GRADUATE WORK

(Continued from page 49.)

engineering practice and the related sciences.

At the Institute a certain amount of such training is given the students by requiring from them a thesis on some original problem before graduation. The time available in the senior year, however, is sufficient only for comparatively simple investigations. In many cases one or more years could be profitably spent by a student on work of this character. To provide such an opportunity, the Institute now offers advanced instruction and facilities for research in all departments devoted to the more advanced branches of instruction. To aid those students who show a particular fitness for such work, certain scholarships and fellowships are offered, varying in value from free tuition to free tuition plus five hundred dollars. As an attestation of the successful completion of one year's advanced study and of the presentation of

PROF. HAROLD PENDER.

a satisfactory thesis on some original investigation the degree of Master of Science is awarded. Two or more years' study, accompanied by the presentation of a thesis of high grade is attested by the award of the degree of Doctor of Engineering (or Doctor of Philosophy in the departments of pure science).

In the department of Electrical Engineering there are at present a number of graduate students, two of which are formally candidates for the degree of Doctor of Engineering and three for the degree of Master of Science. These men are taking advanced courses in both the technical and the economic side of electrical engineering, advanced mathematics, electro-chemistry, etc., and in addition meet once a week with the entire instructing staff of the department for the review and discussion of the more important articles appearing in both English and foreign technical journals.

The major portion of the time of each man, however, is devoted to experimental research. The investigations now in progress are the following:

Experimental study of the changes produced in the properties of solid dielectrics when subjected to high electric stresses, with special reference to the effect of such changes on the disruptive voltage of insulated cables. Also a study of the feasability of grading the insulation of cables, from both the theoretical and economic point of view.

Study of the transient potential gradient in a coil having an iron core when a given voltage is impressed across its terminals, with special reference to the choking effect of the end turns of a transformer winding when switched into circuit.

Investigation of the effect of heat treatment on the magnetic and electric properties of silicon iron, together with a metallographic study of the changes of structure produced by such treatment. This investigation has been undertaken with the hope of arriving at some definite quantitative relations between the various effects produced.

Experimental determination of the breaking strength, deflection, and point of rupture of wooden transmission poles when subjected to lateral stresses, with special reference to the effect of the nature of the soil in which the poles are set.

Experimental check of the formula for self induction and electrostatic capacity of parallel conductors, both solid and stranded, for both single and three-phase currents. Also a check of certain approximate formulæ for the capacity of multi-conductor cables enclosed in lead sheaths.

LETTER FROM GRADUATE

BY MR. CLARENCE RENSHAW.

To the Editor of The Tech:—

Just when or why I became interested in electrical matters, I can not recall definitely. I think it was due to some articles, on how to make batteries and perform simple experiments, which appeared in the Youths' Companion just about the time I was studying Physics, in the first-year class of the high school. I do not believe that I ever made a definite decision to adopt Electrical Engineering as a profession; it seemed to follow as a matter of course.

During my term at the high school, I became imbued in some way with the idea that all college-trained electrical engineers were helpless theorists, and so, on graduating, I decided that I would not go to college, but would find employment in some electrical factory and "work my way up." I made rapid strides in the fan motor factory where I first found work, and advanced from a salary of $3.50 per week to $7.50, in less than a year. Soon after I achieved this distinction, however, the concern became bankrupt. Another position, this time with a thermostadt company, ended in a more or less similar manner; and then, finding it difficult to obtain any electrical work, I decided that I would go to college, after all.

The decision as to which college I would attend, was entirely in my own hands. It was made in favor of the Institute largely on account of the clear and businesslike arrangement of the Institute catalogue. The statements that were made there regarding the necessity for a broad training, rather than a purely technical one, appealed to me, and I could readily understand exactly what the entrance requirements were, while the catalogues from other prominent technical colleges seemed hopelessly confusing. Once enrolled at the Institute, I was quickly convinced that I had chosen wisely. I have never forgotten this incident, however, and that it was the excellence of the catalogue which really settled my decision, and many, many times since, I have taken greater pains in the preparation of reports, specifications, letters, etc., on account of this recollection.

In choosing the Institute in preference to other schools I did so because I believed that it offered the best course in Electrical Engineering that could be had anywhere, and my opinion now is the same that it was then. In looking back over the curriculum as I knew it, however, I recall many details that I wish could have been different. One of our professors, in closing his course just before graduation, told us that the Institute had provided us with a complete set of tools for our life work, but that we, ourselves must learn the uses of them. I regret that this was but too apt a simile, and feel that we would have been much better off, if more time had been given to acquainting us with some of the practical possibilities of the subjects taught. During my course, I was fortunate in having a friend who was employed by the Boston Elevated Railway Co. in looking after their underground feeder cables. It was his duty, every week, to measure the insulation resistance of each cable, and I visited him on one occasion while this was being done, and had the whole process explained to me. Soon after this our class took up the study of Differential Equations, and talking to my friend one day about the apparent uselessness of this subject, he told me that the formula which he used in making his cable tests was derived by the aid of Differential Equations. My respect for the subject was at once greatly increased, and I am sure that if the entire class could have been given the benefit of this and similar incidents, their recitations in Differential Equations would have shown marked improvement and the subject would have made a much more lasting impression on them.

Nor was it merely the purely academic studies that could have been

(Continued on page 54.)