

reports and data to be used in the design. Design and construction of the various units has commenced, and the next twelve months will see considerable progress. The mass spectrometer is to be used for biological and other research in which stable isotopes imported from overseas atomic energy stations will be employed.

PHYSICAL INSTRUMENTATION

The year has shown a great decrease in the amount of external servicing work done for industry. This is partly due to the Laboratory's efforts to divert this work to commercial agencies, and partly due to the natural development of these instrument-servicing organizations. The diversion of the work from the Laboratory is undoubtedly helping the commercial concerns to set themselves up. Assistance is still given in any case where commercial aid is impossible. The present main work of this laboratory is thus the development of instruments for internal use, for Government Departments, and other laboratories. A notable improvement in the conditions under which instruments are developed has been possible through extra space being allotted to the laboratory.

Current Developments.—Air systems for amplifying small mechanical movements, especially those of low effort. These systems provide an alternative to electrical and electronic methods of indication and control. Use is being made of two types—one using air-pressure indication and the other air-flow indication. The systems are to be used in general laboratory instrumentation, in an instrument for measuring the fineness of a bulk sample of wool fibres, and in load-measuring capsules.

Load-measuring capsules for earth pressure and related measurements and for compact weighing devices.

A "velocity against gravity" recorder for use in aircraft.

Development of the blood-pressure-recording equipment has been continued, and a trial has now been made under hospital theatre conditions. This instrument is being developed for specialized medical use.

Frost-alarm development has continued past the trial stage and a pre-production batch of instruments is being made for the next frost-fighting season.

RADAR

Canterbury Project.—In this project, which is an investigation of anomalous propagation of radio waves under north-west wind conditions in Canterbury, the collation of results into a form suitable for permanent recording has been completed, and one officer has been seconded to the Telecommunications Research Establishment in England to work on the theoretical analysis.

Microwave Meteorological Radar M.E. 7.—The service manuals have been completed and distributed. Installation of the second two sets has been delayed by building difficulties; however, the fourth set is now to be installed at Harewood instead of Palmerston North, so final installation may be accelerated. One of these equipments has been temporarily installed at Shelly Bay for staff training.

As far as is known, this equipment still has a higher operational performance than any other set used for wind-finding overseas.