the effect and influence of the work done by the larger universities in the last thirty years and more, and by the technical schools in the more recent portion of that period. In almost every line of manufacturing industry there has been manifested a greatly increased appreciation of the value of the trained specialist, of the man of scientific knowledge. A signal proof of this has been the steady demand for the whole output of the universities in every branch of engineering, and the creation of new departments in the universities—such as those of forestry and railroading—to meet the requirements of industries in which the scientific spirit is being more and more recognized.

It is worth while, in connection with our subject, to point out the two principal ways in which Science has influence upon manufacturing industry. In the first place, there is the direct contribution of scientific knowledge. The principles of chemistry, for instance, are being more and more applied in both iron and steel making. The qualities of iron for different purposes depend very greatly on the composition of the ores used, and the the constant analysis of the ores is known to be indispensable, if the best results are to be obtained. In most of the arts and industries, indeed, the facts and principles of chemistry are becoming of increased importance, as rule-of-thumb methods become more unmanageable and less profitable under the conditions of world competition. This illustrates the direct influence of Science upon industry. The indirect is that of scientific method. Huxley once defined Science as simply organized common sense. It is as such that it ap-