in science education. This Committee, by bringing together representatives of the scientific societies and by consulting with administrators, supervisors, and teachers who are concerned with the science curriculum, hopes to aid in the development of a more effective science program in this period of change.

(5) Reports will be made on the need for legislation leading to Federal *support of science teaching in the high schools*. The need for scholarships on the senior high school level is as urgent as it is on the college level. Extension of the Science Talent Search to states and recommendations for Federal support of a scholarship program are of deep concern to the Committee.

(6) The Committee will cooperate with the National Science Teachers Association and other organizations in projects for the improvement of teaching aids in science. Projects are now under way for the development of low-cost laboratory equipment, for visual aids, and for the study of teaching techniques.

(7) The Committee proposes to study possible procedures for certification of competency, with special reference to the development of instruments for appraisal of the prospective teacher.

(8) It is also planned to give serious consideration to a coordinated science curriculum in the schools, with particular emphasis on the proper grade placement of concepts and ideas.