

FINE-INSTRUMENT WORKSHOPS, INCLUDING GLASS-BLOWING, GLASS-GRINDING, AND ELECTRICAL INSTRUMENTS

The Fine-instrument Workshop has been engaged on the finer types of instrument construction and repair work, and the following analysis shows the number of instruments of different types dealt with: cameras (5); surveying-instruments (81); meteorological instruments (43); optical instruments (4); clocks, chronometers, stop-watches (47); seismographs (4); drawing-instruments (6); and miscellaneous measuring-instruments (53). The equipment at Apia Observatory was overhauled by this section during the year.

The Electrical Instrument Workshop has dealt with the following instruments: ammeters, voltmeters, multi-test meters, valve-testers (98); pyrometers, pyrostats, and recorders (26); galvanometers (29); other electrical instruments, including light-meters and exposure meters (26).

The glass-working section has suffered through not having a qualified glass-blower, but has handled the repair of 50 pieces of laboratory equipment.

PRECISION WORKSHOPS, INCLUDING TOOL-ROOM AND INSTRUMENT-CONSTRUCTION

*Tool-room (including Machine-shop, Grinding-room, Heat-treatment Room, and Sheet-metal Shop)*

The Tool-room has handled some 800 separate requests for the manufacture of tools, and each request may have involved the construction of several items. The following analysis gives some idea of the number of tools dealt with: gauges (52), heat-treatment (3,432 pieces), taps (226), dies (61), chasers (61 sets), hobs (8), cutters (117), grinding following heat treatment (297), grinding alone (35), reamers (50), mandrels (6), collets (7), and miscellaneous (213).

Under miscellaneous are included replacement parts for factory production machines which might otherwise be idle until replacements could be imported. It also includes the repair and putting into service of production machines. A great deal of precision work has been done which, prior to the acquisition of this Tool-room, would have been sent overseas or accomplished by makeshift or expensive means. The following are brief descriptions of some special items which will illustrate the complexity and precision of the work done by the Tool-room: spindles and bearings for Broadcasting Service recorders; crown stay-taps for Railway Workshops (these were unobtainable in New Zealand and lack of them was seriously hampering boiler repair in Railway workshops); a milling-machine lead screw for a Hutt Valley engineering firm; special tools were designed and made for an Auckland firm engaged in the manufacture of musical instruments (flutes); special bent-nut taps were made in high-speed steel and thread ground for a firm engaged in the manufacture of nuts; circular-form tools for the manufacture of tongue and grooved wooden flooring; thread-rolling wheels for the manufacture of tooth-paste tubes; hobs for use in manufacture of washing-machines; a number of small broaches for a firm manufacturing vacuum cleaners; a seed-packing machine serviced and put into operation; glass rolls for polishing leather reconditioned for an Auckland tannery; a number of circular cutters for a firm engaged in steel-tube-manufacture; parts for electric-lamp-manufacturing machines have been made (these parts were otherwise unobtainable in New Zealand, and the finish and performance of the parts made at the Laboratory have been highly praised by the firm concerned); a jet-control shaft for a turbo alternator for the Waimea Electric-power Board; Deep-hole-drilling tools have been designed, made, and used successfully in making parts for electric-lamp machines mentioned above; a dividing-plate was drilled for a dividing-head for a local engineering firm; a number of coil-formers and mandrels for a firm manufacturing loud-speakers; large shell-reamers for reconditioning motor-car engines; mattress-stitching machines have been repaired and serviced for two mattress-manufacturing firms; rollers for cardboard-box-making machines; a firm manufacturing builders' hardware has been assisted by the making of a shaving-die, and also a ninety-six-pin mould for brass injection moulding of window-stay latches; the Returned Servicemen's Re-establishment League has been assisted by the provision of tools for cutting micarta and stainless steel.