

*Petrology.*

Preparation of thin rock-sections; use of the polariscope; identification of minerals in thin sections; drawing and photographing of sections. Theory of light; ordinary and extraordinary ray; polarised light; positive and negative crystals; uniaxial and biaxial crystals; interference figures, &c.

A grinding-plate and polarising microscope are provided by the school.

*Saturday Science Lectures.*

Fundamental ideas of matter. Gravitation. Mechanical powers. Friction. Pressure of liquids and gases. Specific gravity. Heat, sound, and light. Magnetism. Electricity. Chemistry. Physiology and health.

*Physics.*

*Heat.*—Change of volume, measures of temperature; change of state, latent heat, hygrometry, specific heat, calorimetry; sources of heat, the conservation and dissipation of energy; convection, conduction; reflection, refraction, transmission, and absorption of radiant energy. Use of thermometer, barometer, hygrometer; determination of the density of solids and liquids; calculation of the density of gases from observations of their temperature and pressure; calorimetry.

*Sound.*—The production and propagation of sound; the vibration of sounding bodies; the elements of the physical theory of music.

*Light.*—Nature, production, and propagation of light; the laws of reflection and refraction at plane and spherical surfaces; prismatic dispersion and spectra; interference, double refraction, and plane polarisation; the principal optical instruments, and vision. Use of goniometer, photometer, spectroscope, telescope, and microscope; determination of the curvature, focal length, and magnifying power of lenses; determination of the refractive index of solids and liquids.

*Static Electricity.*—Fundamental phenomena of attraction and repulsion, conduction, induction, and distribution, electrostatic units; electrical machines; condensers.

*Magnetism.*—Fundamental phenomena of magnetic attraction, repulsion, and induction; magnetic units; terrestrial magnetism.

*Current Electricity.*—Voltaic batteries; galvanometers; electrolysis; Ohm's law; thermal effects of the electric current; electro-magnetic units; the interaction of magnets and currents, and the mutual action of currents upon one another; thermo electricity; induction of currents; magneto-electric and dynamo-electric machines. Use of electrometer, galvanometer, voltmeter, Wheatstone's bridge, and resistance-coils; determination of the resistance of conductors and batteries; determination of the electro-motive force of batteries, and of the strength of currents; measurement of magnetic forces.

*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.

*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 installations.

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

The attendance for the past year is as follows:—

			First Term.	Second Term.	Third Term.
Registered students	...	...	33	30	30
Saturday science classes	...	...	61	59	44
Total students	...	...	94	89	74

Being an average of 31 registered students, 54 Saturday science pupils, and 85 of a total.

The examination results for the year 1903 were very good, taking into consideration the lack of active mining and consequent depression existing on these goldfields. Thirty-four students sat, sending in 68 papers, including 18 from the Saturday science class. Fourteen first-class, 18 second-class, and 22 third-class certificates were gained.

The examinations were supervised by myself and staff.