

(3) A sound-film modulator has been designed for the National Film Studios incorporating a permanent magnet light valve operating on the variable area system.

(4) A multiple-temperature incubator consisting of ten separate chambers, grading in temperature from 0° c. to 50° c. automatically controlled, has been designed.

(5) Draught Gauge: A sensitive meter for measuring the difference in pressure between the lower end of a rotary cement-kiln and atmospheric pressure, and graduated from +0.05 in. to -0.15 in. water, was designed and made for a cement-manufacturer.

(6) Electronic Alarm for Gas Calorimeter: A special device was designed for attachment to the recording calorimeter at the Christchurch Gas and Coal Co. to give a sound alarm whenever the calorific value of the gas varied beyond a certain deviation from an optimum value.

(7) A recording instrument has been asked for by a firm making artificial fertilizers to record the weight of rock, weight of acid, temperature of acid, density of acid, and the time of mix on one chart. The design of this recorder is almost complete and many of the components have already been constructed.

(8) Molecular Distillation Still: A prototype still has been completed for the separation of vitamin A from New Zealand fish-oil. A commercial model is at present nearing completion. The prototype has functioned satisfactorily and has provided sufficient data for the building of a commercial model for use in a New Zealand factory.

(9) Miscellaneous: In addition, complete drawings have been produced for the following: pivot polishing and inspection equipment; conductivity cell; barrel-viewing periscope, AID 5772; compressormeter for 6 in. cylinders; pitot tubes and manometers; resistance elements (platinum); micro hypodermic syringe; multiple slide wire (drum type); loadometer-testing machine; multiple switch; backing-pumps; Lamb's roller extensometer; metal vacuum taps; thermostat capsules; air-recirculation furnace; pick-up arms and heads; galvanometers (high sensitivity); resistance bridge and box; head for vacuum packing-machine; and specific-gravity balance.

RADAR LABORATORY

As mentioned before the Radio Development Laboratory has now been incorporated in the Dominion Physical Laboratory. The peacetime functions of the radar group have been approved by Cabinet as follows:—

- (1) Technical service and advice to Government Departments and commercial interests on radar.
- (2) Develop radar equipment for navigational purposes to suit New Zealand circumstances and conditions and to collaborate with the radio industry in its manufacture.
- (3) Service and maintain radar navigational aids used for civil shipping and aircraft.
- (4) Engage in radar research on problems of local application and significance.
- (5) Study radar developments of defence significance, thereby having within New Zealand specialists with up-to-date knowledge of radar in the event of another national emergency.
- (6) Provide means whereby Service personnel can gain technical training in and knowledge of current radar developments.

The following projects are in hand:—

(1) *Design and Construction of Micro-wave Meteorological Radars.*—Four sets of equipment are being constructed for the Meteorological Service (Air Department) for installation at stations in New Zealand and in the Pacific. This apparatus will provide information on winds up to a height of 50,000 ft. for the use on the Trans-Pacific air route and for New Zealand aviation and weather forecasting. Personnel to maintain and operate the sets will be trained at the Dominion Physical Laboratory.