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Limitations of System*

BY F. R. CARNEGIE STEELE

System, a word that has been very much over-worked in recent times, is defined in the dictionaries as "a whole compounded of several parts—a number of things or parts so compounded as to make one complex whole." Antiquarians admit that system in relation to accounting is of most respectable antiquity because it was held in high esteem by the industrial and commercial leaders of ancient times in Babylon, Nineveh and Phoenicia, and some have whimsically alleged that system may have originated with our first ancestors in the garden of Eden, who, in clothing themselves with fig leaves, personally inaugurated what is now termed the "loose-leaf system" that we have quite erroneously regarded as a modern device!

TREND TOWARDS MECHANICAL ROUTINE

In relation to industrial accounting of the present day, however, as system obtains a greater development, has an increasing emphasis laid upon it and is proclaimed as having wider and wider usefulness, there has arisen in many minds a natural doubt whether the claims made for it are consistent with known conditions of business operation or there is not some confusion between system and industry itself. In certain instances also there has been a mistaken aim to develop system into a semi-automatic machine, and to substitute routine, admirable in many respects, for what is of far greater importance: viz., the individual alertness, diligence and judgment that have always been essential to successful management. It is a curious commentary on the direction which modern management seems to be taking towards the methods of military "manual" training and "staff and line" practice, to observe that modern armies themselves are breaking away from these hard and fast methods and are in fact doing all in their power to foster initiative and resource, not only in the officers but also in the rank and file. Even in the days when the "manual" methods were in full force, it was always recognized that far more than perfectly acquired drill was required to make an effective fighting

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force. Esprit-de-corps, the enthusiasm and confidence which come from a sense of corporate efficiency and reliance of each on all the others, has always been recognized as one of the most important factors in military success. It is fairly certain that it is also one of the most potent factors in industrial success. The tendency of modern industry has been to place men in such positions that they become as nearly as possible mere machines with an ever-decreasing scope of intelligence and imagination. While up to a point and for a certain period it is perfectly feasible to find practical efficiency in this direction, it has been strongly questioned whether it does not, in the long run, defeat its own object. There are reasons to believe that quite contrary principles are more practical, based on the fostering of such relations with and among the workers that their human faculty is encouraged to the full and enlisted in the service of the common end: namely, economical production.

In the fashionable pursuit of efficiency by "cutting" labor cost there lurk other dangers overlooked or unsuspected by many persons who rejoice in what seems a "practical" avenue to increased profits. One of these is the fact that speeding up labor implies raising the efficiency of every one of the many factors of production simultaneously, unless the benefit is very largely to be wasted. Old-fashioned methods of storekeeping or of shop transport, for example, will not serve under an increased strain of intensive production, and more than one plant has placed itself in the paradoxical situation of finding its deliveries more uncertain and more subject to annoying delay than when the former easier-going production methods prevailed. A still more serious danger, because far more insidious and less likely to be detected at an early stage, is a progressive deterioration in the character and quality of product. Reputations of many years standing may easily be lost or damaged by too headlong a plunge into the seductive waters of "cutting down labor cost" in the development of system. This, too, has its remedy, but in the earlier stages of enthusiasm for new methods, little attention is likely to be paid to warding off a danger that seems almost inappreciable. The confirmation comes later from the salesmen in the field.

SYSTEM SUBORDINATE TO MANAGEMENT

Those who fully recognize the value of system as an aid to executive control also recognize the danger of over-rating its

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worth and misapprehending its functions; and they unhesitatingly affirm that system must ever be subordinated to management and can never serve as an excuse for bad management. Business success lies in policies, energy, enthusiasm, resourcefulness and sagacity. System itself is merely a tool with which the mind enhances its effectiveness by using it as a basis of knowledge and as a framework for the executive fabric; and it assumes importance only as intelligence, persistency, experience and energy wield it. It is no magic touchstone with which to change losses into profits or create markets for product; nor will it serve as collateral for an importunate bank creditor or as a panacea for labor troubles. System alone neither manufactures nor sells; and in the highest departments of management, where decisions are made, when reasons for and against seem evenly balanced, where men's qualifications are judged, where plans are made in advance and policies are devised, all that system can do is to make for a full knowledge of the facts which bear on the questions to be determined, so as to free the mind from many anxious questions and leave it clearer for the consideration of the final problems of management, the solution of which is apart from system. On the other hand, it must not be assumed that the planning of accounting and production systems is in itself management or a part of management. Management requires wholly different qualifications from those belonging to the expert, and successful management rests on personality—but obviously a personality distinct from an individual's capacity to lay out a system of accounting control. Accounting and production experts have a viewpoint different from that of the executive; and they have a wider basis of comparison for the facts in their field; and they possess daily familiarity with problems and difficulties that may seem unique and peculiar to a manager endeavoring to do his own systematizing in the intervals of his regular work.

SYSTEMS THAT BECOME OBSOLETE

In almost every plant the system is constantly tending to get out of touch with existing conditions. Men come and go, methods of doing business are modified little by little, new wants become apparent, while former wants cease to be felt. There is no help for this, for no system can grow as a living plant grows, and the "self-perpetuating" system is an obvious absurdity. A system is the expression of a given set of relations today, and if they

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change ever so little (and in any live business they are always changing), it will be a less perfect expression of the relations existing tomorrow. It is not infrequently found, on expert examination of large businesses, that a whole history of waste and loss can be read from the mere existence of forms, blanks and books out of use, which represent praiseworthy attempts of different individuals at different times to meet the shortcomings of a system that was getting out of touch with actual conditions. The loss of cash in printers' bills is the least part of such a result. What strikes the imagination most is the futile groping in the dark, the energy diverted from the proper conduct of the business and the loose grip on the vital facts of the daily work that this long series of experimental systematizing represented. Nevertheless, many concerns are operating today with patch-work systems in which all the parts have long since lost the well-defined and balanced relations that they possessed when first installed. This may arise from several causes. Special returns perhaps may be called for temporarily, but once started, they are compiled "until forbidden," and no one ever thinks of countermanding them. Or returns may come into existence and continue to live their useless lives because a new man, or a man with a new point of view, wants to know something not disclosed by the existing way of serving up statistics, so he institutes certain new reports. Afterwards he leaves or is promoted, and while his successor has no use for those figures, because either he has not the same view-point or does not know the purpose of such reports, yet, from a want of moral courage or from sheer inertia, he refrains from interfering with what appears to be a well-grounded custom, and so the useless expense of compilation continues. The remedy for this very common disease of organizations is after all a simple one and a positive economy, not only in indirect results but in actual operating expense. It is, frankly to recognize that systems are constantly growing out of date and that they require regular auditing and adjustment at frequent intervals.

MISPLACED CLERICAL WORK

Operations and profits may be analyzed, gains and losses traced to their causes, new facilities of operation may be created and new means of control established, yet there commonly arises from the very beginning the question of the cost of increased clerical

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help or other work of an auxiliary character, and one is forced to consider, long and carefully, how the largest results can be accomplished with the least relative expense. The desire to avoid a multiplicity of clerks is a perfectly sound instinct, but self-deception on this point is the easiest thing in the world. In every plant there is a certain amount of clerical work that must be performed, and satisfactorily performed, by some one. It must take up some one's time and be paid for, whether such time is accounted for separately on the payroll or not; and, undoubtedly, the most costly way of doing such unavoidable clerical work is by imposing it on foremen, departmental heads and other executive officers, to be carried out in the intervals of their responsible duties. When a plant is undergoing reorganization, the executive will sometimes observe—with groans—that more clerks are being employed than before. This may only mean, however, that such work has been taken away from highly paid men and allotted to special persons whose training enables them to carry it out, not only more quickly and more efficiently, but also at a real saving. In such circumstances what the executive has failed to see is that in all probability there is no more clerical work than before, but that it is being done by cheap men, instead of being a source of worry and discomfort to more highly paid men. It may be that one or more clerks are manifestly additional, but what is not visible is the irregular work of many worried people in various departments, needing to know continually about materials for different purposes, inquiring and searching in various quarters, and then perhaps failing to get accurate information. This waste of time and energy has been saved, though the saving cannot be illustrated in figures; but it obviously has a money value. The strain imposed on foremen and department heads by old-fashioned methods of organization, especially in shops where mechanical equipment is up to date and there is an intense atmosphere of productive activity, does not end merely with the actual loss of their time in fruitless searches and useless inquiries, for the worth of whatever remaining time they may have available for their real functions is greatly impaired, because no man can attend properly to responsible duties when strain and worry overshadow him. There should be, of course, proportion in all of these matters. A large clerical staff makes for the smooth running of an organization, but like every other element of pro-

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duction it has its economic limits. An organizer of judgment will not multiply staff positions beyond the bare need of the situation, yet the amount of any increase must not be measured by what existed before, for almost certainly (if the system is an old one) the hidden clerical work—work in the wrong place—was a generator of inefficiency.

It is worthy of note, however, that the marked increase in the volume and complexity of modern business transactions has been accompanied by the development of ingenious devices through which the clerical labor of dealing with large masses of figures may be lessened. One class of these inventions is of course the work of accountants themselves, whereby the form and arrangement of books and accounting records is such that modern bookkeeping is largely in summarized form, giving totals under various headings, without the labor of detailed ledger postings. Apart, however, from new developments in bookkeeping, there are three classes of inventions of great utility in lessening clerical expense. These are, first, manifolding devices for both hand-written and typewritten records; second, filing devices, applied especially to factory records; and, third, calculating and tabulating machines. The first and second of these are fairly familiar matters and are simple to investigate and understand, while the third (the use of calculating and tabulating machines) is a subject worthy of more extensive study and utilization in system work than it has yet been accorded. Some machines are used to perform ordinary calculations more quickly and with less fatigue and less liability to error than when reliance is placed on "head work" hour after hour. Others make computations, in a few seconds and by purely mechanical means, that could only be performed after tedious and laborious figuring. Others again combine calculating with typewriting mechanism in various ways so that the combined results are entirely different from those of one kind of "head work." There are also statistical machines which analyze, combine and total, with remarkable speed and certainty, any required number of permutations and groupings of a number of original facts about any class of transaction.

NEED FOR CORRELATION OF STATISTICS

Although the relative importance of system as a link in the chain of executive control has often been exaggerated, it cannot

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be gainsaid that many industrial concerns at the present time are seriously handicapped through the inadequacy or inaccuracy of their accounts, reports and manufacturing records. It was recently stated by the federal trade commission, as the result of an investigation of business conditions, that there were 32,000 failures in a single year in the United States and that out of a total of 260,000 business corporations less than one-fourth were profit-making enterprises, while more than three-fourths were either losing money or just making both ends meet. Still more recently there has been published a report of a detailed survey of plants engaged in a certain industry in New York, doing a gross business of \$80,000,000 per annum, wherein it is stated that the percentage of profit on cost in that industry averaged only two per cent. Upon further investigation it was found that those plants which were equipped with an adequate cost system had earned eleven and one-half per cent, while the rest, which were not so equipped but did a gross business of nearly \$70,000,000, showed a profit averaging only one per cent.

It should be borne in mind that the salient feature of the business process of manufacturing is a series of changes, and one object of accounting is to make the financial result of these changes known at frequent periods. Have they resulted in profit in this article and loss in that? Have they resulted in production greater than sales or sales larger than production? Is the demand for this article or that falling off? Is demand falling off or increasing uniformly, or more in one territory than in others? Is cost rising or falling? Is selling expense rising or falling? Is burden rising or falling? Is more capital locked up in the business or less? All these questions and many others like them arise in the mind of the alert executive, but prompt and verified answers are not always obtainable from his factory statistics. Such statistics are generally known as cost accounts, though the costing of product is only one and sometimes not even the most important of their functions.

While the form of balance-sheets and of statements of earnings does not vary greatly, factory statistics on the other hand are individual to each industry and practically to each plant. Too frequently they are ill adapted to their purpose, largely because of a failure to recognize the relative values of various forms of statistics and the need for their systematic correlation. For example, in many organizations elaborate analytical records are

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laboriously compiled concerning sales, segregated so as to show currently, in quantity and in value for each group or grade of product, the distribution among cities, territories, salesmen, etc., and the fluctuations thereof from period to period; yet, in marked contrast with such refinement of analysis no reliable statistics regarding cost, for comparison with sales prices, are usually obtainable. In similar fashion a great deal of clerical work is often conscientiously undertaken in checking and exhaustively dissecting labor tickets, payrolls, stores, requisitions, etc., which is never carried to its logical conclusion by bringing those important expenditures under accounting control.

Under such conditions inventory values are determined only through an annual or semi-annual stock-taking, which is usually a nerve-racking undertaking. The work is carried on under pressure, and the arduous calculations leading to the final result are hurried forward so that the position of the business may be known at the earliest date. Too often a large element—the work in progress in the factory—is valued by main force, that is, by some one roughly estimating the value of the labor and materials in it. With perhaps hundreds of jobs the cumulative error arising from this procedure can be and often has been a very serious matter.

Modern accounting methods do not merely eliminate this annual or semi-annual flurry, but by the method of "continuous" stock-taking there can be known at any time exactly what values lie in the shops and what remain in stores or on the warehouse floor. Moreover, as these values are known currently there is little difficulty in preparing an interim monthly profit and loss account and balance-sheet. This is the only sure test of how the business is progressing. As the result of these developments in industrial accounting there are few businesses that have any excuse for failing to provide themselves with monthly operating statements which show exactly how every department of the business stands. While there are people who hesitate to take this step, few after having provided themselves with such a powerful instrument of control have ever abandoned it in order to go back to the half-yearly or yearly main-force system of stock-taking. In considering the importance of adequately correlated statistics it should be understood that factory accounts may be termed a "system" only when their several divisions mutually support and

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supplement each other and when, without gaps and without repetitions, they furnish the means of constantly observing the processes of making or losing money. Therefore, the most elaborate command of details is fruitless without scientifically balanced grouping and analysis, showing results in sharp outline with their trends and tendencies. A system should be a unity, and no statistics should ever be accepted on which action is to be taken that are not interlocked with and vouched for by balancing with the financial books.

THE OUTLOOK

Today the trend towards uniform standards for accounting statistics and reports is unmistakable. Federal and state departments are steadily increasing their demands for elaborate information concerning operating costs, financial resources, etc.; radical changes in import tariffs, based on cost, are believed to be imminent, and there is a widespread demand for uniformity in financial records in order to avoid the confiscatory taxation that has commonly resulted from defective accounting. The same trend can be discerned in reviewing other factors affecting industrial and financial conditions of the present day. Over-expansion of credit, stringency of the money market, demoralization of foreign exchanges, advancing wages and industrial unrest have brought about a marked industrial reaction from the abnormal conditions that recently over-taxed the productive capacity of many of our important industries. Economists allege that the whole country is suffering from financial inflation. Undeniably, manufacturers are carrying enormous stocks of commodities produced or purchased at abnormal cost under war-price conditions, the gradual liquidation of which must proceed in an orderly fashion if an interval of acute industrial depression is to be avoided. Imports are increasing now more rapidly than exports and this tendency is having a very disturbing effect upon the prices of domestic goods, since the depreciation of foreign exchange makes it possible to purchase many things abroad to better advantage than at home. Consequently precision in detail and accurate methods of production, with correspondingly modern methods of accounting and of exhibiting results graphically and at a glance, have now become essential to executive control in all lines of American industry.