

application, the immense amount of technical knowledge still unappropriated by society or industry even for the relief of suffering, the way in which the economic structure itself opposes technical change and the adoption of new methods or standards of living, limiting alike expenditure on research and utilisation of existing knowledge.

This sombre picture of the way in which scientific development may be held up by lack of support or turned to trivial or destructive uses cannot be ignored by the man of science. He at all events should see through the fallacy of a demand for less science and a return to simpler times, when what is really needed is the application of science to the convenience of living instead of to profit-making. Nor can he fail to be alive to the danger of the degeneration of science under what is called economic nationalism, and the narrowing of its functions, or the way in which professional efficiency and a scientific outlook in the practitioner are threatened by the conditions under which he is called upon to practice, as in the medical profession to-day.

The exact relations between scientific workers and political organisations may be open to debate. There can be no question, however, as to the need for much more open-mindedness on the part of all men of science towards the social and industrial problems of their environment to-day. Even from the point of view of the advance of science itself they must face those problems. Much more must they accept the challenge, corporately and individually, if they care anything for the enrichment of mankind with the vast resources of material well-being and leisure which science has now put within our power. That era of plenty can only be achieved as men of science face frankly such problems as are presented in this book and, faithfully proclaiming the truth, strive as earnestly and disinterestedly for their solution, for the distribution of wealth and the science and art of living as in the past they have striven for the acquisition of the knowledge which places an age of plenty and of leisure within the reach of all.

R. B.

### Development of High-Speed Aircraft

Air Ministry: Aeronautical Research Committee: Reports and Memoranda. No. 1575: *Collected Reports on British High Speed Aircraft for the 1931 Schneider Trophy Contest*. Pp. iii+100+60 plates. (London: H.M. Stationery Office, 1934.) 10s. net.

THIS monograph describes the development of the British aircraft for the Schneider Trophy contest of 1931, the preparations for and the actual contest, also the successful attempts on the speed

record afterwards. It is mainly concerned with the technical aspects, although a tribute is paid to the great skill of the pilots, without which the successes could not have been achieved.

The book is divided into sections, each written by the persons mainly responsible for the work described, and although it forms a connected whole, the individual reports are self-complete.

Section 1 is an introduction by H. M. Garner, giving a brief description of the history of the 1931 contest and a summary of the contents of the monograph. In Section 2 the development of the design and construction of the *S.6A* and *S.6B* are described by R. J. Mitchell, the chief designer of Supermarine Aviation Co. (Vickers), Ltd. Although the design was based on the *S.6*, the Schneider Trophy winner of 1929, there were a number of problems which required further solution, and these were dealt with by Mr. Mitchell in co-operation with the Air Ministry and National Physical Laboratory staffs. Probably the most difficult problem was the provision of adequate water- and oil-cooling.

Section 3 describes the development of the engine by Messrs. Rolls-Royce, Ltd. Although the external shape of the 1929 engine was scarcely altered, almost the whole of the working parts of the engine had to be re-designed. The airscrews were all of the Fairey-Reed type, and a description of the development of them is given in Section 4.

Section 5, describing the wind tunnel tests, is written by the National Physical Laboratory staff. The tests were made on as large models as possible in the Duplex wind tunnel at the National Physical Laboratory in order to reduce the scale effect. For the first time in the history of these contests a large amount of full-scale data was collected. This is described in Sections 6 and 7 and also in a separate report (R. and M. 1472).

The flying experiences of the high-speed flight are summarised in Section 8, and the medical aspect of high-speed flying is discussed in Section 9.

The monograph concludes with Section 10, giving a short descriptive account of the Schneider Trophy contest and the two speed record flights. It is evident that the speed in the contest could have been improved had not instructions been given to take no risks on the turns and to keep the water temperature of the engine at a safe level by throttling. A subsequent speed record flight of 407½ m.p.h. was made.

The monograph illustrates the many aspects of aeronautical research which have to be considered in the development of racing aircraft. It should certainly be read by all aircraft designers, and in a broader sense it is an excellent example of how scientific and technical experimentation upon a specific question should be organised.