production-order cost systems failed most dismally to accomplish.

Before the introduction of standard costs the only important improvement which had been introduced was that of double-entry bookkeeping. There was nothing fundamental in this as it was merely a mechanical device which rendered it possible automatically to check the accuracy of postings by requiring a trial balance of the debit and credit sides of the ledger. Standard cost accounting, however, is double-entry in its broadest and most fundamental sense. It shows both sides of the ledger—on one side what was actually spent and on the other what was received in return for this expenditure in terms of standard accomplishment.

It took a long time, a very long time, for accountants to realize that Mr. Emerson in his introduction of the idea of standard costs had sounded the opening note of a revolution in accounting procedure. Some accountants have not realized it even today. In my case, however, Mr. Emerson's message fell upon responsive ears as I was having serious trouble with the old-style cost methods. At that time I was comptroller of Russell, Burdsall and Ward Bolt & Nut Company of Port Chester, New York. Its president, Mr. William L. Ward, so long well known in the politics of New York State, was continuously embarrassing me by asking questions which I could not answer regarding costs. He would say, for instance, "I haven't any doubt as to the correctness of your cost figures, Harrison, but nevertheless the fact remains that some of your costs are in excess of what our competitors are selling the goods for. Isn't there some way whereby your cost system can tell me why it is that some of our costs are obviously higher than they should be?"

When, a year or so later, I designed and installed my first standard-cost system in the numerous factories of the Boss Manufacturing Company of Kewanee, Illinois, I again ran up against the question "Why?" The first cost statements I presented to the president of that company merely compared actual costs with standard and showed excess costs in red ink. The first word the president used when he looked at those red figures was the same as William L. Ward used, namely, "Why?" It was necessary, therefore, for me to develop formulae which would answer this question and which would analyze variations from standard by "causes," which would show, for instance, to what extent an increase in cost was due to idle time, to excessive consumption of power, to an increase in the cost of producing power, to spoiled work being in excess of standard, etc., etc. Of course, no standard-cost system can analyze variations by ultimate causes; it can only reflect proximate causes. It will show, for instance, that due to the inefficiency of Mr. John Brown on Monday morning spoiled work was excessive, but it does not come within the scope of cost analysis to carry this back to a further cause, namely, the quality of the bootleg liquor Mr. Brown drank on Saturday night or to a cause still farther back, namely, Mrs. Brown's disposition which largely accounted for Mr. Brown's urge for the consolation of liquor on that occasion. Here again standard-cost accounting is also truly scientific for, to quote again from Louis Pasteur, "in science it is a mistaken waste to endeavor to penetrate primary causes; we can only note correlations."

Considered as an element of managerial technique, what advantages have been derived from the introduction of standard costs in the factory? In my own experience I have never known a factory executive who, after operating a properly designed standard-cost system, would be willing to revert to the job-order cost plan it superseded. There have, of course, been successful standard-cost systems but the failure in such cases has usually been due to defective design of the system. It must be remembered that there are in operation many alleged standard-cost systems which their creators fondly believe to be in line with good standard-cost practice but which can really be so regarded only by an exercise of the imagination. Standard-cost accounting is deceptively simple; it involves the application of a few elementary, indeed self-evident, principles, but to apply these principles in the most effective manner to meet a given situation often calls for technical ability of high order.

Standard costs are great economizers of the time of the factory executive. Based on the principle of exceptions, they render it possible, through the "exceptions" from standard to bring cost-variation data to a focus, to give the management on a single sheet of paper a bird's-eye view of his factory considered from the standpoint of efficiency. The primary defect of the job-order cost plan was that it was necessary, since standards were not incorporated in the cost plan, to conduct prolonged investigations of individual cost records, to compare the cost of an operation on this order with its corresponding cost on a previous order, in order to determine where variations existed. Even then the basis of comparison was merely a past performance, the efficiency of which was not known.

Under the standard-cost plan inefficiencies are shown up automatically as part of the regular accounting routine. The job-order cost plan necessitated investigations to disclose whether an inefficiency existed or not, a dangerous and wasteful procedure. Considered from the standpoint of clerical costs, standard costs represented a great improvement over the job-order cost plan. With job-order costs it mattered not how efficient the factory might be; it took just as much cost accounting as did the most inefficient. But under standard costs, which deal primarily with "exceptions," the more efficient the factory, the less the "exceptions" and the less the accounting required.

It may be possible that there is some industry where the standard-cost idea cannot be successfully applied, but in my own experience I have as yet failed to find it. It is difficult, indeed, to conceive of a business which must be operated entirely without standards. And where standards can be determined a standard-cost system can be introduced. It is true that the same standard-cost technique cannot be successfully applied in different industries; for instance, the technique for a standard-cost system in a textile mill will differ radically from that suitable for a foundry or a machine-tool manufacturer. It was generally believed in the oil-refining industry that standard costs were not practicable in that highly complex business until my clients, the Atlantic Refining Company, tackled the problem with outstanding success. The vegetable canning industry is one presenting standard-cost problems entirely different from those to be met in other industries, and yet a most successful installation was made in a chain of nineteen canning factories by a company whose comptroller at the outset ridiculed the idea that it would be possible to apply standard costs successfully under the conditions existing in that industry. Speaking generally any business will benefit from introducing standard costs with the proper technique.

Does the designing of a standard-cost system come within the province of the accountant or the engineer? To design a standard-cost system successfully demands a combination of accounting knowledge and engineering viewpoint which is rarely met. In my own experience I have found it easier to teach engineers the necessary accounting technique than to wean accountants away from their preconceived ideas. The work of designing standard-cost systems has largely fallen to professional engineers because of the failure on the part of the accounting profession generally to grasp the standard-cost concept. Most of the failures of standard-cost systems have been due to a lack of accounting training on the part of the engineers who have introduced them. A recent case came to my attention of a standard-cost plan which was thrown out bodily by a large manufacturing organization because the system crudely wrote off all differences between standard and actual costs directly to profit and loss so that the company had absolutely no information as to the actual current costs of the different products it manufactured. It is hardly to be wondered at that the company after operating the system for a few months abandoned it in disgust. The marvel is that installation of the system was ever permitted. Incidents like these are unfortunate because they result in creating an erroneous belief that standard costs are impracticable in a given industry whereas, if properly designed, they would prove of incalculable value to the management.

The best proof of the correctness of a basic idea is the possibility of successfully expanding its application. The standard-cost idea is no exception to this rule. It was inevitable that the application of the standard-cost idea should be expanded to include the selling and administrative fields as well as the factory. After all is said and done, minimum manufacturing costs are merely means to an end. The primary purpose of business is profits and carrying the standard-cost idea to its logical conclusion meant incorporating in the accounting standards for all elements entering into the profit-and-loss statement. There is, of course, no fundamental difference between a budget and a standard-cost system except that the former term is usually applied to a forecast of expenditures and income, whereas a modern standard-cost system, based upon sales quotas, standard selling and administrative costs and standard factory costs, is a highly scientific and technical procedure.

It is understandable that executives who have once operated under a complete standard-cost plan wonder how they were ever able to direct the affairs of their businesses without it. The chief executive of a business with such a system has as definite an objective before him as the man operating under a task and bonus plan on a machine. The objective of such an executive is a standard profit which in itself represents the merging of ten or a hundred thousand minor or subsidiary objectives—sales quotas for a hundred salesmen, standards for salesmen's salaries and expenses, standard expenses for branch offices, advertising appropriations, standard factory costs, etc.