

THE STRASSBURG BOTANICAL
INSTITUTE.

IN the American *Botanical Gazette* for December 1888 (vol. xiii. No. 12) there is a paper by Mr. William R. Dudley on the Botanical Institute at Strassburg. This paper is valuable and interesting as showing the sort of provision for botanical study that is thought right and necessary in Germany. The Institute forms part of the new University buildings of Strassburg. Mr. Dudley gives plans of the ground floor and first floor, and from these it appears that a considerable portion of the building is reserved as a residence for the Director and his family, and that two rooms are allotted to the Director's assistant, usually a young man who has recently taken his degree as a doctor. On the ground floor, besides the living-rooms, are a larger and smaller lecture-room, a "*Lehrsammlung*," or illustrative museum, and a "preparation-room," which is used in the preparation of lectures, and is also found useful by those who wish to carry on work in connection with the museum. On the first floor a large part of the space is given up to laboratories. It includes also an herbarium, a library, a weighing-room, a chemical-room, a dark room, and a small greenhouse.

After some introductory statements, Mr. Dudley continues as follows:—

No doubt the architect who designed this building is accountable for cutting it up into symmetrical squares; any German architect who failed in this would be sure to die unhappy. Nevertheless, for the sequence of the rooms and for the details, De Bary was responsible, and, taking everything into consideration, it is considered in Germany their best single laboratory for botany.

Its chief characteristics are the abundance of all necessary appliances and apparatus, cleanliness and orderly disposition of all its supplies, good light from huge windows and white wall-surfaces. Wall-cases are numerous, and the contained glass-ware, reagents, &c., nicely arranged. Drawers are abundant—this one containing only reagent tubes, that glass plates, another pipettes, burettes, &c. Running water is convenient, of course, and distilled water and three grades of alcohol where they can be readily obtained by students if necessary. There are several sterilizing boxes in the large laboratories; also constant-temperature boxes provided with thermostats. The chemical-room is provided with a hood for fumes and for the steam generated by the steam sterilizing cylinders. Gas is provided at each table, and a separate room is set apart for delicate instruments, such as balances. Indeed the association and dissociation of rooms and apparatus, the conveniences, the absence of unnecessary things and showy effects, indicate the intelligence and discernment of a worker and a master.

The tables are broad, very heavy, and designed so as to prevent warping or seaming. They are convenient for two beginners or a single special student. Each person is provided, at the outset, with about a dozen common reagents and fluids. The microscopes for laboratory use are chiefly Hartnack. Most of the private microscopes in the laboratory at the time I was there were from Seibert, an excellent Wetzlar manufacturer, not well known in America, and one or two from Zeiss. The stock of reagents in the cases is large, and, if necessary, new ones will be cheerfully ordered. The University requires of special students working every day in the laboratory, a payment of fifteen dollars, which covers all necessary expenses.

Strassburg University had about 1000 students during the winter semester of 1887-88, and 104 professors, *privat-docents*, and assistants. It is, therefore, neither one of the largest, nor one of the smallest, of Germany's twenty-one Universities.

The Botanical Laboratory had six advanced and five beginning students, and I do not think the number was affected by De Bary's illness. To instruct or counsel these were four instructors: the Professor; the associate Professor, Dr. Zacharias; the *privat-docent*, Dr. Wortman; and the assistant, Dr. Jost—all contributors, in a greater or less degree, to science, and of course well-trained men. At least three of the advanced students were working quite independently during De Bary's illness, although it was the latter's custom to inquire nearly every day after the work of the advanced students, when he was in health. But the German Government, which employs and pays these instructors, is not afflicted with that particular kind of malaria which enters into the management of almost every American institution, and gives it alternate chills and fever over fall and

rise in numbers. Numbers are a matter of indifference to it. A very distinguished German Professor once said to me: "The truth is, we teach whatever we please, we do as much or as little as we please, and the Government does not interfere with us." Yet these men teach enthusiastically, and accomplish in scientific research ten times as much as the American Professor, who is "personally conducted" by a whole Board of Trustees. The German Government *does* "personally conduct," however, in certain very important matters. In the first place, it provides a suitable *corps* of assistants, and makes it sure, therefore, that the Professor has *not* too great a burden of teaching on his hands. It provides ample appropriations; it appoints its Professors for merit, and it sends up its students from the secondary schools with an excellent and uniform training.

The advanced students were mostly engaged in bacteriological investigations, although one was working out certain biological questions of fern development. Prof. Zacharias was engaged in histological work, Dr. Wortman in physiology, and Dr. Jost completed a paper during the winter on the morphology of certain mistletoes.

In the "*Lehrsammlung*" are numerous beautiful preparations, some made by De Bary, and at once recognizable as the originals of well-known figures in his published works; and some by former pupils, some of whom are now famous men. These preparations are frequently used in illustrating the lectures, all of which were held late in the afternoon or in the evening.

The herbarium collection is not relatively large, and is situated rather remote from the other rooms. Had De Bary been a systematist, he would, no doubt, have placed his herbarium centrally. Instead, the large laboratories, the rooms which have seen so many distinguished investigators, and witnessed so many scientific discoveries under the guidance of the great Director, are the rooms around which the others are clustered.

The library, stocked with a fairly good number of the important serials, together with a few standard works in the principal departments of botany, is placed nearer the laboratory; and in this, every Monday evening, meets the "Botanical Colloquium," made up of the advanced students of the laboratory and the instructors. Certain members give carefully prepared abstracts and reviews of the current botanical literature, which are followed by spirited discussions. After an hour or more of arduous and profitable labour of this kind, by means of which each member is enabled to keep quite abreast of advanced lines of work, they adjourn to a more convivial place, and spend the remainder of the evening in the relaxation natural to the German. By eleven o'clock all their vast learning, and especially the hard facts of the recent Colloquium, are in a state of saturated solution, and by next morning are quite ready for use.

INDUSTRIAL EDUCATION.

MAY I ask you to publish and invite criticism on the inclosed Bill, which has been read a first time in the Kensington Parliament? It is put forward as not antagonistic to, but rather as including (see Clause 8), the academic schemes of technical education with which we are familiar. I write as one who was at a primary school, who has worked at the bench, who has great reason to be grateful to the Science and Art Department, who has been a master at a public school, a manager of works, and an employer of labour.

JOHN PERRY.

10 Penywern Road, South Kensington, S.W.,
December 28, 1888.

A Bill for Technical Industrial Education.

Whereas it is expedient to make provision for Technical Industrial Education in England and Wales:

Be it therefore enacted, &c.

(1) This Bill may be cited as the Technical Education Bill 1889, and shall not extend to Scotland or Ireland.

(2) "Apprentice" means any boy of less than 18, or any girl of less than 17 years of age employed, whether under indentures or not, in any place which, under the Factories or Workshops Acts, is denominated a factory or workshop, or in any warehouse, shop, office, or other place of business, or for wages, or other remuneration, in any place of employment. But apprentice so defined shall not include any menial or