

*Regulated Power-supply.*—A power-supply for the Standards Laboratory, stable to 1 part in 10,000, has been designed and developed. Initial tests have been carried out in the laboratory, and mechanical details for the final model are almost complete in the workshops.

*Simple High-speed Mechanical Counter for Aircraft.*—An instrument was required to count at rates up to 20 per second and to be unaffected by vibration. A prototype instrument has been built and proved very promising. A new design incorporating the use of a standard case size, concentric pointers, and acceleration compensation is in hand.

*Maraetai Temperature Units.*—A set of thermometers was supplied to measure the temperature of concrete as it was setting in the Maraetai Dam. Ninety copper resistance elements were made up and housed in short lengths of water-pipe. The indicator used was a Wheatstone bridge with the slide wire wound on a drum and calibrated directly in Fahrenheit degrees.

*Special Anemometer.*—An anemometer for recording very low wind speeds has been designed by using a photo-electric system and electronic frequency meter to record the speed of the anemometer vane. The advantage of this system is that very light loading is imposed on the anemometer vane.

*Plant Lighting.*—Apparatus is being developed for supplying plants with artificial sunlight when growing in enclosed cabinets. In addition to soil nourishment, warmth, air, and moisture, plants require light to sustain growth. A battery of fluorescent lamps is being arranged to fit inside a totally enclosed cabinet. The light unit has water and air cooling to prevent convected or radiant heat from reaching the plants.

*Grease-kettle Thermocouple.*—A specially robust thermocouple head was developed for measuring temperature in large grease-kettles. The action of powerful stirrers in greases of high viscosity caused frequent failures of expensive and delicate heads imported from the U.S.A. A robust and satisfactory head was designed and built.

*Temperature Measurement in Deep Bores.*—Prototype equipment has been made for measuring temperatures in deep bores in the thermal regions. A special three-core electric cable for use at high temperatures is now to hand from Great Britain and will be used with a resistance thermometer and meter at temperatures up to 200°C.

*Ultracentrifuge.*—This high-speed centrifuge (60,000 r.p.m.) is now well advanced in construction, and is being assembled and tested. Tests of the Schlieren optical system have given very satisfactory results. The turbine unit has been given bearing tests, and has been held at 40,000 r.p.m. for some time. Rotors are still under construction.

*Intervalometer Mark II.*—A further model incorporating operational improvements has been designed and built following the successful results obtained with the original instrument that was supplied by the laboratory and used for timing camera exposures in aerial photography.

*Timber-weighing Apparatus.*—A direct mechanical method of determining moisture content of wood samples throughout timber stacked in a vapour drying-kiln is being developed. Samples are weighed at intervals by means of a pneumatic capsule.