storage areas are needed for these courses. Many household appliances—stoves, refrigerators, and pressure cookers—and other ingenius devices are being used to meet the needs of these courses (James Dawson, Macalester Scientific Corp., Cambridge, Massachusetts).

In a session on research activities in high schools, Charles Ostrander (Atwater High School, California) described the development of an electrical device to be used in the classroom which will be useful in daily communication between pupil and teacher; it is known as a multiple integrated response device. Dorothy N. Naiman (Hunter College) discussed a procedure for producing models of various organs. The models, which are cased in rubber, are made of methan and are easily colored or sectioned by the student. G. E. Caraker (Eastridge High School, Rochester, New York) was concerned with the apparent relationship between high school smokers and their academic performance. A study of the academic performance of high school students indicated that smokers did not do as well as non-smokers.

Collegiate curricula for biology teachers were noted by two educational groups.

1) The Commission on the Undergraduate Education in Biological Sciences has set up a council to study and recommend changes to be made in the curriculum of undergraduate biology majors. Among the areas of action proposed by the council are curriculum revision to include support in physics, chemistry and mathematics, and faculty development through summer institutes for college teachers (Thomas Hall, Washington University).

2) The Commission on the Education of Teachers of Science has found that science courses based on the assumption that all the students in the course will become science teachers best fit the needs of all students. A study of the background of applicants for a Harvard fellowship showed that many top students are not well prepared in their major field and many more of these students have little or no background in any of the related sciences or mathematics (Fletcher Watson, Harvard).

The climax of the convention was the Silver Jubilee Anniversary Banquet honoring the past presidents. Ted F. Andrews, presiding over the program, presented gavel plaques to the 13 past presidents in attendance and to the others in absentia. Special awards were given to Oscar Riddle and C. M. Goethe. Riddle, who was the chairman of the committee that established NABT in 1938, was the special guest of honor. After the presidential address, "Missions, money and men," retiring president, Phillip R. Fordyce, presented the gavel to Ted F. Andrews, president for 1964.

Ted F. Andrews, President

Information and Communication (T)

Noted during a panel discussion on communication of research and development information and the role of the working scientist and engineer was the tremendous growth of successful research and development in recent years—part of the so-called information explosion—and the resultant inevitable problems, strains, possible hostility, and calls for solutions, perhaps even drastic action, in some areas. The comprehensive report, "Science, Government, and Information," issued from the White House by the President's Science Advisory Committee recommends a number of sober solutions. Selected portions of this report were discussed in amplification at another panel meeting (27 Dec.).

A. Weinberg (chairman of the Panel of Science Information) strongly stressed the need for improving the use of language by scientists and technologists—a "project literacy". The unclear way scientists express themselves calls for changes in the style of technical writing—from the present passive, stilted style to one that is active and less formal, and which communicates better. Very preliminary research, in which he participated, indicated improvements could be made. Milton Lee, a member of Weinberg's Panel, facetiously recommended an ego-maximizing process—items that reach the readers. He predicted that within 10 years new methods of photo-composition would be available for primary journal publication, whereby an author could set his own copy. Also noted were: (i) the need to eliminate from information transfer systems report matter which is trivial; (ii) greater selectivity and screening; and (iii) more stringent standards for acceptance of research manuscripts (Robert Speers). Charles Stevens amplified the role of the central depository. He indicated that librarians and documentalists basically agreed with the report and hoped its recommendations would succeed, while disagreeing somewhat with specific items. Vernon Root took up the report challenge that scientists and engineers must change some of their basic attitudes. However, even to make scientists and engineers aware that changes are necessary requires a major psychological offensive which can best be carried out through existing professional societies and society journals. After being made aware of the problems in technical communication, the scientist can begin the long, lonely struggle within himself to recognize that he contributes to the problem and must contribute to its solution by altering some of his established attitudes.

Stello Jordan arranged for the panel and presided at the meeting, which was cosponsored by AAAS (Section T) and the Society of Technical Writers and Publishers.

Stello Jordan, Program Chairman

Control of Metallurgical Information. John A. Fellows (vice president, of the American Society for Metals, and assistant technical director, Research and Development, Mallinckrodt Chemical Works) opened the symposium by reviewing some of the problems with which the researcher must cope.

Cost of providing adequate information resources is a major stumbling block, and the question of whether this cost can be borne by the individual scientist or whether large-scale government support of information resources is required has not yet been resolved. New ways of disseminating individual scientific papers rather than in complete journals, and of providing better abstracts and indexes than are now available, are being explored in the hopes that such combined services can be provided on a subscription basis at reasonable cost.

It has not yet been determined whether information resources can be broken down into sectors, separately administrated yet coordinated, or whether a single omnibus system with all the disadvantages of centralization and government administration is the final answer.

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