

Most aspects of aircraft electrical equipment were thoroughly covered by the papers presented, and these, together with the discussions on them, should provide a useful work of reference for those concerned with the design or utilization of such equipment. An interesting point made was concerned with the adverse effect of standardization on the weight of electrical equipment, and a plea was entered for an increase in the number of standard sizes in order to reduce the weight penalty.

## MARINE BIOLOGY

### SYMPOSIUM AT THE SCRIPPS INSTITUTION

A SYMPOSIUM on "Perspectives in Marine Biology" was held in the Scripps Institution of Oceanography, La Jolla, California, during March 24–April 2, under the auspices of the International Union of Biological Sciences and jointly sponsored by the University of California and the Office of Naval Research of the United States Navy. Owing to generous financial help and to the co-operation of the Military Air Transport Service of the United States, a large and representative body of marine biologists attended from all parts of the world, eight being from Great Britain. The programme of prepared papers covered the whole range, and indeed more than is usually regarded as the whole range, of the composite science of marine biology. Certain of those invited to participate came to give accounts of work of very wide biological implication, and they also made major contributions to the discussions which followed the papers. Very adequate provision had been made in the time-table for such discussions.

It is undoubtedly true to say that no such broad survey of the field of biological investigation in the marine environment has hitherto been held. Observation and discussion ranged from the factors of the marine environment to the study of bottom fauna and of plankton communities, through problems of biochemistry and regulation, both chemical and in respect of timing and rhythms, to problems of production and productivity, notably in relation to both phytoplankton and bacteria. The importance of ethology was stressed, and both the sensory equipment and effector mechanisms of marine organisms were discussed. Problems of speciation and of genetics formed the subject-matter of the concluding sessions of a programme that had been organized by Prof. A. A. Buzzati-Traverso, to whose distinction as a geneticist must certainly be added high ability as an organizer.

An experiment of great interest was made during the symposium, the participants in which were organized into a series of 'idea groups' of very mixed membership where the subject-matter of the papers and general matters appertaining to marine biology were informally discussed. The concluding session of the symposium took the form of a meeting at which spokesmen of the various groups gave some account of their deliberations and answered certain leading questions which had been put to them. In the opinion of the writer, himself one of the spokesmen, profitable use could probably be made of such a scheme in future, although perhaps in this instance both subject-matter and participants were somewhat too heterogeneous. A doubt was left as to whether those who organized the symposium would obtain

any major lead from the deliberations of the idea groups.

But there can be no doubt that, as a result of the discussions, both formal and informal, all who attended the symposium left it with increased knowledge both of their science and of their colleagues from many countries. Regret was widely expressed at the absence of the delegates expected from the U.S.S.R. The Scripps Institution of Oceanography now has the possibilities, through a major grant of money from the Rockefeller Foundation, to develop greatly the biological aspects of its work. Those responsible for the symposium must certainly have gained an idea of the extent and diversity of modern investigations in marine biology. The majority of these, outside the field of fishery research, are the achievements of individual workers, although naturally such work is being increasingly aided by the facilities of modern marine biological laboratories and research vessels. Along what lines of research money might most fruitfully be spent would, at this stage, seem to depend more on the quality of the people employed than on the actual programme, and it is to be hoped that the Scripps Institution will be successful in its endeavours to obtain workers of the highest quality to develop its biological programme.

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## SCIENTIFIC HUMANISM

IT is a commonplace of discussions on the universities that there is an ever-widening gap between the arts and the science graduates: this usually takes the form of a most often unjust attack on the 'narrow scientist'. S. J. Tester, a lecturer in classics at the University of Bristol, suggests that the 'narrow arts graduate' is a commoner phenomenon and represents a more serious problem (*Univ. Rev.*, 28, No. 2; Feb. 1956).

Most graduates in one of the special sciences will, in a time of films and theatres, radio and television, "Penguins" and "Pelicans", imbibe something of what the arts man so often describes as 'culture'; but most arts graduates leave the universities with practically no conception of the revolution that took place in science between the seventeenth and nineteenth centuries, and the further revolutionary developments which have occurred since 1900. Unfortunately, they leave not feeling ashamed of this ignorance but either proud of it or indifferent to it; they consider it irrelevant to their being 'cultured' or 'educated'. Tester suggests a way in which both these problems—that of the science graduates' lack of contact with the minds of the great thinkers of the past and that of the arts graduates' blindness on the side of science—might be at least partly solved.

The way in which the universe in all its physical aspects is now regarded is largely due to developments in science between the seventeenth and nineteenth centuries; it is to be expected that new developments in physics, physiology, psychology and electronics will produce changes in men's commonplace opinions in the future. It is possible to draw up a list of half a dozen or so books which would epitomize the 'scientific revolution', all, or nearly all, books written for the educated public of their day by men of generally acknowledged genius or importance, and all readable by any intelligent student.