It appears to us that the duty-free privilege has, in a measure at least, defeated its own end in depriving the American manufacturer of means necessary to put the time, thought and experiment into high-grade scientific instruments which is requisite for real progress, leaving us dependent on foreigners for such investigations and the advancement incident thereto. If a few have apparently been able to make a notable exception of their products, this has been accomplished only by placing on a purely commercial basis an industry which ought to be, in fact, must be, for long-continued success based on the firm foundation of scientific research. The impossibility of properly conducting such research has often reduced us to the status of imitators dependent for our own progress upon investigations conducted on the other side of the ocean.

If it has been imposible, under existing conditions, to manufacture or properly develop instruments already known, what can be expected in the way of new instruments to accomplish new purposes. Increasing and expanding research calls for new and modified instruments and, *vice versa*, new instruments uncover new lines of research. In other words, the two go hand in hand. The retarding of one retards the other, and the stimulation of one stimulates and helps the other.

What is true in regard to science in the abstract is equally true in regard to men doing scientific work. The development of the manufacture of scientific instruments under a protective policy will thus react favorably on the educational institutions themselves by building up a demand for their graduates.

It is manifestly absurd to endeavor to discriminate between a policy beneficial to educational institutions and one desirable for the people as a whole. Our educational system from the kindergarten to the university is our very life blood; we can not promote the institution to the detriment of the people, nor can we favor other interests at the expense of the institution.

The great bulk of education in our country is supported, as it should be, by taxation. Is it best to contribute to their support by the kind of subsidy that grants them special privileges in regard to certain classes of goods, at the same time making them dependent on foreign manufacturers; or by the very slightly increased taxation necessary to develop American independence in scientific instruments as in other lines of industry?

C. H. Ash

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THE DIVISION OF ENGINEERING NATIONAL RESEARCH COUNCIL[1]

The War Organization of the Engineering Division comprised four sections; a section on metallurgy, a section on mechanical engineering, a section on electrical engineering, and a section on prime movers. The work of each section was under a chairman, who was directly responsible to the chairman of the division.

The section on metallurgy had for its principal work the solving of metallurgical problems arising in connection with the conduct of the war, more particularly those brought to it by the military. This work was accomplished through the medium of committees, whose personnel included leading authorities upon metallurgy.

The section of mechanical engineering established a drafting room in charge of a chief draftsman at research council headquarters and through the generosity of the Carnegie Institute of Technology a machine shop at Pittsburgh under the direction of a foreman. These were used for the development of inventions referred to the section by the physics and engineering divisions.

The section on electrical engineering concentrated its efforts upon the problem of electric welding, more particularly electric welding as applied to ship building. This section worked in very close cooperation with the Emergency Fleet Corporation, who financed its investigative work.

The section on prime movers devoted its attention chiefly to the design and development of power plants for aircraft.

[1] Address given at joint session of the National Academy of Sciences with National Research Council, April 30, 1919, Smithsonian Institution, Washington, D. C.

The efforts of each section were so directed as to be of the greatest service in the solving of the problems of greatest immediate need to winning the war; each has to its credit important achievements during the war period.[2]

Reorganization of the engineering division on a peace basis has now been fully accomplished. The division consists of three representatives of each of the four founder engineering societies. The societies so represented being the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, the American Institute of Mining Engineers, and the American Society of Civil Engineers; further there is one representative each from the four more important non-founder societies. The societies so represented being the American Society for Testing Materials, the American Society of Illuminating Engineers, the Western Society of Engineers, and the Society of Automotive Engineers. In addition to the representatives of the engineering societies there are twelve members at large, making a total membership in the division of twenty-eight. The paid officers of the division are a chairman and a vice-chairman.

The work of the engineering division has gone steadily forward during the reorganization period and to such an extent that the newly organized division is now performing all its functions and begins its career, *a going concern.*

A plan of close affiliation of the division with the engineering foundation has recently been approved by the members of the foundation and the executive board of the National Research Council. By the terms of this agreement the engineering foundation will provide the engineering division an office in the Engineering Societies Building at New York, together with most of the necessary clerical force; further they will make appropriations from time to time of their funds to aid specific undertakings of the division. The location of the engineering division at this center of engineering activity and the close affiliation with the engineering foundation will be important contributing factors to the future development of the division.

At present the division is working largely through the medium of committees. It is common knowledge that it is easy to form committees, but difficult to get them to function properly. Very careful consideration has been given the problem of organizing the research committees of the engineering division. We have found that given an energetic chairman, who is master of his subject and who inspires confidence, an active group within the comittee to perform the necessary researches, a still wider group who may not have time to devote to research but who through breadth of experience are particularly well qualified to act in an advisory capacity, and last but not least the necessary funds, and important results are sure to follow.

Time will not permit of going into the work of the committees in detail. The work so far undertaken covers the fields of metallurgy, electrical engineering, mechanical engineering and to a less extent civil engineering.

The engineering division now has some fourteen committees at work upon various problems. At present fourteen states, extending from the Atlantic to the Pacific are represented and the number is rapidly increasing. Men connected with educational institutions, the military and civilian bureaus of the government and large manufacturing concerns are willing and even eager to serve upon these committees; in fact appointment to one of them is regarded as an honor.

The principal work of the engineering division is to stimulate and coordinate research. It is not to be regarded as an instrument of research, but rather as a stimulator and director of other instrumentalities of research which are brought together through the medium of committees. In suggesting, planning, and organizing researches which other agencies carry out, it performs a valuable and unique service. It arouses interest where it did not previously exist, brings together agencies none of which for various reasons were able to do the whole of a research,

[2] See Report of the Academy of Sciences for the Year 1918.

but which are able and willing to contribute an important part of a research.

Galen H. Clevenger,
Acting Chairman of the Division of Engineering

SCIENTIFIC EVENTS

THE WATT CENTENARY[1]

Additional interest has been given to the forthcoming commemoration of the centenary of the death of James Watt by the movement just inaugurated in Glasgow to found locally a James Watt chair of engineering at the university. Birmingham engineers decided some time ago that a similarly named chair should be installed in the university of their city, besides holding a centenary commemoration and erecting an international memorial to the three great pioneers, Watt, Boulton and Murdock. The commemoration in Birmingham will be held on September 16–18. London, Glasgow, and Greenock, and, indeed, all parts of the country, are heartily cooperating, and, with few exceptions, the universities and scientific societies, together with many manufacturers and individual eminent men, are associating themselves with the scheme. In the Science Museum at South Kensington steps are being taken to arrange a comprehensive exhibition of Watt relics. In Birmingham the Watt relics existing there, which have so carefully been preserved by the forethought of Mr. George Tangye, and were a few years back presented to the city, will be completely rearranged and displayed with many additions. Two pumping-engines made by Boulton and Watt will be seen; one, the first sold by the makers in 1776. will be actually shown under steam, and raising water. A memorial service will be held in the Parish Church at Handsworth, where the three contemporaries are buried. A garden-party will be held in park at Heathfield Hall, where the garret workshop still remains as Watt left it. Lectures will be delivered by eminent men and a centenary dinner held. Some doubt seems to have been raised with regard to the claims of Birmingham to an international memorial. It should be remembered, however, that Watt's association with Boulton led to the success of his engine. Boulton's factory was famous for workmanship throughout Europe. It is true that Watt conceived his first ideas whilst working at the University in Glasgow, but he gained no practical success until he went to Birmingham. He spent the best part of his life there, including the evening of his days after he retired from business. The foundations he laid by scientific thought and careful study have resulted in the great and universal application of steam, and the appeal comes appropriately from Birmingham for an international memorial to him.

[1] From *Nature*.

THE SHORTAGE OF COAL IN EUROPE

The Bureau of Mines gives figures showing that western and southern Europe is badly in need of coal. The deficiencies in the several countries were supplied by Great Britain, which now faces a loss of its export business through reduction in its coal production. On a pre-war basis of consumption the following tabular statement gives the deficiency in the various countries in western and northern Europe which must be met by imports:

	Long Tons (2,240 lbs.)
France	20,000,000
Spain	3,650,000
Italy	9,650,000
Holland (other than supplies from Germany)	2,010,000
Sweden	4,560,000
Portugal	1,360,000
Norway	2,300,000
Mediterranean countries (other than Italy)	3,500,000
Denmark	3,030,000
Total	50,060,000

In 1913 Great Britain supplied 31,000,000 tons to north Europe; 32,000,000 tons to France, and south Europe, that is 63,000,000 tons to the above-named countries, and others, in Europe, in addition to which about 9,000,000 tons was sent to South America; and 5,000,000 tons to other parts of the world.

If the statements made before the Parliamentary Commission are correct, from the