

purposes only, and the technical student is required to absorb a large amount of, for him, useless matter, whilst his labour is in no way lightened by practical application to the problems of his profession. Further, he is under divided control, in which there is sometimes the reverse of unity of purpose, and from which more often than not he receives contradictory advice. Discouraged and disheartened, he turns to amusement and attempts to combine the relaxations which are possible for a man taking a pass degree with the much heavier work of a professional course, and then, though he may finally scrape through his examinations, he is in no sense of the term a qualified professional man, and infinitely inferior as a leader of industry to his brother of the technical high school.

From the technical laboratories have sprung the two great research institutions of Germany, the Reichsanstalt and the Mechanische-Technische Versuchsanstalt. The former, which is under the direction of Dr. Kolrushe, undertakes all descriptions of physical and chemical research. The latter, of which Dr. Martens is the head, carries on the testing of metals, building-materials, paper, and oil. There is also a Department of Metallographie under Professor Heyn. At both establishments the buildings are extensive, the plant elaborate, and a large number of skilled professors are engaged solely upon work which has for its object the advancement of German industry.

As an example of one of these industries the speaker proposes to give a short description and show views of the firm of Fried. Krüpp at Essen Ruhr, which he was granted exceptional facilities for inspecting. From these works steel in almost every form is sent to all parts of the world. The output includes open-hearth, Bessemer, crucible, chrome, nickel, and tool steel; rails, tires, axles, propellers, shafts, and engine-details; armour, guns (of which more than forty thousand have been made), gun-carriages, and munitions of war. The size of these works can be better realised when it is mentioned that they include sixty departments in which twenty-five thousand people are employed, are equipped with 45,000-horse power, and consume 1,700,000 tons of coal per annum. The firebrick and crucible factories turn out no less than 2,000 crucibles per day, which are all used in the steel-works. The gasworks are the third largest in the German Empire, and supply 19,000,000 cubic meters of lighting-gas per annum. The firm owns an excellent hotel, a hospital, convalescent-homes, over a hundred shops and stores, and six thousand family dwellings, housing twenty-seven thousand people. Quarters are provided in the Alterhof Colony for aged, disabled, and pensioned workpeople. There is at Hülgel an extremely good club, of which higher officials are members.

A number of views, illustrative of his address, were shown on a screen and explained by Professor Scott. In connection with those of the Municipal School of Technology, Manchester, he remarked as follows:—

The buildings and equipment of this school have been planned on German lines, and it is in these particulars by far the finest and most complete in England, and compares favourably with its Continental prototypes. But, though the teaching-staff has been carefully selected and includes many men of worldwide reputation, there exists the want of definite aim to which I have already alluded. This the syllabus itself indicates, the subjects taught including mechanical engineering, physics and electrical engineering, municipal and sanitary engineering, geology, metallurgy, upholstery, horology, breadmaking, house-painting, iron-founding, photography, weaving, dyeing and spinning, brewing, dressmaking, &c., microscopic investigation, &c.—in fact, almost every conceivable subject taught to students of widely differing education and capability. Division into a technical high school, attached to the Victoria University, and a trade school proper is now under consideration.

In conclusion, Professor Scott showed some views of the School of Engineering at Canterbury College, regarding which he made the following remarks:—

These views are not introduced with the object of comparing our equipment with that of the magnificent teaching-establishments of the Old World, but to show that something is being done to assist our young men to prepare for competition with their highly-trained Continental rivals. How much more remains to be accomplished to enable them to compete on even terms, and in what direction, it has been the aim of this address to indicate.

*Approximate Cost of Paper.*—Preparation, not given; printing (1,425 copies), £3 12s. 6d.

---

By Authority: JOHN MACKAY, Government Printer, Wellington.—1905.

Price 6d.]