

Mechanics and Hydrostatics.

Composition and resolution of forces acting on a point, and on a rigid body on one plane; the mechanical powers; the centre of gravity; the fundamental laws of motion; the laws of uniform and uniformly accelerated motion and of falling bodies; the pressure of liquids and gases; the equilibrium of floating bodies; specific gravities, and the principal instruments and machines the action of which depends on the properties of fluids.

Text-books.—Elements of Statics and Dynamics, Loney; Elements of Hydrostatics, Loney.

Syllabus for Electrical Class.

The syllabus comprises a complete course for the City and Guilds Examination in electrical engineering, and includes the following subjects:—

General notions about electro-motive force, current, resistance, and the principles of electric circuits, simple and branching; the electro-motive force required to produce a given current in a wire of given resistance; electric batteries, their construction and adaptation for commercial uses; simple principle and use of electric measuring instruments; ammeters, voltmeters, delicate mirror galvanometers, resistance-coils; the induction of currents by the motion of magnets; notions about magnetic lines of force; the induction of currents by action of currents in neighbouring circuits; the effect of iron; induction-coils and transformers for alternate currents; simple principle of motors and of electro-magnetic mechanism; the magnetic drag on wires carrying currents; glow-lamps and arc lamps, their arrangement in parallel and in series; the necessary parts of arc lamps and their action; the relation between mass, weight, and force; relations between heat and work; relation between the watt, the kilowatt, and the horse-power; watt meters; systems of wiring houses; methods of jointing; general knowledge about conducting and insulating materials and their mechanical and electrical properties; meaning and calculations of drop; methods of testing installation.

If any student wishes to sit for examination in telephony or telegraphy he may do so by making arrangements with the lecturer.

Text-book.—Electrical Engineering, Slingo and Brooker.

Reference-books.—Magnetism and Electricity, Poyser; Magnetism and Electricity, Thompson; Vol. iii, N.Z. Mining Journal, containing "Electricity for Artisans," by E. G. Wright.

Through the courtesy of the Hon. James McGowan, Minister of Mines, a special grant was obtained for the purchase of additional apparatus, including a chemical balance, crystal models, planimeter, slide-rule, &c. The chemical balance is Oertling's best standard make, and is a very satisfactory instrument. The planimeter is Coradi's patent compensation polar planimeter, which is a more satisfactory instrument than the ordinary Amster's. Major-General Hannington's slide-rule is a most useful instrument and a great labour-saver, enabling computations to be performed mechanically.

The school is equipped for teaching all the subjects in the syllabus. There is a complete assay laboratory for the students and another entirely separate laboratory restricted to the use of the staff, where assays and analyses are made for the public. A metallurgical plant is attached to the school, where ore is treated in bulk for the public and reports furnished on the best method of treatment. The students gain valuable experience from this battery.

The school is lit throughout with electricity generated by a dynamo driven by a Pelton water-wheel in the electricity laboratory. This laboratory is equipped for practical instruction in electrical engineering to supplement the lectures on that subject.

The museum is well stocked with minerals, rocks, and fossils, and is open to the students at all times. The public are admitted every Thursday afternoon.

GOVERNMENT CERTIFICATES.

No less than sixty-five first-class mine-managers' certificates have been issued, after examination, to Thames School of Mines students, and fifty-three battery-superintendents' certificates.

ASSAYING AND ORE-TREATMENT DEPARTMENT.

During the year 136 assays were made for the public besides a large number made in connection with the experimental battery. All assays are done in duplicate, and extreme care taken that all reports are accurate.

In the experimental metallurgical plant eight parcels of ore were received for treatment.

The scale of fees has been altered and simplified, and now stands as below:—

Bullion assay	5s.
Assay of gold and silver ores, with parting assay	5s.
Assays and analyses of ores, &c., for ordinary metals	5s. per constituent.
Assay of nickel, cobalt, and chromium ores	10s. „
Assays and analyses of rare metals, &c	By arrangement.
Assay of coals and fuels	5s.
Ditto, with sulphur-determination	10s.
Analysis of water for metallurgical purposes	5s. per constituent.
Cyanide and chlorination tests	By arrangement, (minimum, 15s.).

The fee of £5 per ton for treatment of ore in the battery has been retained, but is reduced under certain circumstances to bare cost of labour and material. To obtain this concession the sender of the ore must obtain from the Inspector of Mines a certificate stating that the sender is a *bona fide* prospector.