

islature to provide tuition free for a limited number of Students.* Hence, at the Worcester Institute of Industrial Science, out of the eighty students in attendance, only seven of them paid an annual fee of \$100, the other seventy-three were admitted free, either from the State, or from the City of Worcester. In no case were students boarded or lodged on the school premises. At Cornell University, a boarding hall was provided near the institution, more as a protection to students against high charges in the village of Ithaca. It is proposed, however, as soon as possible, to discontinue it.

IV. COURSE OF STUDY.

7. The course of study in each of the institutions visited, varied according to the number of Professors and Instructors employed, and the extent of the accommodation provided. They all, however, embraced the subjects of Mathematics, Chemistry, Natural Philosophy, Drawing, Civil and Mechanical Engineering, and the Modern Languages. This latter branch of instruction was invariably provided for, as so many of the scientific text-books and works, which are required to be used or consulted, are written in French and German. In the great majority of cases, four years was the period allowed to complete the course—two years preliminary and two years professional; so that graduates of Colleges were only required to pursue the professional course of two years.

8. As an example of the best and most comprehensive course of study for a school of Industrial science, we give in the Appendix, a copy of that adopted by the Sheffield Scientific School at Yale College, and at the Massachusetts Institute of Technology, at Boston,—the latter being one of the latest and most complete institutions of the kind in the United States. (See page 25.)

V. SUBJECTS TO BE TAUGHT IN THE PROPOSED INSTITUTION.

9. As to the subjects which should be taught in the proposed College of Technology, or School of Industrial Science for Ontario, we may state that the following are regarded as essential to the usefulness and efficiency of any institution of the kind proposed.

(1.) *Pure and Applied Mathematics.*—This department should include Mathematics proper, Natural Philosophy, Civil, Military and Mechanical Engineering and Surveying. To render the teaching in this department efficient, the students should be required, among other things, and as part of their regular instruction, to visit with their professor, or his assistant, the larger engineering or manufacturing establishments. In vacation time, mining students should be taken, if possible, on excursions to convenient mining districts. The engineering students should be required to undertake practical surveys of a given section of country, for railway or other purposes.

(2.) *Architecture and Drawing.*—This department should embrace Free-hand, Architectural, Engineering and Topographical drawing, with plans, sections, etc.

(3.) *Pure and applied Chemistry.*—This important department, should include organic and inorganic chemistry; chemistry as applied to the industrial arts, and to Mining and Metallurgy.

(4.) *Natural Science.*—This department should include Geology, Mineralogy, Zoology and Botany, and their industrial applications.

* This fund was created by an Act of Congress, passed in 1862, apportioning "to each State a quantity of public land, equal to 30,000 acres, for each Senator and Representative in Congress, according to the census of 1860." The object of the grant was to provide in each State of the Union, for "the endowment, support and maintenance of at least one College, where the leading object shall be, (without excluding other scientific and classical studies, and including military tactics), to teach such branches of learning, as are related to agriculture and mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." The Act further provides that "a sum, not exceeding ten per centum upon the amount received by any State, may be expended for the purchase of lands for sites and experimental farms, whenever authorized by the respective Legislatures of the States."

Note.—In Massachusetts, the grant is annually divided among several institutions; in New York, the whole of it was given to Cornell University, and in Connecticut, to Yale College, for the benefit of Sheffield Scientific School.