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IN THE UNITED STATES, A REPORT**

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FRANK FOSTER

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Engineering in the United States

A REPORT

*To the Electors to the Gartside Scholarships on the results of
a Tour in the United States in 1904-05.*

BY

FRANK FOSTER, M.Sc.
Gartside Scholar

MANCHESTER
AT THE UNIVERSITY PRESS
1906

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PREFACE.

THIS Report is the outcome of twelve months recently spent in the United States as Gartside Scholar of the University of Manchester.

As an engineer, the writer naturally devoted most attention to engineering, and in particular to mechanical and electrical engineering. In order to come to close quarters with American engineering, the writer thought it desirable to spend some time as a worker in a manufacturing works and in a power station. The remainder of the time was spent in visiting works and educational institutions, interviewing business men, attending engineering meetings and general study connected with the business on hand.

No reference is made in the body of the Report to the St. Louis Exhibition, which the writer visited early on his tour. To attempt a description of it would take up too much space. Perhaps the most enduring impression was that of size: it was distractingly big.

In general the writer was received with kindness by American business people, and freely shown those things which one could legitimately expect to see. The idea, however, that an American will show the outsider *everything* is quite erroneous. He has no more desire than the Englishman to give the results of his special study and experience to the world at large.

Some firms were kind enough to exhibit to the writer their systems of cost-keeping, and several firms very kindly supplied sample forms, cards, etc. For various reasons it has been decided not to reproduce these forms.

In particular the writer would like to acknowledge the assistance he received from Mr. Grace, Junr., of the Ingersoll-Sergeant Drill Co.; Messrs. Charles Churchill and Co.; Mr. McDougal and Mr. Wm. C. Brown, of Montreal; the Wellman-Seaver-Morgan Co., of Cleveland; Mr. Worthington, secretary to the British Institution of Mechanical Engineers; and Prof. S. J. Chapman, of Manchester. To these and many others the writer is greatly indebted, and had it not been for their kindly assistance the defects of this Report would have been even greater than they are.

FRANK FOSTER.

MANCHESTER,
JULY, 1906.

THE GARTSIDE REPORTS.

THE Gartside Reports are the reports made by the Gartside Scholars at the University of Manchester. The Gartside Scholarships were established in 1902 for a limited period, by John Henry Gartside, Esq., of Manchester. They are tenable for two years and about three are awarded each year. They are open to males of British nationality who at the date of the election shall be over the age of eighteen years and under the age of twenty-three years.

Every scholar must enter the University of Manchester for one Session for a course of study approved by the electors. The remainder of the time covered by the scholarship must be devoted to the examination of subjects bearing upon Commerce or Industry in Germany or Switzerland, or in the United States of America, or partly in one of the above-mentioned countries and partly in others, but the electors may on special grounds allow part of this period of the tenure of the Scholarship to be spent in study and travel in some other country or countries. It is intended that each scholar shall select some industry, or part of an industry, or some business, for examination and investigate this comparatively in the United Kingdom and abroad. The first year's work at the University of Manchester is designed to prepare the student for this investigation, and it partly takes the form of directed study, from publications and by direct investigation, of English conditions with regard to the industrial or commercial subjects upon which research will be made abroad in the second year of the scholarship. Finally each scholar must present a report upon the matters that he has had under examination. The reports will as a rule be published.

The value of a scholarship is about £80 a year for the time spent in England, £150 a year for time spent on the Continent of Europe, and about £250 a year for time spent in America.