Edward Bartow, Chemist

On Saturday afternoon of 12 April 1958, Edward Bartow died quietly at his home in Iowa City at the age of 88. He served the State University of Iowa as head of the department of chemistry and chemical engineering from 1920 to 1940 and was responsible for getting the chemistry building built in 1923. During his administration, good curricula for training chemists and chemical engineers were developed, and many graduate students were trained in the field of water chemistry. Dr. Bartow and his students published over 200 papers on all phases of water treatment. After his retirement, he taught the course in water chemistry and came to his office daily to carry on correspondence with chemists in his field of specialization—a practice which he continued until only a few days before his death.

Edward Bartow was born in Glenham, New York on 12 January 1870. He attended a preparatory academy at Fishkill, New York, and graduated from Williams College in 1892. In 1895, he obtained his doctorate from the University of Göttingen, Germany. Upon his return to the United States, he married Alice Abbott on 3 September 1895 and started his academic career as an instructor at Williams College. He taught at the University of Kansas from 1897 to 1905, and then moved to the University of Illinois where he was professor of sanitary chemistry and director of the Illinois Water Survey, from 1905 to 1920.

Dr. Bartow served in the American Expeditionary Forces in France in 1917–18, first as a major and then as a lieutenant colonel. He directed the work of 80 officers and many privates in the difficult task of providing good drinking water and proper sanitation for the armed services. His work was recognized by the French Government with the award of the *Medaille d'Honneur*.

Dr. Bartow was a member of Phi Beta Kappa, Sigma Xi, and many scientific societies. He served as president of the Kansas Academy of Science in 1904 and, 30 years later, as president of the Iowa Academy of Science. In 1922, he was president of the American Water Works Association, of which he was a life-long member. He was a member of the American Institute of Chemical Engineers and a director of that organization from 1923 to 1925 and again from 1936 to 1939. From 1934 to 1938, he was a vice-president of the International Chemical Union as the representative of the United States. In 1936, he was elected to the presidency of the American Chemical Society, the highest office and honor his chemistry contemporaries could bestow. He attended many meetings of the International Congress of Chemistry as a representative of the United States and the American Chemical Society.

In Iowa City, Edward Bartow was a member of the Congregational Church and a loyal Rotarian. His chief hobby was stamp collecting and first-day covers. He was a member of the American Philatelic Society, the Society of Philatelic Americans, and the Trans-Mississippi Stamp Society.

Edward Bartow will be remembered as a pioneer scientist in the chemistry of water purification and the treatment of wastes to avoid pollution of streams. His friends, locally, nationally, and internationally, remember him as the tall smiling gentleman with his hand always outstretched in friendship.

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News of Science

Science Education Legislation

Various opinions have been voiced on the prospects of passage of a Federal aid to education bill before adjournment of Congress, which is expected to occur between 15 August and 1 September. At this date, 23 July, informed opinion seems to hold that there are grounds for optimism that legislation on this matter will be passed this year.

The House bill, which may or may not gain passage, represents a compromise between two earlier bills introduced in both chambers. A brief analysis of these earlier bills will be of value in comparing them with the new bill which is threatened by adjournment.

Making use of a scheme of identification employed in an earlier issue [*Science* **127**, 389 (1958)], we will refer to the two bills before the compromise as the Administration bill (S3163) and the Hill-Elliot bill (S3187).

Analysis of Earlier Bills

The Administration bill has the following major provisions: (i) authorization for approximately 40,000 scholarships over a 4-year period to be awarded on the basis of need by the individual states after competitive examination of their college-age applicants; (ii) authorization for funds, to be matched by the states, for the establishment of new or larger student guidance and counseling agencies; (iii) grants to individual universities for the expansion of fellowship and graduate education programs as recommended by the university and approved by the Commissioner of Education; (iv) grants to states of $15 million a year for 4 years for the purpose of aiding the establishment of programs

for supervising instruction in science and mathematics, for improving science and mathematical curricula, and for related work; (v) grants or contracts with institutes of higher education to support short-term and regular-session institutes for advanced training of teachers or prospective teachers of foreign languages, and funds for supporting stipends to these teachers; and (vi) the authorization of funds up to $50,000 a year for 4 years to assist any state to improve the adequacy and reliability of its educational statistics. The individual state would be required to match this fund.

The Hill-Elliot bill, while similar in purpose—bettering the quality and quantity of the country's educated young people, particularly in the fields of mathematics and science—offers different means for accomplishing this end. Its major provisions are: (i) 240,000 scholarships over a 6-year period, awarded according to merit rather than need by the individual states; (ii) permanent authorization for $15 million a year to be matched by the states in the third and succeeding years for the purpose of improving counseling and guidance work; (iii) grants for the awarding, on a national basis, of 1000 fellowships the first year and 1500 additional ones in each of the next 5 years; and (iv) allocation among the states of $10 million a year, on a matching basis, for paying or supplementing the salaries of science, mathematics, and modern foreign language consultants.

The Hill-Elliot bill also has the following provisions, which are not found in the Administration bill: (i) scholarships for the year 1958–59 for students now in college; (ii) a student loan fund of $40 million a year; (iii) stipends for teachers engaging in summer and extension work, particularly in the sciences and mathematics; and (iv) provisions for honorary citations for superior high-school work, for a science information service within the National Science Foundation, for aid for vocational training, and, in a marked departure from the Administration pattern of means, a provision for funds for research in the matter of the development and use of television, radio, motion pictures, and related media as they may have value in education.

Comparison

Out of the welter of debate in the House Education and Labor Committee has come a bill which fully incorporates some of the provisions of the earlier bills, rejects others, and modifies to a greater or lesser degree those remaining.

The number of scholarships granted by the compromise bill runs between 76,000 and 88,000 over a period of 4 years. This is about twice the number asked for by the Administration bill and about one-third the number called for in the original Hill-Elliot bill. The scholarships would be administered by the individual states, as is required by Federal law, and financial support would be on the basis of $500 an academic year for all successful applicants, with another grant, up to $500 a year, to be available to students with a demonstrable need for further aid. This arrangement represents a compromise of the need or merit problem as it arose in the earlier bills.

Compromise can also be seen in the provisions for counseling and guidance. A 4-year grant, rather than a permanent grant, as in the Hill-Elliot bill, would be given to the states, to be matched by them, for the purpose of establishing and maintaining programs of testing, guidance, and counseling. An additional fund would be granted to arrange, through contracts with institutions of higher learning, for the establishment and operation of summer- or regular-session institutes that would offer courses in counseling and guidance of students at secondary school level. Stipends would be paid to eligible persons who attend such institutes.

In the matter of graduate study, the provisions of the Hill-Elliot bill have been adopted with minor changes, notably reduction in the period of availability of the grants.

The new bill modifies those provisions of the Hill-Elliot bill that grant aid to states for the purpose, among others, of improving those parts of the physical plant that are used for instruction in the sciences, mathematics, and modern foreign languages. Instead of the 6-year period of enactment, a 4-year period is used, but the funds authorized are increased from $40 million a year to $60 million. The result in both cases is a total expenditure of $240 million.

In addition to support for language study mentioned above, the new bill incorporates the major relevant provision of the Administration bill: supported supplemental study for teachers of language.

In its other provisions the bill now before the House retains elements of the Hill-Elliot bill which were not found in any equivalent form in the Administration bill. Most notably, these are the sections calling for the establishment of a student loan fund of $40 million for the current year, jumping to $60 million in the succeeding 3 years (the original called for a steady $40 million a year for 6 years), and the section calling for research and experimentation in more effective utilization of television, radio, motion pictures, and related media for educational purposes. Under this provision, an $8 million fund would enable the Commissioner of Education, through grants or contracts, to (i) make studies and surveys to determine the need for increased or improved utilization of television, radio, motion pictures, and related media of communication by state or educational agencies and institutions of higher education in providing education; (ii) conduct research, demonstrations, and experiments in the use of such media for such purposes; (iii) conduct research, demonstrations, and experiments in the development and use of new media of communication; (iv) evaluate and publish reports concerning the effectiveness of such media for such purposes; and (v) prepare and publish abstracts and catalogs of audiovisual material available, to the extent such abstracts or catalogs are not otherwise readily available. The U.S. Commissioner of Education would provide, upon request, advice, counsel, and technical assistance to state and local educational agencies and institutions of higher education undertaking to utilize such media of communication in providing education.

Civilian Space Agency

A governmental agency to coordinate nonmilitary problems of space exploration is expected to come into existence in the near future. The agency, which will be under civilian control, will be called the National Aeronautics and Space Administration and will have jurisdiction over all aeronautical and space activities except for those which President Eisenhower determines to be primarily associated with national defense.

The bill calling for the establishment of the agency (HR 12575) has been passed by both the House and the Senate and has been signed by the President. Among its provisions, the bill:

1) Declared it to be U.S. policy that activities in space should be devoted to peaceful purposes.

2) Established the National Aeronautics and Space Council composed of the President, the secretaries of State and Defense, the administrator of the National Aeronautics and Space Administration, the chairman of the Atomic Energy Commission, and four other appointees—three nongovernment.

3) Directed the President, with advice of the Council, to develop a comprehensive program of aeronautical and space activities, allocate responsibility for major projects, provide for effective cooperation, and resolve differences among departments and agencies.

4) Directed the NASA to coordinate and conduct aeronautical and space ac-