SCIENTIFIC EQUIPMENT IN EUROPE: PRESENT NEEDS

THE report has recently been issued* of a small Anglo-American mission which visited the devastated countries of Europe during the period February–June, 1946, for the purpose of finding out their needs of scientific instruments and laboratory equipment. This report has been prepared by the British members of the mission, and is based on a tour of twelve different countries. It has been made available by the Ministry of Supply for the information of those concerned, on the understanding that the opinions expressed and recommendations made are those of the authors and not of His Majesty's Government.

The countries visited, in the order named, were France, Switzerland, Italy (southern), Greece, Italy (northern), Austria, Czechoslovakia, Belgium, Holland, Denmark, Norway, Poland and Sweden. It had been intended to visit Jugoslavia, but this visit was reluctantly abandoned as the American members of the mission found it impossible to obtain visas at the time they were required. The two neutral countries, Sweden and Switzerland, were included in the tour because they are potential suppliers of some of the equipment, and also because their own needs cannot be disregarded in any assessment of European requirements.

The first suggestion of sending the mission arose at the meetings in London during the War of the Science Commission of the Conference of Allied Ministers of Education, of which the late Dr. E. F. Armstrong was chairman. Accurate information was required as to the conditions in the European countries at the end of the War. Moreover, it was considered that, in the immediate post-war period, the United States and Britain must necessarily be the principal sources of supply of the instruments and equipment needed for educational rehabilitation. The American and British Governments were therefore approached, and eventually the State Department nominated Mr. Wendell R. Turner of the Department of Commerce and Dr. James L. Thomas of the Bureau of Standards as the American representatives on the mission. The British Government appointed two officers of the Ministry of Supply, Mr. Thomas Martin, at that time deputy director of instrument production, and Mr. R. W. H. Cook. The mission was dispatched with the objects, first, of ascertaining as closely as possible the extent of the war losses of scientific instruments and laboratory equipment from universities, research laboratories and schools, and secondly, of bringing back as much information as possible as to the nature and extent of the rehabilitation requirements, to enable the instrument industries of Britain and the United States to make plans for meeting the demands. There was the incidental purpose of giving some lead to the industries of the two countries as to the export opportunities in this field, in view of the (at least temporary) elimination of Germany from the European market.

Much interesting information was obtained by the mission, and not the least valuable feature of the tour was the opportunity it afforded, soon after the end of the War, of comparing the conditions in the different countries. A separate section of the report is devoted to each country visited, and certain general considerations and conclusions in regard to the tour as a whole are set out in the introduction.

The report discloses extremely serious losses and shortages of equipment in many countries; but the opinion is expressed that there has been a tendency to exaggerate the extent of the losses as a whole. In one country, Poland, it would be difficult to exaggerate the extent of the destruction or the urgency of the need. Losses of equipment in Greece are scarcely less serious, but the problem of replacement is much smaller; while in Italy the destruction is very severe. On the other hand, certain countries actively engaged in the War have escaped relatively lightly as regards educational losses; for example, France and Norway. In all the countries, however, there are heavy arrears of normal requirements.

The value of the replacement requirements of the countries visited is estimated at not more than £18 million and not less than £14 million*. This total does not include Jugoslavia, and it was thought undesirable to include in the report any estimate for the two neutral countries, Sweden and Switzerland. Moreover, the estimates are in general based on 1939 values. When all allowances are made, however, the figure is still very much below estimates which were current before the mission left England.

Only a proportion of the total is likely to be called for from Britain and the United States in the immediate future. Some countries have considerable instrument-making resources of their own. In others there is uncertainty as to the extent of relief grants for educational rehabilitation, and as to the application of priorities in the utilization of funds or credits available. Shortage of foreign exchange is likely to limit overseas buying by most of the countries for a considerable time to come, and generally those with the greatest needs have the slenderest resources.

Intense interest in Anglo-American technical progress during the War, and a desire to fill the gaps in scientific knowledge caused by the cutting of communications during the German occupation, were everywhere manifest. In several countries sentiment was strongly in favour of obtaining scientific instruments and equipment from Britain and the United States and of breaking the previous German connexions in education and science. Resentment at German ill-treatment, for example in Holland, conduced strongly to this tendency. It must be said, however, that in the Scandinavian countries, and particularly in Norway, a different point of view was held. Many Norwegians wished to see German industry compelled to produce, and supply by way of reparations, the equipment urgently needed by the Allied countries. The dangers of a revival of the German instrument industry and of the virtual German monopoly of the Continental market were discounted or disregarded.

Whatever may be the opinions on this point, there can be no doubt that in Great Britain we have at the present time both a heavy responsibility and a remarkable opportunity in regard to the educational rehabilitation of Europe. It must be recognized,

* Report upon the Needs of European Countries for Scientific Instruments and Laboratory Equipment. Ministry of Supply (E2), October 1946.

* The estimate of £9 million mentioned in *Nature* of January 25, p. 110, referred to a report apparently made for the United Nations Educational, Scientific and Cultural Organisation. EDITORS.

however, that in many countries very little is known of the resources of British instrument-making. There are notable exceptions: the instruments of one or two British firms are to be found in nearly every physics and chemistry laboratory in Europe; but the other makers are not well known to Continental users. In the case of survey instruments, for example, German and Swiss manufacturers have held the field so completely that the long-established and high-quality production in Great Britain is unknown. The position is very little better in regard to microscopes.

Recommendations are made in the report with the view of correcting this state of affairs, particularly the setting up of more effective agencies for the British instrument industry in the principal cities of Europe. These should be well provided with instruments as well as literature, and have adequate servicing facilities; and it is suggested that a special study should be made of the commercial peculiarities and methods of ordering in the different countries. Reference is made to the very successful exhibition of British instruments held in Stockholm in May 1946, which was highly appreciated in Sweden; and the holding of further exhibitions in other countries is strongly advocated.

As to the nature of European requirements, the following passages are best quoted in full:

"It can be said with certainty that there is no type of scientific equipment which is not wanted somewhere in Europe; but we early found that it would not be practicable to bring back anything in the nature of detailed lists with quantities attached for each country. So varied are the needs and so dependent the ordering is likely to be on local conditions and personal preferences that such statistical information is generally not available in the countries themselves. Much miscellaneous information bearing on the needs of particular institutions is however given [in the separate reports for each country].

"Apart from this there are certain general shortages to which attention must be drawn. In nearly every country of Europe there is a serious, and in some cases an acute, shortage of laboratory glassware, that is to say, beakers, flasks, funnels and test tubes, particularly in the heat-resisting varieties, as well as graduated glassware, glass tubing and rod, and glass apparatus of all kinds. There is an equal shortage of laboratory porcelain, and of miscellaneous laboratory supplies—filter papers, rubber tubing, corks and the like. In many countries too, stocks of chemical reagents are long since exhausted, and further supplies, particularly of pure reagents, cannot be obtained. It is no exaggeration to say that in many parts of Europe the experimental teaching of chemistry is at a standstill because of these shortages of consumable laboratory supplies.

"As to direct war losses, heavy equipment, while it may have been damaged, for example by the stripping of non-ferrous metal components, has often been left and is repairable; but instruments of a portable character, such as microscopes, spectroscopes, lenses and photographic equipment, balances, galvanometers, resistances and small electrical instruments of all types, have everywhere been looted. Of all such instruments, large numbers are wanted in every country.

"Another serious shortage is of metal-to-glass equipment, that is, radio valves, X-ray tubes, cathode ray oscillographs, discharge lamps, rectifiers and so forth.

"Interest in war-time technical developments, particularly radar and atomic physics, will cause a demand for new equipment in many places. We saw cyclotrons in five different countries, and heard of others building. . . . High tension plant, Wilson chambers and their accessory equipment, hydrogen and helium liquefiers, compressors and vacuum pumps will all be wanted."

A shortage which was not strictly the concern of the mission, but which was everywhere apparent, was that of scientific and technical literature, particularly British and American text-books, journals and periodicals. In every university library the gaps in the shelves for the volumes from 1939 onwards were pointed out, and many of the professors regarded this as the most serious shortage of all. The problem of the back numbers and missing text-books is so serious and so important to science that a special and concerted effort is clearly needed to ensure the printing or re-printing of the missing books.

In the reports on the separate countries the visits to universities and institutions are described, and the conferences with government and other officials are summarized. In certain countries which have suffered heavy losses, among them Belgium, Holland and Czechoslovakia, the energy and initiative with which the problems of educational reconstruction are being tackled are most impressive. In other countries the circumstances are less satisfactory, and again the report may be quoted in full:

"In our report on Poland we have indicated that the destruction and loss to the educational system is so severe, and the resources seemingly so inadequate, that the problem becomes one of a different nature from that in some other countries. Elsewhere there are conditions which are almost, if not quite as serious. It would be impossible for any person of ordinary goodwill to see the state of the institutions we visited in Warsaw, in Athens and in Naples, without wishing that some way could be found to cut through the political and economic barriers which hold up action through the official channels, and bring some direct and immediate assistance to the courageous men and women who are struggling to carry on their work in these places. . . . There are in a few countries, and particularly in a few institutions within those countries, conditions so deplorable, and prospects of relief so remote, as to suggest that there are grounds for special action to relieve the most serious cases."

As to the part the British instrument industry may be able to take in dealing with this urgent problem, it is clear that greatly accelerated production of scientific instruments and laboratory equipment is needed to relieve the shortages in Europe. On commercial as well as humanitarian grounds the production is needed, for early delivery is the important consideration if the export possibilities are to be realized which the situation in Europe presents. Copies of the report have already been put at the disposal of the Council of the Scientific Instrument Manufacturers' Association of Great Britain, which is giving active and sympathetic consideration to its recommendations; but the industry is suffering from grave handicaps at the present time, among them inadequate factory space, shortage of skilled labour, and not least, difficulty in obtaining supplies of basic raw materials. It is much to be hoped that ways and means may be found of enabling this vital industry to continue, into the post-war years of reconstruction, the magnificent effort it made during the War.

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