Some New Features in the Electrical Engineering Department

During the past three years considerable improvement has been made in the general equipment of the electrical engineering department. This has been quite necessary, since in no other branch of engineering do machine types or methods of construction so quickly become antiquated or obsolete. The close accord with the ever changing commercial practice, which the department has striven to maintain, has also dictated the introduction of several new courses, requiring much additional material in both library and laboratory.

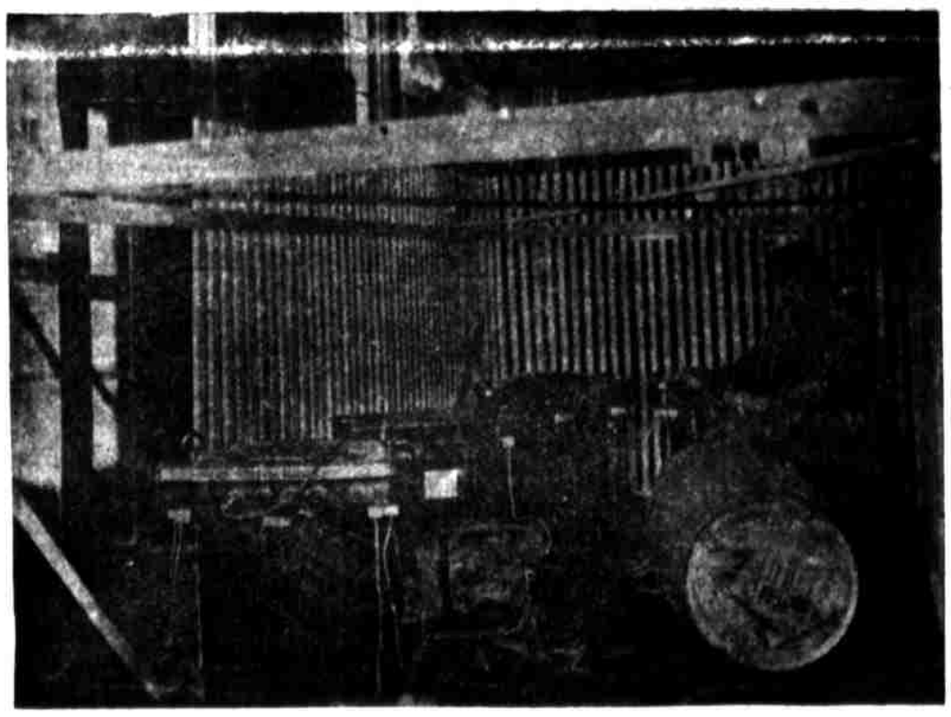
THE ENGINEERING LIBRARY.

There are but few libraries to be found anywhere in the country better provided with electrical engineering literature than is that of this university. A recent investigation shows that there are 464 bound volumes devoted exclusively to electrical subjects upon the shelves, while the list of electrical periodicals includes 12 American, 3 English, 1 French, and 1 German. The major part of these works are kept in the departmental library, shown herewith, which is devoted to engineering and mathematics, a skilled assistant being constantly in attendance.

THE SENIOR LABORATORY.

Recent developments in long distance transmission of power have brought into extensive use the two and three phase generator, induction motor and rotary converter. A representative pair of the last named types of apparatus have been installed in the senior laboratory, where they offer excellent facility for advanced experimental work. An accompanying view shows three senior students in the act of making a test upon these machines. The panoramic view of the main dynamo laboratory, besides a number of recent types and a few of historical interest, shows also in the foreground a special two and three phase generator, lately built to order for the department by the General Electric Co. From these various dynamo machines electric currents of almost any variety and of wide range in quantity, pressure and frequency may be easily derived. An excellent set of Weston and other instruments are also at hand with which to measure them.

The voltage employed for the transmission of energy during the past few years has steadily crept up from the danger limit at 500 volts, as used in the trolley circuit, to 40,000 and 60,000 volts now found in some western transmissions, where the power from waterfalls is sent many miles over small copper wires to run the machinery of a town or mine. Such pressures as the last named cause the wires to become luminous at night, make each particular hair stand on end as one passes beneath them, and will even cause miniature lightning flashes to dart from wire to wire across an intervening space of several inches. The department has lately received four large transformers which can be so coupled and operated as to produce a pressure amounting to 50,000 volts. This will afford opportunity for experiments and instruction along the very latest lines of commercial development. Owing to the great danger involved in approaching these pieces of apparatus while in operation, they have been entirely surrounded by a wooden cage and all manipulation of switches, circuits, etc., will be accomplished from the outside.



THE TRANSFORMERS.

The rapid strides which have been made in the art of electro-chemistry and electro-metallurgy both in this country and abroad are hardly realized as yet by the uninitiated. The prodigious power which has been developed at Niagara Falls is now largely utilized in the production of ordinary chemical products almost to the exclusion of many old familiar processes. The application of electricity in mining is also extensive both in obtaining the ore and in extracting the metal. The electrical engineering departments, in conjunction with those of chemistry of some of the largest and most progressive universities, have lately been striving to meet this new demand. There is, in the extended application of this new art, much that requires the constructive ability of the engineer, as for instance the building and management of the enormous electric furnaces and the apparatus by which they are regulated and supplied with power. In another direction we find the storage battery or accumulator becoming a prominent feature in electric lighting and in electric railway work. Also there is much that suggests the possibility of an early solution of the problem which has for its object the conversion of the latent energy of coal directly into electric energy without the intervention of the steam engine and the dynamo; so that all electricians may ere long become per force electro-chemical engineers. In order that the students of this department need not leave the institution without proper training in the construction and management of these special devices, the course in electro-chemistry was last year introduced. Excellent facilities have accordingly been provided for practical instruction along some of the above lines, and much more equipment of the sort is projected.

ELECTRO CHEMICAL LABORATORY.

PROF. GEORGE H. MORSE.

VIEW OF THE MAIN DYNAMO LABORATORY.