

light without heat for stimulating plant growth; and, of course, numerous examples of more ordinary instruments in new and improved designs.

The Research and Experimental Section provides always a fascinating display of the research physicists' work before it reaches the commercial production stage. Thirty-one of the research laboratories attached to Government departments, research associations, universities and manufacturing firms exhibited. Many of the devices shown had been developed for testing the properties and behaviour of a wide variety of materials under the differing conditions met with in practice, whilst several others were concerned with applications of cathode ray tubes and electron cameras to all manner of problems. One exhibit was staged to demonstrate the possibilities of ordering a number of different materials to match a given colour by quoting a standard name, number or code word, and another was designed for the routine measurement of the colour values of fabric and similar surfaces viewed by diffusely reflected light. Developments in the method of controlling the speed of small electric and mechanical motions by means of light tuning forks formed the subject of another exhibit. Others were, a galvanometer which is said to be immune from mechanical disturbance of the zero, despite violent pitching and rolling of the type met with in marine work, and a high speed motion picture timing system and camera which is said to take as many as 2,500 pictures a second.

Radio and telephony formed the subject of several

important exhibits in the Research Section, and among these mention may be made of a standard receiver for the measurement of radio interference, a map of England and southern Scotland showing the electrical resistivity of the earth, and an 'artificial mouth' for testing telephones.

The growing use of discharge tubes for illumination purposes has led to the development of various devices for studying their behaviour, and some of these were exhibited. Another illumination device shown was a gas burner for producing an intermittent flame or light.

On each evening of the exhibition a discourse was delivered. The first was entitled "The Architecture of Molecules" in which Dr. B. Wheeler Robinson gave an account of recent X-ray investigations of molecular structure made at the Davy-Faraday Laboratory and elsewhere; the second was delivered by Dr. C. V. Drysdale on "The Problem of Ether Drift", a subject which readers of NATURE will know he has recently taken up with characteristic zeal; and on the third day, when the public is admitted to the Exhibition, the Astronomer Royal spoke on "Giant Telescopes".

The attendance at this year's Exhibition is not yet known, but in the past two years it has wanted but a few hundreds to be ten thousand. The Society is justly proud of the record of service it has rendered for so long to all those concerned with instruments, to the instrument industry in Great Britain, and to the public.

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Biochemistry of Marine Phytoplankton

A SERIES of papers on "Observations on the Fatty Constituents of Marine Plankton" (*J. Exp. Biol.*, 11, 173-197, 198-202, 203-209; 1934) sheds considerable light on the content of fat and vitamins A and D in plankton, on which all marine animal life is dependent directly or indirectly for existence.

In Part 1, on the "Biology of the Plankton" by E. R. Gunther, in order to convey a more precise idea of the relative importance of each species, an attempt is made to translate by means of suitable measurements the figures representing the numbers of a species present in a given quantity of plankton into figures representing the volume occupied by that species. The oil content of May phytoplankton from near the Isle of Man was about 6.9 per cent on the dry weight, and it is suggested that the oil content may vary with the species and fluctuate during the life-history. The oil content of July zooplankton varied between 15 and 19.3 per cent. In plankton giving a high oil yield, *Calanus finmarchicus* was very prominent.

In Part 2, on the "General Character of the Plankton Oils", G. Collin, J. C. Drummond, T. P. Hilditch and E. R. Gunther show that the fatty

acid fraction of the zooplankton oils resembled that from fish liver oils. In the non-saponifiable fraction they demonstrated the presence of cholesterol, cetyl and eicosenyl alcohols, a hydrocarbon suggestive of squalene and possibly batyl alcohol.

In Part 3, on "The Vitamin A and D Content of Oils derived from Plankton", J. C. Drummond and E. R. Gunther describe the results of an examination of the oils by feeding tests, with antimony trichloride and spectroscopically. They show that the phytoplankton oil is more potent than the zooplankton oil in its growth-promoting action, and this is correlated with a greater richness in lipochrome pigments related to carotene. Vitamin A as such is apparently absent from both phytoplankton and zooplankton. In testing for vitamin D, the degree of healing was determined both by histological (line test) and by X-ray examinations. In daily doses of 50 mgm., phytoplankton oil showed no antirachitic activity but zooplankton showed slight activity. It is suggested that the small amount of vitamin D present in the animals results from their irradiation while in surface waters rather than from a prolonged diet of phytoplankton.

Building in Earthquake Countries

WE have received from Dr. C. E. Adams, Dominion astronomer and seismologist in New Zealand, several papers by Mr. R. W. de Montalk. In these, the author, who is an architect, describes a foundation, called the 'Salvus' foundation, that he has devised in order to lessen the effects of destructive

earthquakes. It consists of a platform fixed to the ground. This is made of reinforced concrete, the under side of which may be strengthened, if necessary. Round the edge of the platform rises a rim of the same material, which contains a layer of clean fine shingle, 4-11 in. in depth according to the weight