Suggestions Relating to Graduate Work in Germany.

At the request of the Board of Publication of The Tech, the following article was written in the hope that it might be of service to students contemplating graduate work in science. No comparison of the relative advantages of the universities of England, the continent, and the United States for graduate study will be made. It is assumed that for good and sufficient reasons the period of advanced study is to be spent in Germany.

For the larger proportion of Technology students graduation signifies the entrance into the activities of the professional and technical world. To a few, however, and their number is increasing, the realization of their ignorance in the presence of the inexhaustible treasures of science, art, music, literature, indeed of life, awakens a longing for an unfolding and enrichment of the whole nature before entering upon the absorbing commercial and professional work. This desire for a broader, a more complete acquaintance with the chosen profession, and incidentally with what the world has to offer in other fields, arouses the love for graduate work. Assuming that Germany has been selected as the most attractive field for study, the important questions become, with whom and where to study. An American graduate of a German university will appreciate the gravity of these questions upon whose wise solution the success of the European period of study largely depends.

The system in vogue in German universities is entirely different from our own. On completion of the Gymnasium or High-School course, the German boy may enter the University. As there are no required lecture and laboratory courses, he is left to choose from the multitude which are offered, either those which appeal to his tastes, or those which pertain to the profession later to be followed. The majority of the professors do not wish to be brought into personal relationship with the students attending their lectures and, consequently, it is the custom for the professor to enter, deliver the lecture, and, without permitting questions to be asked, to withdraw, the student body remaining seated. In conjunction with a few courses Seminars or quizzes are offered and it is only here that any personal acquaintance is made. Another peculiar feature is that the students are allowed to attend the lectures for one month in order to decide whether it is wise to take the course. Many Germans sign and pay for courses which they attend only at the beginning and end (as it is necessary to have the Professor's signature at both times) in order to win the favor of the professors, or else to impress the authorities with the extent of the work done. That this is an astute bit of diplomacy is clear, when it is remembered that no examinations are required in these subjects for the attainment of the doctor's degree.

These facts show conclusively the minor part played by the lecture courses in the intellectual development of the American student of natural science abroad. How, then, is it possible to extend the scientific horizon, to quicken the powers of scientific imagination, to sharpen the powers of discerning new problems for solution, to awaken and cultivate an overpowering love and lasting inspiration for original research? This development can only be achieved through the frequent personal intercourse with a scholar of magnetic personality, keen perception, fertility of ideas, ready sympathy, and breadth of scientific knowledge.

How is this personal instruction to be obtained? In all departments of natural science a research or Arbeit, generally experimental, must be presented and accepted before the candidate is allowed zu promovieren or "to come up" for the examination. Such a research usually requires two years and is carried out under the personal supervision of a professor or a Privat-Dozent. The inspiration and enthusiasm of the professor are transmitted to the student in the daily or frequent intercourse (in connection with the Arbeit), through the discussions of the difficulties to be overcome, the suggestions as to methods and instruments, and through the perception of new problems for investigation from the results of the measurements. A research under an instructor deficient in suggestiveness and completeness of knowledge would be of no greater value in the mental growth of the student than the same research carried on in the quiet of one's private laboratory. It is, therefore, almost needless to emphasize the wisdom of learning from well-informed friends and colleagues the characteristics of the professors in the German universities. It is well for the student to reflect that it is not always inadvisable to