

and signs of disease—(a) general; (b) connected with nervous systems; (c) connected with urino-genital systems; (d) connected with circulatory systems (1, pulse; 2, temperature and clinical thermometer); (e) connected with respiratory systems; (f) hygienic and general treatment (1, ventilation; 2, food and water; 3, exercise and grooming; 4, shoeing, &c.); (g) fevers, their causes, nature, &c. Thursday evening: Anatomy—(1.) The skeleton (1, spinal column; 2, anterior limb; 3, posterior limb; 4, thoracic cavity; 5, pelvic cavity; 6, head—(a) rough outline of bones, (b) teeth, &c.): (2.) Arthrology. Physiology—Physiological histology (1, epithelium; 2, pigment; 3, connective tissue; 4, cartilage; 5, bone—(a) chemical composition, (b) structure, &c.). Students wishing fuller information and advice should apply to the instructor in agriculture.

*Department of Applied Mechanics (Instructor, Professor Warren).*

Four years' course of study. A student who wishes to obtain the certificate of Expert in Applied Mechanics must attend the whole course of instruction and pass a satisfactory examination in each subject, unless granted exemption from lectures and instruction, in which case he must pass the examination only. He must also obtain certificates for chemistry, heat, electricity, pneumatics, hydrodynamics, and mathematics, and must also satisfy the examiners as to his knowledge of English and bookkeeping. A student may, however, attend the course of instruction in any subject under applied mechanics, and if he passes a satisfactory examination a trade certificate will be granted. He may take any period that he may require to obtain the necessary certificates for the degree of Industrial Expert, and as soon as he has obtained them the full certificate will be given.

The course of instruction is as follows:—Mechanical engineers: First year—first term—mathematics, 1, Wednesday; chemistry, 2, Monday and Thursday; freehand drawing, 1, Friday: second term, the same in continuation. Second year—first term—practical plane geometry, 1, Monday; physics, 2, Tuesday and Friday; mathematics, 1, Thursday: second term—practical solid geometry, 1, Monday; physics, 2, Tuesday and Friday; mathematics, 1, Thursday. Third year—first term—mathematics, 1, Monday; mechanical drawing, 2, Wednesday and Friday: second term—trade classes. Fourth year—first and second terms—applied mechanics, 2, Tuesday and Thursday; machine-construction and design, 2, Monday and Wednesday; trade classes: second term—machine-design lecture, 1, Tuesday; trade classes.

If a student wishes to obtain the certificate of expert in any of the under-mentioned mechanical trades under the instructor in applied mechanics, he must attend the following course of instruction and pass a satisfactory examination in each subject, and satisfy the examiners as to his knowledge of English and bookkeeping:—First year—first term—mathematics, 1, Wednesday; chemistry, 2, Monday and Thursday; freehand drawing, 1, Friday: second term—the same in continuation. Second year—first term—practical plane geometry, 1, Monday; physics, 2, Tuesday and Friday; mechanical drawing, 1, Wednesday: second term—practical solid geometry, 1, Monday; physics, 2, Tuesday and Friday; mechanical drawing, 1, Wednesday. Third year—first term—applied mechanics, 2, Tuesday and Thursday; mechanical drawing, 1, Wednesday; trade class, 2: second term—the same in continuation, and machine-design, 1. If there is no class for the trade of any student, he is to furnish evidence of workmanship. Students must obtain certificates in mathematics, physics, chemistry of metals, freehand drawing, geometry, and mechanical drawing, as well as for the trade. Mechanical trades referred to above: Agricultural-implement makers, blacksmiths, boiler-makers, clock- and watch-makers, gunsmiths, locksmiths, metal-plate workers, mechanicians (fitters and turners), millers and millwrights, iron-, brass-, and type-founders. Students wishing fuller information and advice should apply to the instructor in applied mechanics.

*Applied Mechanics.*—First term: To be taken by students in their second year under instructors in architecture (A Division), geology, and mining; by students in their third year under mathematics (A Division), chemistry (A and B Divisions), architecture (B Division), applied mechanics (C Division); fourth year, applied mechanics (A and B Divisions). Second term: To be taken by students in their third year under physics (A Division—electric lighters), mathematics (B Division), applied mechanics (C Division); fourth year, applied mechanics (A and B Divisions). Classes under applied mechanics: Mechanical drawing to be taken by students in their second year; by students under geology and mining; by students in their third year under applied mechanics (A, B, and C Divisions); by students in their fourth year under mechanics (A and B Divisions). Naval architecture: To be taken by students in their third year under mathematics (B Division), mechanics (B Division). Boiler-making: To be taken by students in their third year under mechanics (C Division—boiler-makers).

*Syllabus—Applied Mechanics.*—The principle of mechanical energy and its application in the mechanical powers and simple machines; units of work and horse-power; velocity ratio of a machine compared with its mechanical efficiency; friction, how determined in machinery; modulus of a machine; work done by variable pressures. Fluid-pressure, including description of the more important machines worked by air- and water-pressure; hydraulic hoisting- and lifting-machinery. Experimental demonstrations by means of the testing-machine on the strength and elasticity of materials used in engineering and building, with special reference to iron, steel, and colonial timber; ultimate strength and working-strength; limit of elasticity and factors of safety; bending-moments, shearing-stresses, and moments of resistance, and their application to cast- and wrought-iron girders and timber beams; graphical method of determining stresses in braced structures, such as trussed beams, lattice-girders, bowstring-girders; iron roofs.

Mechanism, Machinery, and the Steam-engine.—Definitions of spur- and bevel-wheels, belts, bands, guide-pulleys, screw-surface, worm and wheels, screw-threads; transmission of power by belting, wire-rope, &c.; conversion of circular into reciprocating motion, including crank and connecting-rod; eccentric, valve-motions, cams, reversing and quick-return motions; conversion of reciprocating into circular motions, including ratchet-wheels, feed-motions, escapement, &c. Teeth of wheels: General laws and principles; method of setting out spur- and bevel-wheels by various