

Engineering.—The principal schools are now provided with facilities for teaching elementary theoretical and applied mechanics, and the mechanics of machinery experimentally, and for workshop practice. The instruction in these subjects, generally speaking, is on sound lines, as is also that in mathematics. In this connexion the significant remarks of Principal Gurnett, of the Manchester School of Technology, are worthy of consideration. In an address given at the opening season of 1912 he stated that it was a remarkable fact that in spite of the natural aptitude of the English brain for mechanical invention, the most striking advances in mechanical engineering since the introduction of the steam turbine had not been made in England, and that German practice had been overhauling English in almost every department. He showed that the obvious explanation of this was the remarkable growth in Germany of facilities for both elementary and advanced technical training, particularly the latter, and emphasized the necessity and value to the engineer of a sound training in mathematics and mathematical methods which enabled the engineer to apply his knowledge to problems of his own stating. It is considered that a course in engineering without mathematics lacks an essential part, and the recognition of this is becoming more general. Most of the engineering students at the technical schools attend not only the drawing class, but also one or more additional classes, involving in some instances attendance at the school on four and, in a few cases, five evenings a week. It is to be regretted that under present conditions such students are not able to receive their instruction at times when their minds are more receptive. If they were, the benefits of such instruction to themselves and to their employers would be more apparent. Practical instruction proceeds, generally speaking, on satisfactory lines. With a fairly complete equipment in the way of modern machine tools and other appliances excellent opportunities for practical work of a kind unobtainable in the average engineering workshop are now available, and it is to be hoped that the courses of work will be arranged so as to afford practice in operations requiring the greatest care and a degree of accuracy too often considered, it is feared, unnecessary in ordinary colonial workshop practice. This suggestion is made in view of a slight tendency to permit a kind of go-as-you-please course, with the result that the workshop tends to become a convenient place where tools and other appliances for personal use may be made. These remarks are not made with any intention of disparaging such work, but it is considered that a systematized course is just as important in engineering as in any other subject taught in the schools. It is further suggested that more use might be made of apparatus and appliances for experimental work in applied mechanics as models for exercises in freehand sketching in connexion with the instruction in drawing.

Plumbing classes in the theory and practice of plumbing are among the best-attended classes at the principal schools, and the instruction given as well as the students' work is most satisfactory. If the incentive given to plumbers to take up courses of technical instruction were extended to mechanics following other trades the necessity for commenting on the small number of trade students in attendance at the schools would probably disappear.

Classes bearing on the Primary Industries.—The demand for instruction in wool-classing continues to be maintained, while classes for sheep-shearing, where these have been held, have been well attended. It is to be regretted, as regards wool-classing, that the commercial aspect continues to receive, in most cases, considerably more attention than such topics as the structure of the fibre, the effect of climate and soil on wool-production, and the adaptation of flocks to varying climates and conditions. In this, as in the majority of subjects relating to rural industries, it appears to be difficult to induce students to take up courses that include instruction in principles as well as practice. In addition to the above-named subjects, a few classes for dairying, veterinary science, horticulture, and bee- and poultry-keeping have been held, with results quite satisfactory to the students who attended them; while in some districts farmers and others have received considerable assistance at the hands of the special itinerant instructors in agriculture in the employ of Education Boards. Otherwise the position is much the same as last year.

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