

1905-6 about 2,800, while the present attendance at Darmstadt is nearly 2,000, at Brunswick about 500 and at Hanover 1,500.

These statistics are of some interest in showing how technical education has taken hold in Germany, and as I went from place to place and saw many new buildings and new additions to old ones I was fully impressed with the fact that the people are alive to their opportunities in that line.

That the courses given in these institutions are varied and thorough is at once evident on glancing at any of the



The Main Building—Berlin.

The Main Building—Berlin Technical High School.

"Programmes" issued by them. I might give one illustration, that of the Munich Technical High School, as the calendar for 1906-7 is at hand. The courses there are: (1) Civil engineering, in which there are three divisions—(a) civil engineering; (b) agricultural civil engineering; (c) surveying; (2) architecture; (3) mechanical engineering, which is sub-divided into (a) mechanical engineering; (b) electrical engineering; (4) chemistry; (5) agriculture. All these courses extend over four years, with the exception of surveying and agriculture, both of which are three-year courses.

Space will not be taken to quote the list of subjects in each year, but these would indicate more advanced mathematics than is given in this country, and, indeed, an examination of the entrance requirements for fully-qualified students shows that the latter are much more advanced when they enter than the matriculants here. A fairly large proportion of these entering have a considerable knowledge of both analytical and descriptive geometry, and of the calculus, and are well advanced in the general subjects.

The absence of shops and shopwork is very noticeable in the German Technical High Schools, as these shops are very common both in Great Britain and America, scarcely any institution in the latter two countries in which mechanical engineering is taught being without them. As there is considerable discussion on this question of university shops continually being heard, careful attention was paid to this point, but I was unable to find a single school in Germany with these shops, the opinion apparently being that the proper place to learn shop practice is in the shops of manufacturers, and some experience in this class of work is practically always demanded before graduating, in many cases a year of work in a manufacturing plant being required.

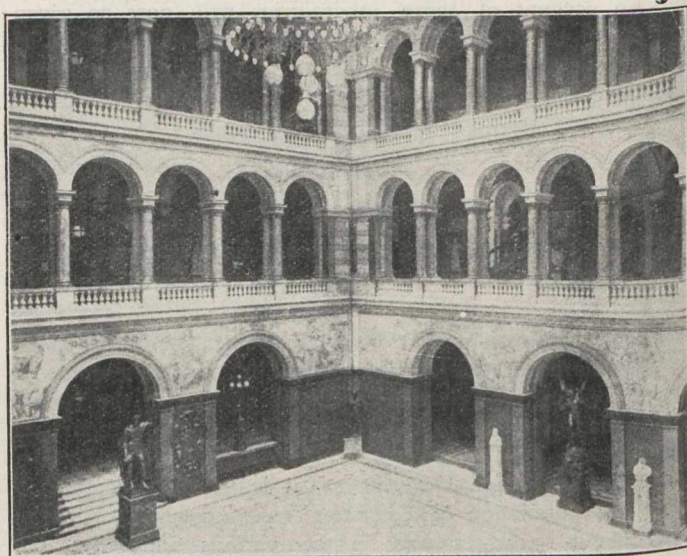
The money which would otherwise be invested in the shops is thus devoted to laboratory equipment.

Berlin.

In both Hanover and Brunswick the opinion was freely expressed that in order to see the best Technical School one must go to Berlin, and as this institution is well known to us in America my anxiety to get there increased daily, and it was with considerable expectancy that I reached this great German city.

Berlin has a population of about 3,000,000 people, and is probably the greatest commercial and manufacturing city in Continental Europe. The manufactures include large numbers of locomotives, engines, dynamos, etc., and here one finds enormous shops, such as those of the Allgemeine Electricitäts Gesellschaft, with a working capital of \$25,000,000 and 13,000 employees; the Berlin Maschinenbau Aktien Gesellschaft, a very large concern, having special residences erected for its men; Siemens and Halske; the Borsig works, employing 6,000 men and turning out 450 locomotives yearly in addition to many engines, pumps, etc., and many other very large shops. This city is also the capital of Prussia, is the residence of the Kaiser, and the seat of the Imperial Government.

Here, then, in this great city in the midst of so much business and progress one naturally expects to find a first-class engineering school, and one does not expect too much, for the Royal Prussian Technical High School is in many respects by far the greatest in Europe, and doubtless also in the whole world. Passing out through the delightful Tiergarten, one sees on crossing a small stream the massive "Hauptgebaude" or main building, a magnificent structure nearly 750 feet long and about 290 feet wide, with a floor area exceeding 330,000 square feet.



Interior Main Building—Berlin.

To appreciate fully the grandeur of this building one must visit it, for it is so customary to see engineering schools plain and with very little adornment that one seems to be in a strange atmosphere in this grand place. The building was erected in 1878-84, and is richly decorated with busts and sculptures of such noted men as Gauss, Eytelwein, Schinkel, Redtenbacher and many others, amongst whom it was a pleasure to see Watt and Stephenson. In