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T. M. McNiece

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BUSH TERMINAL BUILDING
130 WEST 42nd STREET, NEW YORK

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PUBLICATION DEPARTMENT NOTE

One of the outstanding developments of the present time in the field of cost accounting is the increasing use of cost information. This is due both to a fuller appreciation on the part of executives of the value and benefits of cost data and to a better understanding on the part of the accountant of the type of information most useful to the executive. Determining the type of information is oftentimes a local and personal problem. Cost information and reports set up in one form may prove readily usable by one executive but quite unsuitable to another. The form and makeup will depend somewhat upon the person for whose guidance they are intended.

In the control of costs the foreman occupies a strategic position. As a minor executive he also can profitably use cost information. The subject of this Official Publication deals with the relation of cost accounting to the activities of the foreman. The author, Mr. T. M. McNiece, has made a real contribution to industrial organization in the studies he has made in this field. Graduating from the Case School of Applied Science, Class of 1907, he received the degree of Electrical Engineer in 1911. He was engaged for a number of years in production and engineering capacities on pumps, plumbing goods, and sanitary enameled ware. He then entered the employ of the National Carbon Company in experimental and research work, chiefly on carbon brushes. For several years he was in charge of the production of carbon brushes, specialties, and illuminating carbons.

His activities were then transferred largely to the development and installation of standard plant accounting methods in the various factories of the National Carbon Company and to the utilization of the results in operating management. He is now engaged as the head of the Plant Accounting Control Division of the Union Carbide and Carbon Corporation, New York City. He is an Associate member of the American Institute of Electrical Engineers.

COST ACCOUNTING AND FOREMEN'S DEPARTMENTAL ACTIVITIES

In presenting these ideas on the relationship between cost accountant and foreman, the point should be strongly emphasized that, in the author's opinion, ideal methods and practices have not been reached yet. On the contrary, there is constant striving to strengthen the weaker elements of the plan as they may develop and to present to the operating management any new combinations of data that will improve their control of plant operations. It is a constant aim to keep ears to the ground and eyes everywhere.

In order that there may be no uncertainty regarding the position taken, let it be said that not only is it believed that all data should be shared with the foreman, in so far as such data concern his operations, but that these data cannot be comprehensively and accurately collected without his active assistance. For this assistance to be effective the foreman must understand what the manage-

ment wants and just as truly must it understand what the foreman wants.

While the system of accounts used is considered basic in its application to our factories, you may be assured that its details were not worked out on a glass-covered mahogany desk. On the contrary, during all phases of the early development work, foremen, superintendents and accountants co-ordinated their efforts to solve the difficulties in local application. Conferences were held and are still held which are attended by representatives of all plants interested in this work. Definite programs are provided through the assignment of topics for discussion and questions are referred to committees for decision and answer.

As a matter of information, it should be stated that there are approximately twenty factories working under the same general method and standardized operating accounts. The variety of products made by these plants is very extensive. It includes on the one hand products in continuous process of manufacture and on the other hand products made in small job lots according to definite specifications from customers. The nature of these products is equally variable and embraces storage batteries of all types, dry cells, radio and flashlight batteries, chemical products—liquid and gaseous—calcium carbide, welding and cutting apparatus, a complete line of carbon products from electric furnace electrodes two feet in diameter and ten feet long to the minute carbon granules used in telephone transmitters, and a large variety of ferrous and non-ferrous alloys.

All of the factories producing these products keep their own operating accounts and forward to the central office each month a plant balance sheet together with certain standard auxiliary operating reports. Expense accounts or classifications are listed in a uniform manner for all plants and the direct charges are arranged to meet the requirements fixed by product, plant arrangement and organization.

In arranging the schedule of accounts, effort has been made to keep in mind particularly the operating man's point of view and to collect the figures in those groups or classifications which will enable him best to control his expenditures. In the main, the two prime objects of the accounting schedule are: (1) To ascertain cost of operation, and (2) To ascertain cost of product.

It should not be assumed that the order in which these objects have been placed constitutes heresy of a degree that is indefensible. The need for prompt and accurate product costs is not in any way underrated, but the value to plant executives of clearly stated operating costs as a means for producing further economies is the point particularly emphasized. Experience has shown positively and beyond doubt that an active, aggressive and logically thinking technical, engineering and operating staff may be relied upon to effect consistent economies in co-operation with the cost accountant on items included in the divisions of direct material and direct

labor. The element of expense, however, is usually nobody's "pet" and it is here that a fundamental classification of expense charges must be vigorously applied. Properly used, this classification will permit the operating executive, manager, superintendent and foreman to keep the "undertow of unclassified detail from submerging the overhead to a depth where it defies examination and analysis," in terms of a trenchant phraseology recently noted.

To win and maintain a foreman's interest and active support in the collection and use of statistical data, such data must mean something to him, and to mean the most to him, they should enable him and others to measure his own performance and progress.

Therefore, each factory is divided into manufacturing departments according to its layout and the processes involved in fabricating its products. These departments also coincide with the field of the foreman's authority and responsibility, although, of course, a foreman or general foreman may sometimes exercise supervisory control over more than one department.

There are also certain auxiliary or service departments—non-manufacturing departments—in each plant, and these, too, are under the control of foremen or departmental heads. Examples of such departments are Power, Employment, Maintenance, Superintendents, Buyers, etc. All such activities are classified in a standard way for all plants.

In addition to this there is also a standard list of accounts or charges where the element of personnel is not involved. Included in this group, for example, are Fixed Charges.

All manufacturing department charges are divided into direct and indirect classes. The direct charges are further divided into direct material and direct labor while the indirect or departmental charges—those occurring in the department itself—are divided into a classification that is standard for all manufacturing departments.

Direct material is that which finds its way into the product and becomes a part of it at some stage or another.

Direct labor is all labor expended in manufacturing operations upon the product itself. Where advisable, this is further subdivided within the department to individual operations.

Departmental expense consists of the indirect charges encountered within the department for its own operation. This is classified in a standard way for all departments and plants and displays separately such basic charges as supervision, inspection, maintenance, reclamation of errors, supplies and other important charges. These divisions, we maintain, are fundamental in that they represent the prime causes for the expenditures and for that reason the control is maintained in these same divisions.

All auxiliary and service department charges are classified in the same way as those departmental expense charges just described.

The manufacturing departments are charged each month

upon either a metered or an engineering basis for heat, light, power and water. These costs have previously been collected for control purposes in the auxiliary groups and the net residue of auxiliary and fixed charges after substracting those just mentioned is allocated to the manufacturing departments by several methods which have been adopted as standard. These amounts are separately displayed on the departmental reports so there is no confusion with the departmental charges.

Direct material and direct labor charges are of course further divided within each department to products and types of product by suitable manufacturing order or cost schedule numbers and collected in this manner for purpose of determining product cost.

Expense is applied to product costs departmentally on a direct labor basis.

In the manner thus briefly described, cost of operations and cost of product are collected by departments for the operation of which definite individuals or foremen can be held accountable.

At this point, it will be well to mention that the statistics come from the original entries made on stores issues, time cards, production records, etc., and when collected and summarized form the debits and credits to the various operating accounts. In other words, these operating data are secured step by step as the reports are summarized and the completed results are not analyzed, as is sometimes done, in order to determine what division of charges shall be displayed on the reports. In this way, 100 per cent of the expenditures are definitely accounted for in the operating reports furnished to the department heads.

It is our belief that the divisions of operating charges indicated are basic or fundamental and are common to practically any form of manufacturing enterprise. Furthermore, by maintaining the control of these charges in the same fundamental classes in which they occur, manager and foreman alike are provided with the most effective means for holding them within proper bounds and reducing them where further economy is feasible.

It may be well to mention briefly the organization of the group that is responsible in each factory for the collection of data and administration of accounts and costs. This division is designated by the term, Manufacturing Office, and the executive in charge is called the Head of the Manufacturing Office. He is responsible to the superintendent as far as daily activities and personnel are concerned, but the methods of procedure are outlined by the General Accounting Department in the Central Office. This central control is absolutely essential in order to maintain the benefits of standardized practice.

Under the jurisdiction of the Head of the Manufacturing Office is the control of stores, time-keeping, material and labor distribution, cost-keeping, book-keeping, factory invoicing, production records and, in some factories, planning and shipping.

In this manner, responsibilities are clearly set forth and the

collection of all data affecting the accuracy of the monthly records is subject to the control of one man whose chief item of business is to see that this work is properly and promptly done. This man then becomes the chief interpreter, as it were, of the results of the factory operations and, therefore, works very closely with the superintendent.

Now that the organization and procedure have been outlined in this sketchy manner, it may well be asked what results are obtained therefrom. To indicate that, we have three report sheets in as many colors which are provided each month at each factory. The brown or buff sheet shows the operating expenditures for all auxiliary or service and business departments, and all accounts of a general nature including fixed charges.

The departmental and account symbols are listed along the left and right margins while across the top are listed the classified departmental expense accounts, as, for example, supervision, maintenance, supplies, miscellaneous labor, etc. For purposes of comparison, last month's total and the total of the year-to-date are shown side by side with the column showing totals by departments.

Similarly at the bottom of the sheet are the totals for the current month, last month, and year-to-date of the same expense divisions for all departments.

The blue sheet is made up in exactly the same way but includes only the manufacturing departments.

The white sheet is a complete summary of charges to operations and in addition to showing the departmental and allocated expense by departmental totals also shows the direct material and labor charges by departments.

The reports in this form do not go to the foreman as they cover operations for the whole plant.

There is also a departmental report upon which is recorded in detail the charges against the department and the source of the charge as well as departamental expenditures for the account of any other departments. Each foreman thus gets a complete statement of each month's operations of his own department. The foreman is heartily encouraged to come to the manufacturing office at any time to ask for justification and proof of charges in case he feels an error has been made. Stores issues and time cards are filed in such a manner as to be available for ready reference and accuracy or inaccuracy of charges can be easily determined. In general, the foreman is the only one aside from the maintenance foreman who is permitted to initiate charges to his own accounts.

Data of this type are much more valuable when posted in comparative form in such a manner that tendencies upward or downward can be detected at a glance. Accordingly, there is used a statistical sheet 8½" x 11" in size with months listed along the left margin and across the page a series of vertical columns without headings. Headings suitable for the need can be inserted and

the data transferred to this sheet from the monthly form. As a rule, it is good practice for the foreman to make this transfer. It requires an almost negligible part of his monthly time and the very act of recording will force a consideration which the data might not otherwise receive. Space is provided on this statistical sheet for two years' records, including totals and average for the year. On the back of the sheet is imprinted a cross-section ruling which permits any essential or major data to be recorded graphically. We believe very strongly in the advantage of graphical display of many kinds of data. Of all the five senses, seeing is the one which most quickly responds to an impression. The Chinese sage, Confucius, is credited with saying, "One picture is better than ten thousand words."

While as previously stated these results are best displayed in comparative form, they become still more valuable if some standard or bogie can be adopted as a unit by which to measure actual performance each month. In a number of plants, this has been done. In collaboration with the foremen and departmental heads, the manufacturing office and the superintendent have established and agreed upon certain amounts in direct labor and in each of the divisions of expense as sufficient to operate the plant at its standard capacity. These are effective for the current year. In the same way and in the same form standards have been developed by some ten of the factories. It may be well to mention specifically that the standard methods have necessarily not attained the same degree of development at all of the factories using them. Installation and parallel development cannot be carried on simultaneously at so many widely separated points.

The standards or bogies, to which reference has been made, are entered at the top or bottom of their respective columns on the statistical reports referred to above, and are therefore, available at all times for comparative purposes. There are not many foremen who, once entering into the spirit of the plan, will not exert every effort to meet the figures agreed upon and who having met them will not continue the pressure to reduce them and beat the commitment.

The records mentioned up to this point are monthly and are ordinarily available to the foremen sometime between the 9th or 10th and the 15th or the 16th of the month, according to the size of the plant. In addition to the expense charges by detailed divisions, material and labor charges together with production are furnished. In the case of a single product, the division of each of the classes of charges by the production immediately makes a series of per unit values available as far as his own department is concerned. It follows without argument that this should be a most effective aid in the control of departmental operations.

In a very large proportion of our plants, a demand has arisen among the foremen and other executives for more up-to-the-minute results than those just described. In some factories, certain data

have been requested daily and arrangements have been made that will enable the foremen to secure certain labor statistics for control purposes on the day following the expenditure. Other data are supplied weekly in a manner that means very little additional work. A number of the statistical sheets described, sufficient to carry the data desired, are clipped together in a folder—one for each department. The foremen retain possession of these booklets until a given day of the week, when according to instructions, typewritten on the cover, they return them to the Manufacturing Office where the figures for the prior week are inserted. The sheets are immediately returned to the foremen who keep them until they are again to be returned. Anything within reason that will encourage the use of such information while it is still "hot" cannot be too strongly recommended. Such information is of relatively little value for merely historical purposes. On the other hand its value increases enormously as it is currently used.

It may very properly be asked what procedure is followed in securing the interest and co-operation of the foreman. There is no definite formula that can be made to fit all cases. In undertaking the introduction of operating and production cost data to the foremen the first aim is, by group or individual contact or both, to acquaint each foreman with the nature of the material and labor charges peculiar to his department and the reasons therefor. It has frequently happened that valuable and timely suggestions have been received from the foreman at this or a slightly later stage. If the foreman and others can be taken into partnership, as it were, it will not only increase the breadth of view of all parties interested, but will arouse in the foremen some interest in following the results of their own suggestions. These things usually work out to the mutual advantage of all concerned.

In this discussion with the foreman, he is reminded that he initiates many of the charges placed on stores issues and time cards and that it is by the summarized results of these that his performance may in part be judged. It may also be suggested to him that his signatures on stores issues and time cards are essentially the same as far as final results are concerned, as his signature on the company's check for an equivalent amount of money. Since this is true and since he initiates such charges, it is strictly up to him in the interest of the company and of himself to see that such charges are fairly and accurately made according to plans furnished him. It follows that those responsible for acquainting the foreman with the requirements must do their job well and supply the foreman with all the information the case demands. Too frequently this part of the work may be slighted.

It may be pointed out to the foreman that it is he who is doing the primary accounting and that the clerks and bookkeepers in the office are merely busied in arranging and accumulating the charges he has already made.

It is not often that foremen are averse to receiving and utiliz-

ing the data pertaining to their departments, and therefore, in helping to collect the data accurately. If such a case is encountered, the foreman's attitude may not be entirely his fault but the result of earlier training or environment. It may also be that prejudice has been aroused by some unfortunate and mistaken application of similar information at some previous time.

It is quite the natural thing for a foreman to feel that if he has turned out his product in the desired quantity and quality, he has fulfilled his mission. Under such conditions, he gladly leaves consideration of costs to others. Such a foreman sees about him every day masses of product in pieces, pounds, gallons, yards or other unit, until he loses sight of all but product. In such cases, it is pointed out to him that while his plant and department are equipped to manufacture product, this is only a means to an end and that end is profits; that maximum profits demand minimum costs; and that unless he is constantly using his influence directed by data supplied him to reduce costs, he is not playing his full part in the game. In following up this thought, emphasis is placed on the importance of appraising his performance and progress in the same units of measure as used by the management in judging the final results, namely, dollars and cents.

To overcome successfully any lingering prejudice which a foreman may have for the use of any cost figures, it is essential that those who come in contact with him be prepared to meet him on his own ground, be familiar with his product and problems and be able personally to inspire his respect. The tabulations presented must be correct within the limitations prescribed by his own inaccuracies. Nothing will confirm a foreman more quickly in his belief that the use of costs is worthless, than to find them inaccurate when he does investigate them.

One of the best methods within our experience in securing favorable attention and action from the foremen, and one which is followed in a large number of factories, is the custom of the superintendents to call upon each foreman once a month for a review of his operating charges, an explanation of any major variations, and definite recommendations for any economies where it is feasible to make them.

On certain major products, cost sheets are furnished by the plant, showing the cost of each material involved, each labor operation and its corresponding expense. These values are subtotaled by departments. Where more than one plant is engaged in the manufacture of such products, these costs are displayed by the central office in parallel columns by factories and a copy of this composite cost sheet sent to each superintendent whose plant is engaged in the manufacture of the product. Since these costs display the departmental detail, each superintendent is enabled to compare his costs in detail, by operations and departments, with those of the other factories. The management, in turn, is able to match the lowest costs in any detail at any of the plants with the

cost of the same operations at the other factories and either to justify the differences or to take steps to reduce the higher costs to the lower levels attained. This indirectly comes back to the foremen and has the distinct advantage of encouraging the element of friendly, inter-plant rivalry.

If a foreman, superintendent or, for that matter, anyone of us finds that he is to be judged in accordance with some definite plan, he will not long postpone the time when he will take active interest in the method used.

There is a habit or fashion of work in every plant and it is in the main dictated by the superintendent or other active executive. As the superintendent plans, so must the others work or ultimately fade out of the picture. If, therefore, the foremen characteristically fail to measure up to reasonable expectations, it may pay to spend some time with the superintendent or manager.

One of the most profitable items for study by the foreman is his Reclamation of Errors account. Without going into detail regarding it, this account represents the cost of the spoiled work that is scrapped plus the cost of putting such work that can be saved within specifications. The value of setting this cost out clearly from other groups is tremendous. One of our works managers recently advised that in furnishing graphs to his foremen, he has chosen green ink for the Reclamation of Errors account. Those familiar with the intricacies of the Grand Central subway station, will appreciate the slogan the foremen have chosen, namely, "Follow the Green Line."

To express briefly the burden of this discussion; make an honest effort to display the facts and having displayed them, have them put to profitable use.

A few days ago, Mr. Owen D. Young, of the Dawes Commission, in a speech on international relations, given at the time a degree was conferred upon him by Johns Hopkins, made the following remarks regarding the use of facts:

"Facts can be applied in any field. Our curse is ignorance. Facts are our scarcest raw material. This is shown by the economy with which we use them. One has to dig deep for them because they are as difficult to get as they are precious to have."

How literally this may be applied to the field of endeavor under discussion!

The place to save money is the point at which it is spent, and, technically, it is spent when the foreman signs the time card and stores issue. This, therefore, is one place to display the facts and to use them. Nothing is gained by preventing the proper use of facts through concealment.

Concealment amounts to cenorship which works both ways; that is, it may be applied from below as well as from above. It is our policy to present the facts in such a way that all who should have them will have all they should have and may be guided accordingly.

Some years ago there appeared an editorial in Collier's that seems to apply to this situation:

"Somewhere in Holland a certain elderly civilian, his 120-odd uniforms laid aside, is growing a beard, taking walks in the castle garden, cutting wood for the fireplaces from logs respectfully handed to him by liveried attendants, and is otherwise generally busied looking after the health of the person he cares most about. He receives a good deal of mail, but as the Associated Press Dispatch states: 'A servant of the former Emperor inspects the letters and permits only those communications which he considers will please him to reach the royal exile.'

"There you have censorship at its silly worst. If it affected only exiles, the matter would not be very important. But eminent and busy men in all walks of life miss true leadership by doing much the same thing. They try to save time, to make things go smoothly, and it finally comes out that some one else determines what facts shall appear before their minds for judgment or action. They do not get the truth; they get what a subordinate thinks they ought to have, and littleness thus grasps power by indirection. No one can master all his facts, but he can make occasionally what the accountants call a "spot check" as HARUN-AL-RASHID did in his midnight prowls around Bagdad a thousand years ago. The instinct for that is one of the proofs of leadership. * * * Censorship is evil because it makes men walk in twilight and between walls."

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