

Rochester in 1918 a supply of optical glass was available which was equal to the best which had been imported from Germany before the war.

After leaving Rochester the writer visited Syracuse, Schenectady, Worcester and Boston. Near Syracuse is the laboratory of the Smet Solvay and the Solvay Process Companies. In this laboratory fifty research workers are employed. Much work has been done on processes for obtaining trinitrotoluol and on processes for producing benzalchloride and thence deriving benzaldehyde. A recent outcome of work done in this laboratory is a process for extracting potash salts from one of the larger brine lakes of California. They have also succeeded, in collaboration with Government chemists, in catalytically oxidizing ammonia for the manufacture on a commercial scale of nitric acid.

The Laboratory of the General Electric Company at Schenectady was visited by the writer both in 1917 and in 1918. During the past year, I have, on several occasions, given details in regard to some of the achievements of this great research establishment.* Dr Dushman too, a member of the research staff at Schenectady and a graduate of our own University, has recently lectured here on the work of the laboratory. It may therefore suffice if I mention that in August last the Laboratory was given over completely to war work, that the members of the staff were in particular preoccupied with the submarine problem and that the expenditure on research in 1918 was more than double that in the preceding year. It would probably be a safe guess to say that the General Electric Company in 1918 expended on research in its various laboratories a sum which did not fall far short of \$2,000,000.

At the Worcester Polytechnic it struck me as rather novel to find that the Department of Mechanical Engineering was conducted on a commercial basis. The Department has its own shops with a monthly pay list of \$1,800. It possesses its own patents and manufactures apparatus for the market. In the year 1917-18 it did a business of \$220,000. At the time of my visit 95% of the output of the shops was war work. A student, I was told, could help pay his way by working in the shops.

A number of pieces of research which had engaged the attention of members of the staff were described to me. In that connection stress was laid on the necessity of collaboration on the part of the engineer with the physicist and the chemist, as in so many cases his problems bring him up against difficulties of a purely scientific character.

Another engineering institution is the Massachusetts Institute of Technology which is now housed in its magnificent new buildings on the bank of the Charles River. The Institute conducts a course in physics and chemistry which is specially intended to train men for industrial research. It has extensive research laboratories which at the time of my visit were being utilized for war purposes. It is also well-manned—a prerequisite in order that individual members of the staff may find time for research. A point which I noted was the emphasis which is laid on the calculus as an instrument for the engineer.

*See, e.g., "Science and Industry" (an address delivered to the Board of Trade of the City of Toronto).