

to be run to open up areas, an important side of this subject.

Sir Frederick Handley Page wanted to know if the jet would jump us from the speed of 200 m.p.h. to 300 m.p.h. without much difference in economy.

Mr. Peter Masefield made the curious point that 100 per cent load factor is uneconomical in view of the waste of money consumed in the organization necessary to reserve places, allot priorities, etc.; 60 per cent load factor, arrive and take your seat, would seem better! This particular subject is very large and requires and deserves much more attention than it got during a morning's discussion.

In the afternoon, Mr. Roy Chadwick, chief designer to A. V. Roe's of Manchester, who was responsible for the most remarkable of all bombers—the Lancaster—started the proceedings, but with war-time caution would only talk of conventional aircraft, whereas everyone, I believe, wanted to be done with them and dream of the next step. Along the lines of the conventional, however, he wanted a general purpose machine of about 100,000–150,000 lb. weight, 1,000 miles range, carrying thirty people, to cruise if needed at 300 m.p.h.

The great Hives followed him, the soul of Rolls Royce, and what a lot we owe to him for his own genius and the teams under him, unequalled in the world. He started by making the interesting point that whereas a locomotive does 100,000 miles between overhauls, an aero engine, although universally cursed, does 150,000 miles between overhauls. He would not admit that design for war engines is different from that of engines for civil use, except in minor points. He stressed the importance for maintenance of the whole power plant being interchangeable. Petter did not like this, but I do not think Hives meant that all power plants should be the same, as that would restrict design; but that in many machines you should be able to take out and replace the whole plant. Air Commodore Banks agreed that peace and war engines were similar.

Here I must state candidly that although both Chadwick's and Hives' contributions were most valuable and interesting, the fact that we are at war and unable for security reasons to speak of so much that is interesting, made the whole discussion rather flat; but that was not their fault.

Mr. Ogston pointed out that the cost of fuel for a year equalled the cost of the aeroplane. Hives countered with the *Queen Mary*, and worked it

out in his head at more than half the cost a year!

Mr. C. G. Grey, comparing the difference in form of the *Fortress* and *Liberator*, which have identical performances, drew the startling deduction that both must be wrong and that aeronautics was not a science at all!

Mr. F. F. Crocombe put the size of a tail-less machine at 260,000 lb. before showing advantage over the conventional type. Wings, I suppose, get deep enough then to carry useful load and human beings. No trouble in landing gear in big machines was anticipated, the flexing of large spars not being mentioned.

Dr. Roxbee Cox described the jet engine well and pleaded for speed so as to get his engines to give more real horse-power. He was surprisingly optimistic on fuel consumption relative to ground covered, and I hope he is right.

Hives, in replying, admitted that Rolls Royce are in the jet business. He did not say whole-heartedly, but if this was not known before, some engine manufacturers will feel a cold douche down their backs.

Mr. W. P. Hildred, director general of civil aviation and another member of my Committee, spoke well and with great knowledge on route facilities. He put some difficult questions to us, such as what regularity of service is wanted; is ground organization spoiling pilots, what radio aids are really needed, etc., and even asked if aircraft should be self-navigating. It was noble of him to come along, bombarded and harassed as he was by the representatives at the conference in Chicago, asking for loads of information from his broad shoulders.

After tea—for the meeting went on until 6 p.m.—Mr. J. P. Jeffcock made the point that aircraft operators should compel the radio world to give them what they want rather than to take ready-made goods. After the War, radio aids should be on the ground, not all in the aircraft as war demands.

Sir Roy Fedden, president of the Royal Aeronautical Society, to whom the Society owes so much, was the last speaker, and told us what we had all realized, namely, that in spite of the hours spent, we had only touched the surface of many problems; and that once the conferences in the United States are finished, we are to have another day of discussion. The Society's secretary, Captain Pritchard, was expected to gasp, but in fact he suggested it, so in the New Year we shall be at it again.

BRABAZON OF TARA.

## NEWS and VIEWS

### Teaching and Research in Industrial Health

THE announcement by the Nuffield Trust of grants totalling £150,000 for teaching and research in industrial health is a reminder of the importance of this hitherto neglected aspect of the nation's well-being. In the early eighteenth century, Ramazzini, in his famous "Diseases of Tradesmen", emphasized the risks to health associated with certain occupations; yet it was not until the War of 1914–18 that official interest, apart from a few industrial hazards, was aroused in industrial health. In 1915 it was realized in Britain that munition workers suffering from ill-health were a serious liability to the safety of the country, since their absence affected production. The Health of Munition Workers' Com-

mittee, formed in 1915, found that few organizations kept health records, and that the need for preserving the health of those who work with hands or brain was but feebly recognized. Since 1918 progress has been made, and the recognition of the need for industrial medical officers, industrial nurses, welfare workers and labour managers has become more widely spread. It is, however, chiefly the firms with the best conditions who do the most to safeguard the health of their employees in all ways. There are numerous organizations still existing where health is nobody's concern.—There are two aspects to be considered: (a) the need for systematic research into the actual incidence of sickness absence from various causes; (b) the means of expressing the results of this research in such a way that it can be applied easily. Before

the outbreak of the present War, much research had been done by the Industrial Health Research Board, but the results were only partially utilized.

Research in industrial health is not merely making an inquiry after something untoward has happened; yet this conception of research is found at times even in government departments. Research calls for much time and patient work, and should be done by people trained in its techniques. Then its initial application should be taken as seriously as the initial research: the attitude of mind of the research worker who prides himself on indifference to the application is out of place in these health problems. Finally, the results should be expressed not only for the research worker but also in a form that can be understood by people who are not specialists. In 1939, the lamentable lack of knowledge on the subject of industrial health had the same results as in 1914, though with less excuse. Medical men had little if any knowledge of the industrial conditions they were expected to understand. This should not be attributed to them as a fault, but as throwing into relief a defect in their training. We know that the total working environment, the social environment and the personalities of the people in authority, quite apart from home conditions, all play a part in determining the sickness absence of workers. It is therefore a definite move in the right direction that the trustees of the Nuffield Foundation have offered the Universities of Durham, Glasgow and Manchester, centres of large industrial populations, the financial means for the furtherance of teaching and research. It is also noteworthy that co-operation is suggested between the new departments and other departments such as science and engineering, the relevant Ministries and trades union officials, and the Industrial Health Research Board. Nor should research be limited to those technically called workers, that is, workers at the bench, but should include all those engaged in work of any kind. The grants, which are to be spread over a period of ten years, have been allocated as follows: £70,000 to the University of Manchester for a chair of industrial health; and £40,000 each to the Universities of Durham and Glasgow, at the former for the establishment of a new department under a university reader, and at the latter for a Sub-Department of Industrial Health in the present Department of Social Medicine.

#### Joint Council of Professional Scientists

THE Joint Council of Professional Scientists was established for the period of the national emergency, to voice the collective opinion of qualified men of science. It was originally a joint committee of representatives of the Royal Institute of Chemistry and of the Institute of Physics, which was set up for the purpose of fostering co-ordinated action in matters of common interest, and was developed by the co-optation of a botanist, a geologist, a mathematician and a zoologist, there being no corresponding professional bodies to represent those branches of science. One of the representatives of the Royal Institute of Chemistry is a metallurgist of similar standing. The Council has now been working for two years. Among matters which have received, or are receiving, its attention are the proposal to urge the Government to establish a central scientific and technical board; the Ministry of Labour's announcement regarding the minimum number of hours to be worked in laboratories and factories; the influence, on professional standards, of war-time

university regulations governing the award of degrees; the conditions of service of professional men of science in the Colonial service; and the national policy regarding research and development work.

In June 1943 the Council was responsible for the issue of a statement on "The Place of Scientists in the Community". The views expressed were generally supported and given wide publicity, in the lay and technical Press, not only in Great Britain but also abroad. The Council has specially concerned itself with the resettlement of professionally qualified men of science after the War and with the various proposals which have been put forward for the proper utilization of their services. At the invitation of the Ministry of Labour and National Service, representatives of the Council gave evidence before the Ministry's Committees on "Higher Appointments" and on "The Further Education and Training of Demobilized Persons". Through the Joint Council, also, the Royal Institute of Chemistry and the Institute of Physics offered their continued co-operation with the Ministry in the resettlement period. The Council is also prepared to assist in the general resettlement of all who earn their living through their knowledge of any branch of natural science. Whether the Joint Council will continue in being when the national emergency no longer exists must depend on prevailing circumstances, and how far there may still be a need for professionally qualified men of science as such to voice their collective opinion on matters which concern the community in general, but especially themselves.

#### Fuel and Power Advisory Council

A Fuel and Power Advisory Council has been constituted as follows: Sir Ernest Simon (*chairman*), Mr. Geoffrey Crowther, Sir John Greenly, Dr. E. S. Grumell, Sir Harold Hartley, Prof. C. N. Hinshelwood, Prof. John Jewkes, Viscount Ridley, Sir Robert Robinson, Mr. Geoffrey Summers and Mr. R. N. Quirk (*secretary*). The terms of reference are: "To consider and advise upon questions, referred from time to time by the Minister to the Council, concerning the development and utilization of the fuel and power resources of the country in the national interest."

#### Higher Technical Education in Great Britain

In a paper on "The Status of Higher Technical Education" published by the Association of Technical Institutions (Hon. Secretary, Loughborough College, Leics. 6d.), Dr. T. J. Drakeley, principal of the Northern Polytechnic, London, states that while on the Continent, "technical university studies are accorded the same status as university studies and both lead to the award of degrees, here, most of our best students, in fact most students have been discouraged from taking higher technical courses because of their apparent inferior nature"; consequently industry has received few trained men and has suffered the decline foretold by Lyon Playfair in 1852. Dr. Drakeley strenuously combats the foreign view (which is supported even by some British chemists) that "we do not possess the right temperament to maintain industrial progress", and claims that our ineffectiveness in the industrial field is due to our lack of appreciation of "the vast importance of technical training in the development of an industry—whereas we state that trade cannot be taught *within* a school, our foreign competitors realise that trade cannot be taught *without* a school".