scientific appraisal of the possible reduction of overhead and direct cost per unit, growing out of increased sales and scientific analysis, which may enable him to determine what his increased sales at the lowered price will be. To the extent that he does these things scientifically, he will be engaged in applying scientific method to his price-making policy.

A second class of manufacturer is the one that has, through a patent or some other fortunate situation, a monopoly. The problem of science for this manufacturer is to determine—as expressed in the well-known law of monopoly price—that price at which he will secure the greatest net return. This is by no means usually the highest price. As prices are increased, sales will usually fall. If they are lowered, sales may be expected to increase. The rate of this decrease or increase in sales varies with the character of the demand for the commodity and the possibilities of substitutes. Science, perhaps in the form of experimentation, or in other forms which analyze demand, can go no farther in this case, and appears to have no other form, than to help the manufacturer determine the price at which total sales multiplied by profit per unit will yield the greatest total. Obviously in this case science will be needed in cost accounting to determine the cost and profit per unit of producing various quantities; and science, or at least judgment, should be applied to a consideration of the price at which competitors will be attracted into the industry, or may lead to demands for governmental interference.

A third type of manufacturer, and one very common in the modern business world, is the one that attempts to distinguish his product either actually or in the mind of the buyer, from the general run of similar products. This may have a material basis, as in some slight patent, or it may be a difference, chiefly accomplished by brands, trade marks or packages, which enables the manufacturer to identify it and leads the buyers to believe that it has some measure of superiority. In pricing such a commodity there is a problem similar to that found in monopoly price, but usually in a very much modified form. The advantage, real or imaginary, which this product has will make it possible for the manufacturer to price it somewhat higher than similar commodities. How much science can he bring to bear in helping him? One area in which he may attempt to apply science is in seeing how far he can differentiate it from others; that is, how far he can make it, or make people believe it to be, different from other articles. A second and related area in which he may apply science is in his market analysis. To the extent that he applies science in determining how much of his product can be sold, where it can be sold, and to what extent it enjoys a preference over competing articles, he is doing what science can do in price-making. A third area for scientific study is advertising and other sales effort. In applying science to a study of color, line, design and copy, which lifts his article out of the competing class, he is applying science to making his prices. This is also true, of course, with costs. The more scientific his cost system, the better he will know at what prices various quantities can be produced and, therefore, the better he will know the possible net profits from various sales of various quantities at various prices. His problem, in other words, is that of the manufacturer with a monopoly, except that he has the problem in a very modified form. For this manufacturer, we may conclude that the assumptions and the efforts toward science in pricing mean very different things from their meaning in either of the other cases. The assumption here is of an individual with a large amount of control over his product and his output, who usually fixes his offering prices for a considerable period and strives to determine the price which will yield him the greatest net return. The application of scientific method comes in such a study of costs and markets, and the methods of making buyers buy, as will help to make the net profit large.

Two final thoughts, and then this overly long paper will be concluded. So far as I can ascertain, cost is never for a manufacturer a wholly satisfactory base upon which to figure prices. Goods in the market are worth, and will sell for, what they will bring, and this has no relationship to the costs of an individual manufacturer. Costs determine the minimum price at which one can sell for a profit; and so far as a going business is concerned, they seem to be valuable chiefly from that point of view. If competition is severe, even costs cannot be secured. As every manufacturer and merchant knows, he has sold below cost temporarily, or on forced sales, or he has observed cases where liquidating prices, which did not bring even direct costs were considered better than receiving no prices at all.

Still costs remain, in the minds of many manufacturers, of great consequence. There is a sort of feeling that costs are the bedrock from which to build. Some manufacturers believe that a straight mark-up from costs, and one which results in a constantly lowering price if costs go down, is the safest and best policy. Perhaps it is in certain cases. Other users of costs, I am informed, disagree as to what costs should be counted. While some enumerate at length the types of costs which must be included, others are inclined to say that profits should be figured on direct costs; the volume thus secured must take care of the overhead. In the history of railroad rate-making, this policy has not been unbroken; nor does it have a record of great success.

On the other hand, not a few manufacturers or merchants have told me that while they wish to know costs so that they will know when they are selling at a loss, their price-making begins at the other end. As a merchant they are offered an article, or as a manufacturer they devise one. The question which they put to themselves is: What can we sell this product for, or how many of this product can we sell at certain prices? It is to this problem that they first apply that form of analysis which we are likely to call science. If they conclude that what they call "a satisfactory quantity" could be marketed at one or at several prices, they work backward to determine the costs at which they can buy or make the article in those several quantities. If the margin of profit is satisfactory, they decide to proceed.

In summary, it seems to me safe to say that we have no science of pricing, though we have, in a series of areas, scientific activities which enormously help in the process of pricing. Yet in these areas our assumptions as to what is a proper basis for a proper price, and the activities which we perform and think of as scientific, vary widely. In certain ideal worlds it might be scientific experimentation solely. In railroads and public utilities we have tried with imperfect success to reach scientific pricing through scientific valuation. We have there assumed, at least for certain prices, that value was a sound basis and have applied scientific effort to evaluating. In the commodity exchanges we totally disregard the concepts of cost when we try to be scientific, but set up a series of devices for fixing a price which will "just clear the market" and no more. Whether this price gives cost, or less, or more, is not considered. In manufacturing we have a series of situations highly competitive, highly monopolistic, and semi-monopolistic, and in these science is not applied by some general and outside agency but rather by individuals. These individuals use scientific procedures at those points and in those ways which they believe will help them in ascertaining and carrying on the methods of selling that quantity at that price which will return the greatest net profit. Science, what variations are committed in thy name!

MODERN industrial leadership has vindicated its ability to lead in the efficiency of the individual units that it has created. The present invitation and challenge to this leadership is to enlarge its horizon, to see beyond each individual interest the greater common interest, which likewise opens the road to the legitimate industrial objective. When industry achieves an integrated co-ordination for such a purpose it will likewise achieve a collective power in human affairs that will enable it to speak with far greater authority in the halls of legislation than any dependent or restrictive interest.

This forecast is justified by the importance of industry in the whole scheme of human life. In this scheme we see how great are the modern contrasts with former ages, when clergy, nobles, and people, as expressed in the term "the three estates," were regarded as constituting the sum total of human society. Strangely enough, the expression "fourth estate," owing to a famous historical utterance, became identified not with industry but with the press. But industry has become more than the fourth estate. Already in Russia it has become, in effect, the only estate. And even in countries otherwise organized it has attained recognition as the one interest on which all others depend. The co-ordinated integration of industry for . . . . service . . . must . . . be . . . formal. (James D. Mooney and Alan C. Reiley, *Onward Industry!* p. 540.)