

The principal workshop consists of a centre and wings carried on wooden columns. The motive-power occupies the end of each of the wings—a gas-engine being on one side, and a steam-engine on the other. The tools for ironworking are ranged in the south wing, and the woodworking machinery in the north wing. The whole plant is driven by a system of counter-shafting carried on iron pillars entirely clear of the building, so as to be easily removed when necessary. An important point in connection with the arrangements of plant is that all vibration is kept from the framework or walls of the building. The pillars have a wide-spreading plate bolted down to heavy stone and concrete foundations, above which they rise square for several feet, when they emerge into octagonal sections of about 3ft. length. Above this they are round, for taking the cantilevers. The brackets are secured in pairs by clamping the head of the column, and at their outer ends carry a line of wrought-iron tubing, which serves as a girder upon which to fit the counter-shaft hangers. The pillar-heads are stayed together by tie-rods across the shop, and are devised to carry the line-shaft from which are driven the counter-shafts. These work in specially-designed brackets, and may be secured anywhere on the tubular girders. The machinery consists of a six-horse-power Crossley gas-engine, Smith and Coventry's planer, Olson's testing-machine, Smith and Coventry's milling-machine, American hand-drill, shaping-machine, and English lathes, Marshall six-horse-power vertical engine and boiler, band- and fret-saw, and variety worker. The testing-machine is one of the most perfect of its kind, and will test all kinds of building-materials. Any person may, upon application to the proper officer, go to the shop and test the strength of any material free of charge. This must be a valuable advantage to the building-trades of Sydney. Several students in the boiler-making class were at work in the shop, constructing boilers upon a small scale, and furnace-tubes. This class, one student informed me, had proved of great value to him as a practical boiler-maker. In the turning- and fitting-shop every machine was at work. The portions of machines in progress of construction by the students shown me by Mr. Phillips, the teacher, were well made and accurate in detail and finish. Here, also, I found the students (the majority of whom were engaged in the shops during the day) thoroughly interested in their work, and fully appreciating the value of such instruction with regard to their future welfare.

The architectural department is under the direction of Mr. J. F. Hennessy (Medallist and Prizeman of the Royal Institute of British Architects, London). In this class there were about twenty students engaged in copying and enlarging drawings, copying orders and styles of architecture, working out complete designs of buildings from sketches with the aid of the instructor. The work throughout seemed of excellent quality. In the design section, pencil-sketches are worked out by the students at home, and criticized by the instructor, and, when alterations suggested are complete, the sketches are worked out and handed in for competition. In the national competition of the South Kensington Science and Art Department a carpenter in this class won a bronze medal for a design for a city club-house, two carpenters and an architect's assistant won third-grade prizes, and two architects' assistants, one carpenter, one draughtsman, and one plasterer won second-grade prizes, all in connection with Mr. Hennessy's class.

In the trades under the architectural instructor, the first class visited was that of Mr. John Gardiner, teacher of carpentering and joinery. Here the students were receiving instruction upon scales, sections of solids, and geometry generally as applied to the trade. The advanced section were making models of window-frames, handrails, &c. In the Adelaide Exhibition there were a large number of good exhibits from this class, including window-frames, doors, handrails, fanlights, ventilators, joints, mitre-boxes, &c., made to various proportionate sizes. The exhibitors were mostly carpenters' apprentices ranging from fourteen to nineteen, and carpenters and joiners ranging from twenty to thirty-two years of age. There were also a large number of drawings from the theoretical class, several of considerable merit.

In the masonry-class some of the students were at work upon drawings of bevells of arches, others were practically working out the same to scale in Oamaru stone. A zinc plate is first cut to scale, and the various stones worked down to the size of the model, and afterwards fitted together. The class-room was well supplied with diagrams and models of mouldings, arches, domes, bridges, and other architectural detail requisite for the class. A number of drawings and models of arches were exhibited at the Adelaide Exhibition by masons of the class, and showed how practical the instruction was.

The bricklaying-class have practical instruction with ordinary and other bricks in bonds, joints, foundations, &c., arches, chimney-shafts, ovens, tunnels, &c., combined with proper use of tools and scaffolding, each student building up a portion of the work.

The cabinetmaking and carriage-building classes were both at practical work at the time of my visit, the latter constructing the framework of a carriage from working-drawings.

In the plumbing-class eight or nine students were engaged in practical work, making to full-size siphon and other traps, double-branch pipes, and plumbing required in ordinary sanitary arrangements. Very satisfactory work was exhibited at the Adelaide Exhibition. I was glad to find this class working so successfully, considering this to be one of the most important of all trade-classes. I was informed by one student that the instruction upon sanitary arrangements had been of the greatest value to him as a workman. If our young plumbers would give a little time to ordinary sewage arrangements, and the prevention of escape of sewage-gases into houses, health would be considerably benefited, and fevers far less prevalent.

The department of art, under the direction of Mr. Lucien Henry, is doing good work. A two-years course of geometry and perspective is given, and a two-years course of freehand and model drawing. The art section is well supplied with models, English and French. A special course of instruction is arranged for teachers and pupil-teachers. The classes are suffering from the same complaint as other art-classes visited—viz., want of instruction in the simplest elements previous to entering. If the instruction in the primary schools was efficient from six to nine months' work would be saved, or possibly more. This, in a two-years course, such as given at the Sydney