

## PROJECTS HANDLED

Monthly reports of all work handled have been forwarded both to the Manufacturers' Research Committee and to the Department. The following projects were of particular interest :—

*The production of several types of manipulating endpieces for bronchoscopy.* An operation for the removal of a screw from the lung has been performed successfully in Auckland several times within the last year, using special equipment made by the Laboratories to the requirements of the operating surgeon.

*The design and prototype construction of alternative forms of industrial heating to supplement coal gas and electricity.* Considerable work has been carried out on the design of burners, regulators, and generating equipment, and several emergency installations have been made.

*The design and construction of a remote-indicating wind direction and force indicator for superphosphate-works.*

*An investigation into the performance of a variable-speed ring-spinning frame for woollen fibre.* This project, which is covered by A.I.D.L. Report No. 1, was completed early in the year and the results obtained circulated through the Woollen-mills Research Association through the generosity of Mr. L. W. Tattersfield.

*The design and construction of acid etching-machines for photo-engraving*

*The design and installation of electrical tank-level indicators to ensure safe and continuous operation of sulphuric-acid plants in a chemical-works.*

*The design and development of dies and jigs for forming plywood chair-backs, and assistance in the development of the finished article.*

*The design of a continuous paint spraying, dipping, and drying plant for pressed-steel articles.* Infra-red dull emission lamps are used as a drying medium, and a large range of speeds and heat input is available.

*An investigation into uneven performance of a carding-engine* for a woollen-manufacturing firm was made by recording speed variations throughout the machine, using the equipment developed for the ring-spinning investigations.

*A soil-shear-testing machine* was designed and constructed for the Auckland City Council for experimental use on earth-dam design and construction.

An increasing number of pressure gauges, temperature indicators and recorders, humidity-controllers, and other industrial instruments were checked, repaired, and recalibrated. Many special tools and gauges, particularly those requiring ground threads or formed relief, were designed and produced, most of this work being handled in collaboration with the Dominion Physical Laboratory. A number of mechanical tests of various materials and manufactured articles were carried out, either to check their compliance with specifications or to give further design data from which the final manufactured product could be improved.

It is hoped to increase the mechanical testing facilities greatly during the next few years.

*Optics: Repair, Replacements, and Design.*—Equipment has been set up for the polishing, grinding, and cutting of glass and design of optical instruments. In conjunction with the range of optical glass now in stock, most types of lenses and prisms can be made. Orders fulfilled during the past year included the manufacture of spherical and cylindrical condenser lenses; eyepiece components; objectives for telescopes, binoculars, and microscopes; prisms for binoculars; inspection lenses; lenses and prisms for hospital instruments; bubbles for levels and theodolites; spherical mirrors.

Also included were the engraving of graticules and the repolishing and rebalsaming of lenses and prisms.

*General Physics: Measurements and Calibration.*—With the limited equipment and standards at present available it has been possible to carry out quite a number of useful measurements, including refractive index and specific gravity of tomato-pulp, moments of magnets, refractive index of prisms, inspection and checking of balances, calibration of a Simmance gas-recorder, manometers, pressure gauges 0–1·000 lb./sq.in., and thermometers.