work, is equivalent to a delay of more than ten days, but it is hoped to overcome this fully by the increase of the force.

The Schenectady Trip.

For the past few years it has been customary, during the spring vacation, for Professor Puffer to conduct an excursion of the 4th year electricals to the works of the General Electric Company of Schenectady. This year the party, composed of Professors Puffer and Laws, Instructors Seavey, Smith and Daniels, and Messrs. Bickford, Blauelt, Bolster, Cody, Sturtevant, Woods, and Hammond of the senior electricals, arrived in Schenectady a little before eight Thursday morning, and leaving their baggage at the hotel, went at once to the works, where it was met by three representatives of the company, who had been detailed as guides. Two of these were Tech graduates, Case, '99, and Silverman, '00.

The first building visited was one where transformers of all types are set up and assembled. Here were seen some very large types, both of air blast and oil cooled. A noticeable feature was the fluted and corrugated cases giving a large heat radiating surface.

The main testing room was next in order, and here could be seen dynamo testing in all its details. Machines of all sizes were being tested in every particular. A new steam turbine, which the company is experimenting on, was started and its operation explained. A number of small direct-connected marine units were also being tested. It is in the testing department that most of the college graduates begin their work with the company.

The power plant which supplies most of the power for the testing as well as for the machinery is fitted up with large direct-connected units, and has besides a number of large step-down transformers supplied by a 10,000-volt transmission from Mechanicsville.

The winding department, where armatures and field coils are wound, is a very interesting place. Much of this work must, of necessity, be done by hand, but there are two extremely ingenious machines used to wind field coils for induction motors, where the winding is made up of a copper strip instead of a wire.

In the building where the very large machines are set up and finished off, most of the floor is made of iron provided with slots placed close together, by means of which the machinery needed may be bolted at any convenient place, the driving being of course electrical. In this way large machines such as radial drills, slotters, shapers and the like are brought to the work, instead of having the work brought to them, as is usually the case. In this building were frames, for supporting field coils, which were over forty feet in diameter and carrying forty poles. There were also some very large induction motors, both single and three phase.

Other departments visited were: the foundry, the porcelain fittings, pattern shop, switchboard and controller, searchlight and insulators. In going through the works one is struck by the prevalence of poly-phase machinery, which seems to be the coming type. One is also impressed by the great variety and most ingenious arrangement and manipulation of machine tools, which in all cases are made to conform to the work desired. There are over one hundred and twenty buildings on the grounds, and over seven thousand men are employed there. The machine shop is said to be one of the largest in the country.

Before leaving, a visit was made by some of the party to the Schenectady Locomotive Works, of which the forging room was the most interesting department. Here enormous pieces were handled in forging the engine frames.

The trip to New York was made via the Albany boat, and soon after arrival the men went to the enormous power plant, the "Manhattan," of the Metropolitan St. R. R. The output of this plant varies from 40,000 to 60,000 H. P. and is handled by eight or ten 3,500 K. W. direct connected units. The fly wheels on the engines were the largest the writer has ever seen, having rims thirty inches square.

The plant of the Edison Company was next visited and this was followed by an inspection of two plants in Brooklyn, after which the party broke up.

The value of this trip cannot be over-estimated, as it gives such a fine opportunity for the direct observation of machinery and its construction, which, to most students, has previously been known only by description. The writer was impressed by the extreme accuracy required in the testing departments, showing the necessity for that which has always been demanded at the Institute. He was also surprised