

BUSINESS BUDGETS
AND
BUDGETARY CONTROL

A. W. WILLSMORE

BUSINESS BUDGETS
AND
BUDGETARY CONTROL

BUSINESS BUDGETS
AND
BUDGETARY CONTROL

BY
A. W. WILLSMORE
F.R.ECON.S.

BUDGET OFFICER, STANDARD TELEPHONES AND CABLES, LTD.



LONDON
SIR ISAAC PITMAN & SONS, LTD.

1932

SIR ISAAC PITMAN & SONS, LTD.
PARKER STREET, KINGSWAY, LONDON, W.C.2
THE PITMAN PRESS, BATH
THE RIALTO, COLLINS STREET, MELBOURNE
2 WEST 45TH STREET, NEW YORK
SIR ISAAC PITMAN & SONS (CANADA), LTD.
70 BOND STREET, TORONTO

PRINTED IN GREAT BRITAIN
AT THE PITMAN PRESS, BATH

TO
L. M. A.

PREFACE

THE broad idea of budget control in so far as it affords an outlook into the future is not new. No business can be operated without some sort of estimation of the future, even though the forecast be nothing better than a few half-formed ideas at the back of the manager's mind. But budget control entails more than a mere forecast of the future. It involves a concerted plan of action based on a careful consideration of all relevant tendencies and factors, and it is, in itself, a complete system for controlling costs and preventing waste.

If industrial management has learned anything from the recent trade depression it is that systematic forward planning is needed in large-scale industry to ensure co-ordination of production, purchasing and finance with probable future sales. It is gradually being appreciated that the very existence of any individual concern may well depend as much on the efficiency of its forecasting system as upon the efficiency of its production methods; and, as a result, many companies have turned to the application of budgetary-control principles as a means of planning their operations with an eye to the future. It is felt that this is a logical development that can be expected to take a permanent place in the mechanism of business administration.

Up to the present, the business man who is interested in the details and principles of budget control has been obliged to make use of American textbooks on the subject. It is believed that this is the first book on the practical application of budget control to business to be produced in this country.

The approach to the subject follows very closely the lines of a series of six articles published in *The Times Trade and Engineering Supplement* between 5th December,

1931, and 6th February, 1932. The book is, in fact, largely the outcome of the collection of the necessary material for this series of articles.

The author has drawn widely from his actual experiences in the application and administration of budget control in manufacturing industry, but no attempt has been made to present a ready-made budget plan that can be adopted without modification for any individual company. A comprehensive view is taken of the entire problem with the idea of establishing the basic principles that should guide the introduction and administration of the budget system, not only in manufacturing industry, but in any branch of activity involving cash outlay and cash receipts.

Grateful acknowledgment is due to the proprietors of *The Times* for permission to reproduce the substance of the series of articles on "Business Budgets" already mentioned. The author has embodied a large portion of several articles on management topics originally written for the *Electrical Review*, and would like to record his thanks to the proprietors of that journal for allowing him the use of their copyright in this material. Appreciation is also due to the editor of the *Manchester Guardian Commercial* for the privilege of including references from series of articles on Production Control and on Market Research.

Thanks are due to Mr. G. P. Fox, B.Com., for his assistance in reading the proofs.

A. W. WILLSMORE.

August, 1932

CONTENTS

PREFACE	PAGE vii
-------------------	-------------

CHAPTER I

OBJECTS AND SCOPE	I
-----------------------------	---

Objects of budget control—Business and State budgets—Need for a forecast of the future—Need for co-ordination of activities—The growth of the business unit—Results of delegation of authority—Preparation for budgeting—Budget periods—The sales estimate—The production and expense estimates—The financial aspect—Putting the budget into operation—Summary

CHAPTER II

THE SALES ESTIMATE	20
------------------------------	----

Factors affecting future sales—Study of past results—Long-period growth—Seasonality—Determination of seasonality—Disadvantages of seasonality—Reducing seasonality—A practical solution—Cyclical conditions—Smoothing past results—Relationship with general business—Market conditions—Demand factors—Plans and policies

CHAPTER III

THE SALES BUDGET	42
----------------------------	----

Adjusting the estimate—Fixing selling prices—Cost reduction and prices—The nature of costs—The "price-volume" study—Some practical points—A practical "price-volume" study—Big business and profits—Price cutting in the special order industry—Differential costs—Volume and costs—Orders and shop output—The manufacturing load—Under-capacity production—An even manufacturing load—Summary—Operating on a budget basis

CHAPTER IV

THE PRODUCTION BUDGETS	64
----------------------------------	----

The plant and equipment budget—Consideration of proposed plant expenditure—The materials budget—Factors governing purchases—The labour budget—The manufacturing expense budget—Estimating expenses—Shop balance sheet—Costing and overhead expense—The cost of idleness—The cost of preparedness—Machine-hour rate system—Costs and volume—Production planning—Nature of manufacturing

industry—Stock order industries—Production and stock schedules—Minimum stock control—Seasonal industries—Stabilizing production—Special order industries—Reducing delivery periods—Production control—Routing the work—Budgets and special orders—Contract, jobbing, and style industries—Economic manufacturing quantities—Carrying costs—Formula for ordering quantity—Other practical points

CHAPTER V

THE EXPENSE BUDGETS 102

Expense classification—Some practical points—Expense budget principles—Manufacturing expense—Selling expense—Selling expense and market conditions—Bonus system of payment—Advertising expense—Advertising expense and sales—The advertising programme—Shipping and packing expenses—Auxiliary expenses—Administrative expenses—Profit and loss account—A new attitude towards profits—Fundamental features—Costs and profits—Profit points—Improving profits—Planning for profits—Lines of approach

CHAPTER VI

THE FINANCIAL BUDGET 128

Objects—The cash position—The financial programme—Cash receipts from sales—Accounts receivable and cash—Monthly billings—Receipts from billings—Other receipts—Cash disbursements—Comparison of cash income and outgo—The surplus cash balance—Balance of receipts and outgo—Financing the programme—The efficiency of management—Functions of management—Managerial standards—Significance of the balance sheet—The estimated balance sheet—Forecasting the stock position—Forecasting balance-sheet liabilities—Analysing the balance sheet—Financial ratios—Profit standards—Standards for turnover—Significance of turnover ratios—Balance-sheet relationships—Revising the programme—The master budget

CHAPTER VII

BUDGET ADMINISTRATION 158

Difficulties in practice—Managerial support—Supervision and administration—Budget officer—Budget committee—Other points—Budget reports—Sales reports—Advertising reports—Production reports—Manufacturing expense reports—Purchases reports—Plant and equipment reports—Expense reports—Financial reports—Executive reports—Budget charts—Sales, orders on hand, and shipments—Interpreting the chart—Stocks, deliveries, and production—The Z chart—Budget revision

CONTENTS

xi

CHAPTER VIII

	PAGE
FORWARD PLANNING	183
Need for long-period forecasts—American Telephone and Telegraph Company's policy—The A.T.T. Co.'s Five-year Plan—Long-term forecasts—The business cycle—Weaknesses of industry—Causes of the business cycle—Controlling the cycle—Management and the business cycle—Management policies in depression—Extend facilities during depression—Management policies in recovery—Management policies and the boom—Restrict extensions under boom conditions—Management policies in the crisis—Business forecasting—The Harvard business forecasts—The London and Cambridge Economic Service—Regulating operations—The American General Electric Co.'s plan—Purchasing profits—Trade associations—The facts of industry—Advantages of industrial information—Introducing new lines—Steps in market research—Commercial considerations—Summary	

CHAPTER IX

CONCLUSION	211
Outline of budget practice—Budgets for wholesale and retail stores—Other applications—International interest—Practical advantages	
APPENDIX	223
Budget manual	
INDEX	227

ILLUSTRATIONS

FIG.	PAGE
1. The Trend of Past Sales	25
2. Seasonal Variation in Results	28
3. Cyclical Features of Past Sales	35
4. " Price-Volume " Study	49
5. Differential Costs	53
6. Shop Losses and Profits	78
7. Quantities and Costs	98
8. Preliminary Profit and Loss Account	118
9. Costs and Profits	121
10. Cash Receipts and Disbursements	138
11. Estimated Balance Sheet	145
12. Master Budget	156
13. Sales Report	167
14. Sales Expense Report	168
15. Advertising Expense Report	169
16. Labour Cost Report	171
17. Manufacturing Expense Report	172
18. Sales, Orders, and Shipments	177
19. Stocks, Deliveries, and Production	179
20. The Z Chart	181
21. Outline of Budget Procedure	224

BUSINESS BUDGETS AND BUDGETARY CONTROL

CHAPTER I

OBJECTS AND SCOPE

•
OBJECTS of budget control—Business and State budgets—Need for a forecast of the future—Need for co-ordination of activities—The growth of the business unit—Results of delegation of authority—Preparation for budgeting—Budget periods—The sales estimate—Production and expense estimates—The financial aspect—Putting the budget into operation—Summary

THE idea of budget control is familiar to the business man in the sense of the application of the system to assist in the control of national finances. It is not so well known that a modification of the same technique can be used successfully in practical business administration.

The annual introduction of the budget has been a common feature of British government for more than a century. In the United States, however, the national budget is a recent growth. A special commission appointed to inquire into the methods of transacting public business had recommended the adoption of a budget system in 1912, but the report was shelved. After extensive agitation on the part of both Press and public, however, the idea of a national budget system was finally adopted, and, towards the end of 1921, the first national budget for the United States was introduced to cover the year ending 30th June, 1923.

As an outcome of the controversy on the adoption of budget control in Government finances, the American business man became aware of the potential advantages of the adoption of a fundamentally similar system for

industrial administration. It was appreciated that the principles would have to be modified to suit the different needs of business, but that similar benefits could be realized.

Objects of Budget Control.

The essential features of budget control are that it enables an objective to be established from the consideration of the probable course of events in the future; it enables policies to be formulated to ensure that all activities are co-ordinated to enable this objective to be met, and it provides a means whereby actual results can be measured in the light of the preconceived plan to provide a check on progress towards the desired goal. As applied in the conduct of Government affairs, budget control implies a forecast of probable future expenses and an analysis of the sources from which income is to be raised to meet these expenses. This results in the establishment of desirable totals for expenditure and revenue, coupled with plans to ensure that the actual operations are kept within these bounds. The constant comparison of actual receipts and expenditure against the budget throughout the period then offers a current measure of the extent to which the preconceived plans are being realized.

The necessity for such a consideration of the future is undeniable. Indeed, it is regarded as axiomatic that the administration of the public purse without such forethought would, under present conditions, be virtually impossible. Every public or social service must be considered in terms of the ability to raise the necessary funds to finance it. And every proposed tax must be considered in the light of its probable yield and the cost of its collection.

He who would frame a system of national finance must assume the mantle of a prophet. He must weigh his every move in advance. On the one hand, he must arrange

his system of taxation and expenditure so as to avoid a deficit of national income against expenses. Similarly, he must also guard against the accumulation of an unduly high surplus. This co-ordination of expense and income and the advance planning of affairs to ensure that a proper check is kept on waste are the essentials of State administration.

Business and State Budgets.

A little thought will show that the business manager has very much the same sort of problem as the Chancellor of the Exchequer. He has expenses for materials, labour, and rent, etc., that must be offset by receipts from collections from sales. He has a multi-variety of activities under his control that must be co-ordinated to a common objective. He must plan his whole business with an eye to the future.

It was the realization of this fundamental similarity that led American business men to investigate the possibilities of budget control. Impetus was added to the movement by the disastrous effects of the 1920 slump in general business, which pointed very definitely to the necessity for more careful planning in industry, and the movement continued, until at the present day budget control is a familiar feature of business administration in the United States.

In this country there has not been the same amount of publicity on the national budget system to lead the business man's thoughts in the direction of the potential adoption of budgets in business. There are, however, several British firms who have adopted the system with success, and it is felt that the system would rapidly acquire the same degree of popularity in this country that it has gained in America were its advantages and objects more widely known.

Although business budgets have evolved from the Government budget system, the reader must not expect

to find anything more than a formal similarity between the two systems. The common object of budget-control systems, whether applied to national finances or business administration, is to formulate policies aimed at an objective established after the consideration of the probable course of events in the future, and to provide a means for the constant comparison of actual progress towards this goal against the preconceived results. There is, however, a wide difference in the practical application in business and national affairs.

Government budgets are, by necessity, rigid control systems aimed at preventing waste. Business budgets, on the contrary, are flexible and more of an aid to clear thinking and intelligent action than a rigid control system. As an outcome of this flexibility it is not possible to frame a set of budget rules and draft a series of forms that will be applicable to any industry. The actual budget system must be adjusted to fit the needs of the individual company.

The purpose of this book is to indicate the basic principles of budget control in business and to show how these principles can be adopted in practice to improve efficiency, reduce waste, and increase profits.

Need for a Forecast of the Future.

Successful forecasting is the essence of profitable business administration. The very existence of the individual business man may depend upon the skill with which he can foresee impending changes in the vagaries of consumer demand and anticipate such movements in his operations.

The nature of modern competitive industry is such that success often depends more on the ability of a business manager to foresee the future than on his skill as an actual producer. This must not be taken to imply that efficient manufacturing methods count for nothing in business success. They are, in fact, of prime importance in leading to low costs and to the economical use of working capital.

But all the advantages of productive efficiency may easily be nullified by failure to anticipate the future ; by failure, for instance, to foresee a decline in sales which consequently leads to an accumulation of stocks and a loss of profits.

Need for Co-ordination of Activities.

The introduction of budgetary control in business has arisen from the realization of the importance of planning operations with an ever-watchful eye on the future. But budgetary control is not merely a forecasting system. It involves a concerted plan of action based on a careful consideration of all relevant tendencies and factors, and it is in itself a complete system for controlling costs and preventing waste.

In any business, small or large, it is very important that all the activities of the concern should be directed towards a common goal. It is the prime function of management to ensure this co-ordination. In a wireless manufacturing firm, for instance, it is useless for the man in charge of the factory to lay out his operations for the production of, say, 10,000 sets, simply because the same number was made last year or because it is a nice round figure, unless the sales division appreciates the situation and estimates that the market conditions are such that the sets can be sold.

The manufacturing division must be guided by what the sales division thinks can be sold, and must arrange to produce when required. On the other hand, however, the sales division must colour its views of what it shall sell by a realization of what the factory can produce. Neither division should, of itself, dictate the policy of the company. It must be a matter of mutual agreement.

Furthermore, although the two divisions may agree on mutually satisfactory selling and production policies, the plans involved cannot be put in hand without consideration of the financial aspects. Goods cannot be sold without the expenditure of money on their production, and without

an investment of working capital in stocks and outstanding accounts. Many failures in business can be attributed to lack of working capital arising from the introduction of selling and manufacturing programmes beyond the financial resources of the concern.

The Growth of the Business Unit.

This interdependence of activities readily becomes apparent as a company grows from the stage where the official in charge can himself directly control every phase of activities, to a size where delegation of authority becomes necessary. Where the man making the plans is also responsible for seeing that they are carried out, there is, perhaps, little need for any definite expression of policy. With the delegation of authority, however, there is an implicit necessity for some means of ensuring that the major plans of the business are put into operation. The realization of this fact has been one of the main tendencies leading towards the adoption of the budget control system in business.

In a small one-man firm there is little, if any, room for the application of the refinements of modern scientific management. The head of such a concern has every section of the business under his own eye, and his control is, as a result, often more intuitive than reasoned. The recent rapid development of large-scale production has, however, shown a real need for some form of assistance in business management. As a firm expands, it becomes increasingly difficult and finally impossible for the chief executive to keep himself *au fait* with every detail of the activities of his business.

Results of Delegation of Authority.

The delegation of authority following this movement, has led to the necessity for some method of co-ordinating the activities of the various branches of the company, and also for some measure of the efficiency of management.

Moreover, as the size of a business unit increases, it gradually becomes more and more impracticable for the concern to be managed on a basis of "snap" decisions. It becomes necessary for decisions to be made sufficiently far ahead to enable them to be put into operation in good time, particularly as changes in major policy must obviously take some time to bring into effect.

A company manufacturing motor-cars by mass production methods cannot, for instance, reduce or increase its output at short notice. The production system of such a company with, say, a single progressive main assembly line presents superficially a very simple unit. In fact, however, it involves a particularly complicated interlocked system for the supply of a large variety of piece parts and partial assemblies to the main assembly line, in just the right quantities, and at just the right time, which must all be planned afresh with each change in the scheduled output of cars per week. In the case of the introduction of a new model by such a firm, it is often necessary for the whole factory to be shut down for several weeks so far as regular output is concerned, while the necessary changes are being made.

The relationship of budgets to the production control system is taken up more fully in a subsequent chapter. The point of issue at the moment is that in the large company some mechanism is necessary to enable the company's whole policy to be established in advance. This has been found in the application of budgetary control principles to business. In America, the use of the budget control system is virtually standard practice. A recent survey by the National Industrial Conference Board into the extent of the adoption of budget control in industry showed that out of 294 companies approached, as many as 162, or 55 per cent, had budget systems in operation. This feature was not related to any particular group of industries nor yet to the individually largest companies in particular industries, and, in spite of the

comparatively few companies investigated, it will be apparent that the budget system has secured a good foothold in American industry.

In this country, industry is rapidly being reorganized on large-scale methods. In the circumstances, it is not surprising that the British business man should avail himself of the experience gained in America. Already, several firms in the electrical and "newer" industries—particularly those with transatlantic connections—have adopted the budget plan with considerable success, and many others are contemplating a similar move. The object of this book, as already pointed out, is to indicate the benefits to be expected from the adoption of budgetary control, and to show how the basic principles can be applied in practice to reduce costs, secure closer control of inventories and expenses, and effect a general improvement in the efficiency of management, particularly in the direction of securing a closer co-ordination of all activities.

The fact that the development of large-scale industry has led to an appreciation of the advantages of budgetary control must not be taken as implying that the system has no scope in the small company. Every company, no matter what its size, must be operated on a budget basis. The business manager must conduct his affairs on a budget basis in spite of himself. And, although he may at first be inclined to contest this assertion, a little serious consideration will show that he does, in fact, plan his operations in this way.

Consciously, or subconsciously, he must make an estimate of the future every time he is called upon to give a decision. The difference is that in a small company this estimate by necessity is very crude, and the co-ordination of activities on this basis is automatic rather than logical. Even so small a business unit as a paper-seller's stand cannot be carried on without a consideration of the future. The newsboy must make an estimate of future

sales before he can order his supplies. This is budget control in its most elementary form.

Although, therefore, the man in a small way of business may not operate the same complicated system of paper records implied by budget control in large scale industry, he cannot afford to ignore the principles of systematic forward planning. While budget control is an essential to the management of a large company, in its basic fundamentals it is equally valuable to the small company.

It must not be thought that a budget is designed to turn the management of business into a mechanical operation, or that it is intended in any way to act as a bar against the exercise of personal initiative. Its object is to guide rather than to control. The idea of preparing a budget is not, essentially, to lay down rigid programmes, but to indicate what will happen if certain plans are followed. Its object is to enable the most practical and profitable policy to be established for the future and to provide a yardstick against which actual progress towards this end can be measured. It also aims at providing an indication of impending weaknesses and dangers sufficiently far in advance to enable precautionary measures to be taken in good time.

Preparation for Budgeting.

To ensure success, before any system of budget control is put into operation, there should be a clear understanding on the part of the management of both how the system is to operate and what objects are in view. The nature of budget control is such that all the various estimates involved are strictly interdependent. It is, consequently, very necessary for arrangements to be made to ensure that they are prepared in a logical sequence, and it is unwise to commence the operation of a budget system before these arrangements are made, and before a comprehensive procedure has been established to govern the preparation and use of the various estimates.

Whether the budget system is first introduced into a company to cover the whole range of activities or whether it is introduced step by step, a department at a time, with a view to gaining experience in this way, it must always be remembered that the estimates must be prepared with a definite object in view and not as mere interesting tables of figures. For this reason, it has been found in practice highly desirable to have a responsible official in charge of budget procedure who can take a broad view of the entire problem and supervise the installation and operation of the system. Before developing this side of the problem, however, it may be desirable to summarize the aims and objects of a business budget system.

The application of budget principles to business involves in outline—

1. A consideration of the future, to enable plans to be established that will enable the maximum profit to be earned under the conditions that have to be faced.
2. The co-ordination of all activities towards this end, and, in particular, the co-ordination of sales with production and both with finance.
3. The establishment of some system to ensure that these plans are put into effect, which will also enable a constant check to be kept on actual progress towards the desired objective.

The necessity for planning operations with an eye to the future has already been discussed. It is not possible to co-ordinate activities on a profitable basis simply from a study of past results. But, at the same time, reliable records of past results and current operations are very necessary to the successful adoption of budget control. In fact, a reliable system of accounts and costs is an essential to the success of business administration, whether the concern is operated on a budget basis or not.

This need goes further than the necessity for regular and prompt preparation of reliable records. There should

be a definite relationship between the accounting system and the delegation of responsibility, so that operations and results are classified, recorded, and reported along the lines of the organization. Every account classification should be such that its responsibility can definitely be fixed on an individual or group of individuals, and every item of expense should go at once to that unit of the organization which is responsible for the expenditure. •

Where the budget control system is employed, this need for a correlation of accounting and organization is even more important. Further, it is very necessary that the budget system should be constructed on the same plan so that actual results can be compared accurately with budget forecasts and responsibility fixed on the proper individuals for any failure to meet the estimate.

The necessary preparation for the introduction of budget control, therefore, involves careful consideration of aims and objects, the establishment of a properly aligned organization to establish the delegation of authority, and an interlocked system of budgets, accounts, costs, and organization.

Another practical point that must be settled, before any steps can be taken towards making an estimate of the future, is the question of the period of time which the estimate is to cover.

Budget Periods.

No arbitrary rules can be established to govern the period for which budget estimates should be prepared, and, although the common practice is for the estimates to cover a period of twelve months, the peculiar conditions of individual industries often make it preferable to employ a longer or shorter period. In the first place, the estimate must cover operations sufficiently far ahead to enable a proper perspective to be taken of the future. This is particularly important in industries where changes in policy take some time to come into effect, in order to

enable these changes to be introduced as gradually as possible and with the least disturbance. Against this tendency towards making the budget period as long as possible, there is the practical obstacle that the extent to which a detailed forecast of the future can be made must depend on market conditions and the nature of the available data on past results. If future market conditions are uncertain, and if the available information is not sufficient to enable reliable conclusions to be reached on the general trend of the business, then the budget period must be kept as short as possible. It is better to have an accurate budget covering a period of three months than one which is little better than a blind guess at probable results for a year. Further, it is often necessary for budgets to be prepared in sufficient detail to provide an accurate day-to-day programme, and under the most favourable circumstances such a detailed outlook can only be made for a limited period.

Another point to be considered is the seasonal nature of the business. The activities of the company in the slack period of the business year must obviously take into account the following busy period to enable sales and production to be co-ordinated on a proper basis. This feature will be examined subsequently in greater detail. For the moment, it may be sufficient to note that in a seasonal business the budget should cover the full cycle of slack and busy periods. Similarly, the budget period must be at least long enough to cover the time taken to produce the goods sold. If the company is selling an article that takes nine months to manufacture, for instance, it is impracticable for the budget to cover a shorter period than this, although in an industry with a quick production turnover there is no objection to the budget covering more than one complete manufacturing period.

Further, in so far as it is necessary to compare actual progress as recorded by the accounting division with the budget programme, it is very necessary that there should

be a relationship between the budget period and the length of the accounting period.

There are thus opposing factors, some suggesting a long and others a short budget period, and the final decision must be based on a careful consideration of all these factors. In practice, a common solution is to prepare a main budget covering a period of at least a year, with a subsidiary and more detailed budget covering the first month or three months of the period. The whole estimate is then revised and extended regularly at monthly or quarterly intervals, so that it always provides a general picture twelve months ahead to govern the basic plans of the business, and a specific estimate of the immediate future to serve as the foundation of day-to-day operations.

There is also a tendency towards the preparation of general forecasts covering the entire range of the business cycle which are used apart from the budget for long-term planning. This is a highly significant development, and the uniform adoption of this policy might go a long way towards enabling trade and industry to be maintained on a more even keel without the disturbances of recurring periods of boom prosperity and acute depression. Long-period estimates are also of great value as a basis for deciding policy on plant-expansion projects.

The Sales Estimate.

After a decision has been reached on the period to be covered by the budget estimate, the first step in the operation of the system is for the sales division to prepare an estimate of orders to be received for the period. We will assume for the sake of argument that the estimate is to cover the following year (which, incidentally, need not start on 1st January), with full detail for the first three months. In preparing this estimate, the sales division would take into account the general trend of the business as indicated by past results, the seasonal nature of sales, probable future market conditions and other

external factors likely to affect the business. This estimate may be prepared entirely at head office, or it may represent an aggregation of individual estimates made by the company's salesmen. The actual procedure will depend on the nature of the organization, but it will generally be found most practicable for the original estimate or estimates to be prepared by whoever is responsible for their achievement. It is found that more reliable figures are obtained in this way, by virtue of the fact that if a man is himself called upon to make an estimate he feels a deeper responsibility for its realization than if it is forced upon him by an executive officer, who is not in direct touch with the market and who may not be as well acquainted with all the external factors likely to affect results.

The next step is for the consideration of this preliminary estimate by all interested parties in the light of internal conditions, with a view to obtaining the best possible and most profitable programme for the period. In particular, it is very important for the preliminary sales estimate to be considered from the production and financial standpoints. For instance, the anticipated sales on certain lines may not represent economic manufacturing quantities, and adjustments may have to be made in the direction of reducing prices to increase sales. On the other hand, market conditions as indicated by the preliminary sales estimate may be such that the manufacturing divisions are faced with abnormal output requirements on certain sections of the plant and very little work in other directions. The position must then be reviewed to determine whether the emphasis of the sales programme can be altered by increased advertising, or whether some new product can be introduced to secure a better balance on the manufacturing side. The effect of price concessions on profits must also be taken into account, together with all other considerations, so that the sales estimate can be adjusted to represent the most

desirable and profitable programme possible in the interests of all concerned.

In view of this interdependence of activities, many firms which control their affairs on a budget basis have found it desirable to establish a special budget committee representing the selling, manufacturing and financial functions of the concern. In addition to making any necessary adjustments to the budget estimates before they are put into operation, the budget committee would also consider the monthly reports of actual progress made towards the realization of the budget.

The Production and Expense Estimates.

On the basis of the revised estimate of orders to be received, each division of the company then prepares an estimate of its activities for the budget period. So far as the production department is concerned, the figure of the orders to be received would be interpreted in terms of desirable inventories and output requirements. This, in turn, would involve a subsidiary estimate of raw material requirements and labour requirements, and an estimate of shop expense. The sales division itself would have to prepare an estimate of selling and advertising expenses involved by the desired volume of orders, and similar estimates would have to be made by all the other divisions of the company to cover their expenses for the period.

All these estimates would then be analysed and adjusted by the budget officer or other responsible official to give a comprehensive and concerted programme for the business as a whole, that would show anticipated sales, production, and stock requirements, expense quotas for each division and profit possibilities. At this stage, careful consideration would be given to the estimates, particularly to the expense quotas, with a view to deciding whether the estimated profit represented the best possible achievement for the period under review. Quite apart from the reduction of waste resulting from the closer co-ordination

of all the activities of the concern, considerable savings are usually effected through this investigation of expenses. Every item of proposed expense is considered beforehand with an eye to possible economies. If necessary, cuts are made in the expense quotas, although, naturally, care is taken to ensure that such a reduction in expense does not imply a corresponding reduction in receipts. If practicable, steps are agreed upon to increase sales and any other necessary adjustments are made, the essential interdependence of all activities always being borne in mind.

Finally, an overall budget is established which represents an optimum programme for the period under review, and all that is left is to investigate the possibility of financing the programme out of the resources of the business.

The Financial Aspect.

Hitherto, all the estimates have been considered as book entries. The next step is to analyse every item in the budget from the viewpoint of what cash outlay or income is involved and when the money is likely to be received. This involves the interpretation of the sales and production estimates in terms of billings to customers and then in terms of collection of accounts. Cash outgo for rent, pay-rolls, and materials is offset against these receipts, and after allowing for all other sources of cash income or expenditure, net figures are struck for the cash income and cash outgo for each month or week of the budget period. When these figures are considered in conjunction with the opening cash balance it will be immediately apparent whether additional cash will be required at any particular period or whether any surplus funds will become available for investment. The company can then plan to meet these conditions, or, if necessary, adjust the programme of operations if it cannot be financed. The reader will appreciate, however, that the problem of securing a temporary advance of additional working

capital is facilitated if one can approach one's banker with a complete plan of activities, showing that the normal requirements of a profitable business logically imply a need for additional financing at a specific period so many months ahead. It represents a distinctly different question from suddenly discovering an embarrassing shortage of funds involving the necessity for an immediate advance.

The financial analysis of the budget can be carried still further, and a summarized profit and loss account prepared showing the company's probable position at the end of each month in the budget period. This aspect of budgeting can perhaps be left out of the discussion at the present stage, as the time and trouble involved often mean that it is only practicable in a large business unit, but the advantages of such a statement will be at once apparent.

Putting the Budget into Operation.

It will be appreciated that the mere establishment of plans and policies for the future, however well designed they may be to secure maximum profits, is of no practical value unless efficient arrangements are made for putting them into operation and ensuring that the estimates are maintained. When the estimates made by the various divisions and responsible officials have been adjusted, where necessary, along the lines already indicated, the next step is for the budget officer to advise the individuals concerned of these changes, and to provide them with what is, in effect, a programme of the activities for the period under review. The operating officials must then make their own arrangements for putting these programmes into effect. So far as the sales manager is concerned, this will involve the establishment of quotas of orders and expenses for his individual salesmen. The production executive will set up the implied output schedules and stock control limits, and the "expense" divisions will allocate their quotas of expenses over their activities. But the management cannot rest content at this stage and wait

for profits to accumulate in accordance with budget estimate. There are two factors likely to disturb the plans: one, the possibility of unforeseen external conditions having a disturbing effect on the company's results, and the other, the possibility of failure on the part of certain sections of the organization to meet the objectives set up for the period. It is very important that any developments in these directions should be detected as early as possible, and, with this object in view, arrangements are made for the regular preparation of reports showing actual progress against budget estimate.

These reports must be used by the budget committee as the basis of any special plans designed to adjust deficiencies in the receipt of orders, or failure to meet expense quotas. If the nature of the special developments is such that the basis of the budget is materially affected, the entire estimate must be revised to take into account the changed conditions. It cannot be too strongly stressed that it is unwise in the extreme to continue operations on the basis of a budget that has been rendered impossible of achievement. That way lies failure, with the ultimate discarding of the whole budget system.

A budget is of value only so long as it represents a programme that is possible of achievement, and, particularly in the case of a company that is new to the budget idea, frequent revision of the estimates should be the rule rather than the exception. For this reason, it is advisable not to endeavour to forecast too far ahead at first. As experience is gained, budget periods can with profit be extended, but it is always preferable to err on the side of too frequent revision and too short a period than on the other.

Summary.

In summary, the budget involves the statement of plans, the co-ordination of these plans into well-balanced programmes, and the constant watching of actual operations

to ensure that they are kept in line with the predetermined plans. The budget estimate can be used as the basis of production-planning systems. Factories can be laid out to best advantage to deal with the impending volume of business. Stock-control systems can be co-ordinated with output rates to ensure economic inventory levels. Arrangements can be made in advance for any additional financing, the need for which will be shown by the budget figures, or, on the other hand, plans can be made for the investment of any prospective surplus funds. In this way, limits are set on expenditure, standards of performance are established, and forward thinking is made an essential part of business management.

The budget is not a panacea for all industrial ills. It is an aid to management, not a substitute for ability, and its practical success depends in a large measure on the development of the spirit of co-operation and on the care and good judgment exercised in making the estimates. For this reason, it is not wise to expect too much from the budget system in the first year of operation. As skill and experience are gained in the technique involved, however, extremely valuable benefits are realized in the direction of reduced costs and lower expenses, reductions of 10 per cent and more being by no means uncommon.

But, although the direct benefits of the adoption of budget control may not at first be very great, indirect benefits are realized from the outset in the discovery of weaknesses in the existing system, and through the advantages of the budget in facilitating clear thinking and intelligent action in management. In fact, it has been suggested by an authority that, by compelling a company to learn more about its own business, even if it did nothing more, the budget system would pay for itself. This view is confirmed by the experience of several British firms which have successfully adopted the budget control system.

CHAPTER II

THE SALES ESTIMATE

FACTORS affecting future sales—Study of past results—Long-period growth—Seasonality—Determination of seasonality—Disadvantages of seasonality—Reducing seasonality—A practical solution—Cyclical conditions—Smoothing past results—Relationship with general business—Market conditions—Demand factors—Plans and policies

THE practical success of any budget system has been found to depend in a large measure upon the accuracy with which future sales can be forecasted. The sales estimate is the first estimate to be made in the introduction of budget control, and it is the foundation for the purchasing and production budgets. It is a guide to plant-extension requirements, and, as the prime source of cash receipts and net profits, it must be the basis for any plans for financing the business.

The whole of the activities of any concern, whether it be a manufacturing company, a wholesale store, or a retail shop, must depend on anticipated sales. A knowledge of sales prospects is an essential preliminary to any efforts towards securing co-ordination in the activities of a business.

This emphasis on the importance of the sales estimate must not, however, be taken to imply that the sales division should determine the policy of the business. It has already been stressed that the final sales programme must represent the result of consideration of all the plans and policies of the undertaking. Care must be taken not to ignore this essential interdependence of activities, although, for the sake of convenience, in the subsequent discussion on the preparation of budget estimates and the methods by which they are used, the various estimates are considered separately.

The importance of the sales estimate means that every

possible care must be taken to ensure that the figures are as accurate as possible. In the early days of the application of budget control to business there was a tendency towards the estimation of future sales on the basis of a 10 per cent or similar fixed increase on the previous year's figures. The establishment of a sales forecast on any such arbitrary basis is unwise in the extreme. It implies that no consideration is taken of market conditions, of the trends of results, or of contemplated changes in basic policies.

The value of all the estimates in the operating, expense, and financial budgets is entirely dependent on the care and consideration given to the estimate of future sales, and if this estimate is a guess rather than a logical estimate, the practical value of the budget system may be entirely lost.

Factors Affecting Future Sales.

The estimation of future sales is no simple task. There is, moreover, no standard method of procedure. Different businesses demand different methods. But, in every case, the estimate must be based fundamentally on a study of past experience modified by trade conditions and future plans.

It has been proved in practice that the most reliable method of forecasting future sales is for a theoretical study to be made along these lines, and the resulting figures adjusted in the light of the experienced opinion of those individuals in the company who are most intimately in touch with the market. This sales forecasting technique will be developed in considerable detail, and indications will be given to show how the basic principles can be adapted to the individual needs of various types of industries. Incidentally, it should be appreciated that in the subsequent discussion the term "sales" is used to represent orders received. In some companies goods are not considered as "sold" until they have been shipped or until

billing has been made to the customers. From the viewpoint of the practical adoption of the budget control system it is immaterial whether the basis of the sales is orders, shipments, or billings, provided due allowance is made for any difference in classification in applying the principles developed here. The conversion of estimates of orders to be received to a shipments and billings basis is a comparatively simple matter. The main point is that all concerned in handling the estimates should have a clear idea as to what the figures represent.

The only logical approach to the problem of forecasting future sales is through an understanding of the factors that affect sales results. This involves—

(a) An analysis of past results to determine the basic trend of the business and its seasonal and cyclical peculiarities.

(b) An analysis of the company's potential market to serve as a check on the sales analysis and to indicate to what extent potential demand has been satisfied.

(c) An investigation into general trade conditions to establish how far the results of the company depend on the activity of industry in general.

(d) A knowledge of the effect of changes in the general policies of the business, such as the introduction of new lines and changes in prices.

The idea is to establish a measure of the effect of these factors in the past and then estimate the balanced total of their probable influence in the future. In some industries, such an investigation is a complete guide to the establishment of the sales forecast. In other cases, it results in the preparation of basic figures which must be adjusted to take account of special factors likely to influence results, such, for instance, as individually large special contracts. But, in every case, it must represent the first step towards the preparation of the sales estimate. And, quite apart from the budgetary objects of such an investigation, it will, in many instances, bring to light

certain essential features of the business previously un-guessed at by the management.

Study of Past Results.

The prime object of a study of past results in connection with the introduction of budget control is to discover the essential features of the business that result in variations in the volume of business done in individual years.

If the records of orders received over a period of years by any particular company are charted, it will invariably be found that the results are distinctly irregular. They seem to fluctuate from year to year and from month to month with no apparent rhyme or reason. And yet, by careful analysis, these irregularities can be proved to be the result of certain distinct types of variation. First, there is the long-period growth of the business; secondly, there may be a well-defined seasonal movement, and, thirdly, there is a definite wave-like movement or cyclical characteristic. In addition, there may be occasional exceptional movements that cannot be related to any of these three features.

The long-period growth of a business is of considerable importance in any attempts at weighing up future prospects. If the results for a period of years are examined it will be found that, apart from seasonal and cyclical movements, there is a general trend of increase (or decrease) which is the result of a number of steadily acting factors, such as growth of population, expansion of markets, and improvements in the standard of living. Business does not stand still. It is always basically improving or declining, and the first step in estimating future demand is to establish a normal-growth line for the company in question.

A realization of what constitutes normal progress is the basis for evaluating all other factors likely to have a bearing on progress. It provides, in short, a measure of

what would be achieved if conditions were perfectly normal with no disturbances due to the effect of the business cycle or other features.

Long-Period Growth.

In the accompanying illustration, Fig. 1, showing the results of the past twelve years for a hypothetical firm, the secular trend or long-period growth line of the business is charted and extended to show the normal future development of the business.

There are two available methods for plotting this trend line. The simpler of the two is to draw the line by eye so that it represents the average line of development. It is frequently quite possible to obtain in this way a line that is, to all practical intents and purposes, a reliable indication of future growth. Alternatively, however, the position of the line can be established by a statistical study.

The principle behind the statistical establishment of straight-line trend is that the line should be such that the sum of the squares of the differences between individual actual results and the corresponding points on the line of trend is a minimum. This line always passes through the average of the items which the curve represents. It is not practicable to discuss in this volume the detail of the statistical methods involved in the determination of straight-line trend, but the reader who desires a simple explanation of these principles can be referred to *Elements of Business Statistics*, by R. Riegel, or any similar textbook on statistical methods.

In passing, it should be appreciated that the long-period trend of a business is not always of straight-line order. Particularly in the case of a business where the market is approaching a saturation point, the trend of the business may be towards a decreasing annual rate of increase. The existence of such a condition will be apparent, however, from a study of past results, and, if necessary, a simple curve can be fitted by eye or by statistical analysis

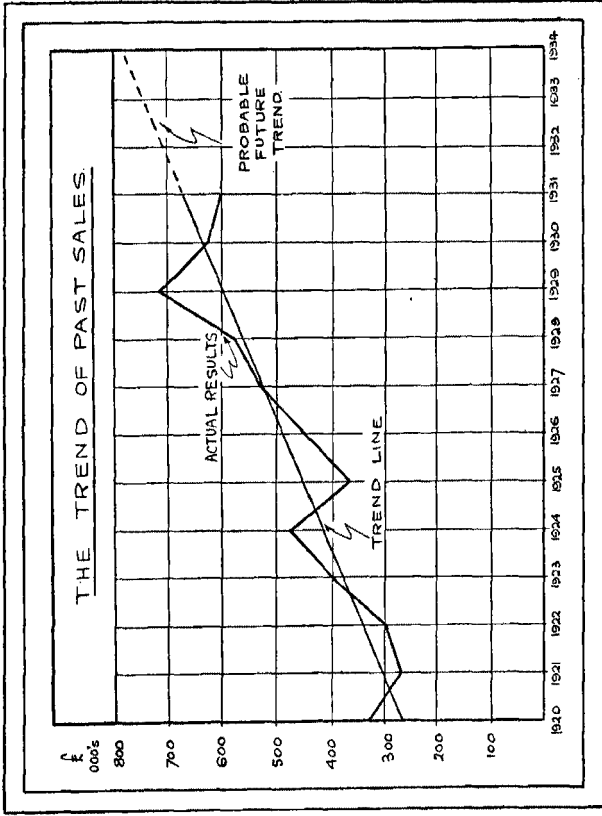


FIG. I

to represent the true picture of basic trend. Usually, the straight line is the proper representation of long-term growth, and a decision to adopt a curve as representing secular trend should only be made after careful consideration has been given to the question of the saturation point of the market.

Some authorities argue that saturation point is never reached because new developments continually expand the potential scope of the market. This aspect will be taken up again later. For the moment, it should be appreciated that even if a market has reached saturation point, there will usually be a definite quantity of replacement business each year, covering articles that have worn out or that are obsolete or out of style. If the business has previously been developing on an expanding scale it is quite logical that this replacement business will increase from year to year.

At this stage, it may be advisable to ensure that there is no misunderstanding as to what is implied by the line of normal growth. This trend line, as illustrated in Fig. 1, shows the basic tendency of the business to increase (or decrease) at a steady rate, and, unless saturation point is imminent, it can be implied that this line can be extended to represent the future growth of the business. A reference to the illustration will, however, indicate that the individual results have shown considerable fluctuation from the trend line. The next step, therefore, is to establish the causes of these fluctuations.

Seasonality.

✓ In some businesses, quite apart from normal growth, there are decided irregularities in the individual monthly results in particular years. ✓ In the wireless retail business, for instance, the winter months always bring better sales than the summer. Conversely, in the motor industry, the spring and summer months represent the period of peak demand.

Similar conditions are encountered in the case of consumable goods. Ice cream is, perhaps, the best example, where, in spite of all efforts to increase winter sales, sales inevitably fall off sharply as the cold weather sets in.

The causes of such seasonal conditions of demand are many. Weather and climatic conditions, holiday periods and trade customs, all have an influence on buying habits, and tend to give irregular results from month to month, quite apart from the peculiarities of the calendar which result in the length of individual months varying from 22 to 25 working days.

The results of these factors are seen in seasonal characteristics in import figures—particularly raw materials—in prices, in unemployment and in bank clearings. The make-up of modern industry is such that any peculiarities in the demand for the products of one industry may have a direct bearing on the results of many other industries. The slack period for manufacturers of motor-cars, for instance, implies a reduced demand for steel; the reduction in the steel manufacturer's sales implies a reduction in his demand for pig iron, and in the pig-iron plant's demand for coal, and so on. Any detailed investigation of the fundamental causes of seasonal demand in individual industries is beyond the scope of this work. The point at issue is the problems in business administration involved by these seasonal tendencies.

Determination of Seasonality.

It will be appreciated that the seasonal nature of a business has a very important bearing on the problem of co-ordinating production and sales, and also on the question of financing the business. Where the seasonal fluctuations are marked and logical, it is, therefore, desirable to establish a measure of the extent to which individual monthly orders may be expected to fall above or below the average for the year. Here, again, there are two avenues of approach, one a comparatively simple

method by which a working approximation can be obtained, and the other involving detailed statistical analysis for the exact computation of seasonal variation.

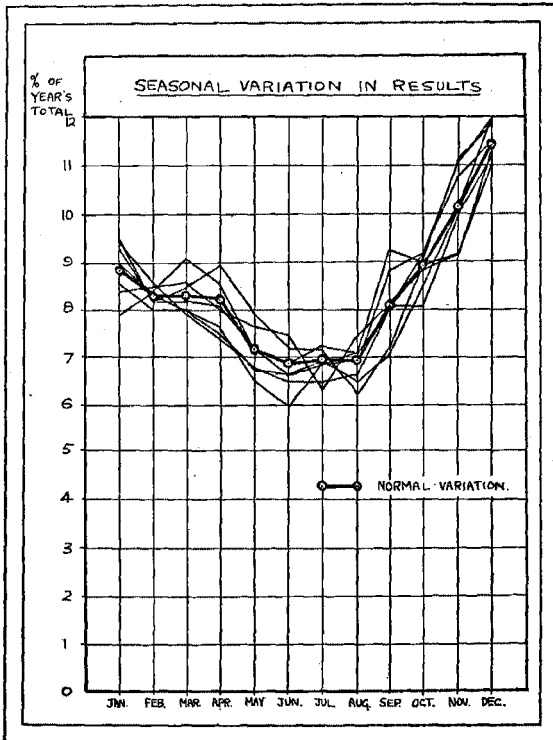


FIG. 2

The more simple method of estimating seasonal variation will be found suitable for most purposes. The procedure is to take the results for several years and calculate the individual monthly figures each year on the basis of

percentages of the year's total. These yearly results for each month should then be charted one on top of the other on a sheet of graph paper, and a curve drawn through the mass of lines to represent the average of the monthly variations. In this connection, any obviously distorted results should be omitted from consideration, and the monthly averages should be adjusted in order to be sure that they add up to 100 per cent.

For the sake of illustration, we will assume that in a hypothetical case this results in a picture similar to that shown in Fig. 2. It will be noticed that the individual figures fluctuate considerably from the average. If these variations are considered in the light of the figures adopted as representative of normal conditions, a good measure will be obtained of the reliability of any conclusions drawn from the figures. Such a comparison is made in the following table—

Month	Average Percentages	Range of Variations
January	8.8	7.9 - 9.5
February	8.3	8.0 - 8.6
March	8.3	7.9 - 9.1
April	8.2	7.4 - 8.9
May	7.2	6.5 - 7.9
June	6.8	6.0 - 7.5
July	6.9	6.3 - 7.3
August	6.9	6.2 - 7.5
September	8.1	7.1 - 9.3
October	8.9	8.1 - 9.2
November	10.2	9.2 - 11.2
December	11.4	11.0 - 12.0
TOTAL	100.0	

The practical purpose of these figures is to enable the estimated orders for some future period to be divided by months. It must be admitted that if the figure is divided in this way, 8.1 per cent of the year's business is allocated to September, while actual results have

shown that the proportion might, in fact, fall between 7.1 per cent and 9.3 per cent. The division of sales on this basis, however, gives a more reliable picture than the mere division of the estimated yearly results into twelve parts. It is, for instance, obvious that the results for May, June, July, and August are always below the average, while those for November and December are consistently high. This may be a very significant feature in planning future results and, in spite of the factor of unreliability (in this particular case) implied by the range of variations, the suggested policy is distinctly preferable to the only available alternatives, i.e. guessing at the monthly figures or ignoring seasonality completely.

The alternative method of estimating normal seasonal variation by statistical methods is beyond the scope of this book by virtue of its complexity. The reader who is interested in this aspect of the problem will find a comparatively simple explanation in the standard textbooks on business statistics, and an interesting memorandum on the subject of seasonal variations in finance, prices, and industry was published by the London and Cambridge Economic Service in 1924. Sufficiently reliable figures can be established by the graphic methods outlined above.

Disadvantages of Seasonality.

A suggestion has already been made that the introduction of budget control offers considerable indirect advantages by compelling a company to learn more about its own business. The investigation of seasonal variation is a good example of this point. It will be obvious that the existence of conditions of marked seasonality implies that for a certain portion of the year the staff of the company are exceptionally busy, while for the remainder of the year they may be comparatively idle. It may not be practicable to endeavour to boost up sales in the slack period to the equivalent of the peak figure. At the height of the season the staff may be working at a pace that

they could not be expected to keep up indefinitely. But the fact remains that there are certain fixed charges in any business—rent, rates, and staff wages, for example—that have to be met each month irrespective of the volume of business done. It is quite a common situation in a seasonal business for an actual loss to be incurred on operations in the slack period, and the results of the business would obviously benefit considerably from any plans designed to increase sales in the slack period to enable a net profit to be earned on operations every month.

This problem is even more acute in the case of a manufacturer producing for a highly seasonal market. Quite apart from the feature mentioned above, in this case there is the added disadvantage of an uneven load on the manufacturing plant. Experience teaches that the only avenue to basic minimum costs is through stable rates of output. If a company is obliged to squeeze, say, 75 per cent of its output into 25 per cent of the year, its costs must obviously be high, as a result of the necessity for production at overtime rates, and as a result of the capital charges on a larger amount of plant than would be required to give the desired output if it were spread evenly over the year. The situation also involves a disadvantage to the community in general implied by the irregular employment.

In some seasonal industries it is an economic policy to produce goods on the basis of a regular output with the idea of building up stocks in the slack period to meet sales in the busy period. This policy is discussed in more detail in a subsequent chapter. It will, however, be appreciated that the extent to which this policy can be followed is governed by the ability to finance the stock investment involved, as well as by the nature of the goods in question. A preferable policy is to find some means of increasing sales in the slack period, not necessarily to the peak figure, but to somewhere nearer the average for the year.

Reducing Seasonality.

The methods for reducing seasonality fall conveniently under three headings—

1. Attempts at changing buying habits to induce out-of-season sales.
2. Other methods for stimulating sales in slack periods.
3. Finding new uses for existing products.

Judicious advertising campaigns can do a great deal towards changing buying habits, even when these are closely related to climatic conditions. The efforts of the soda-fountain industry to increase winter sales, for instance, although not giving steady all-the-year-round sales, have done a great deal towards levelling demand, while radio manufacturers have secured a much better balance in the demand for their products through the development of portable receivers and by emphasis on the outdoor advantages of wireless reception.

Price reductions and credit concessions have also proved of considerable assistance in seasonal industries in inducing retailers to place orders and accept deliveries well in advance of the season, particularly where pains are taken to stress the advantages of having supplies on hand at the opening of the season. Valuable results have also been realized from efforts to persuade retailers to spread deliveries over as long a period as possible. In another direction, manufacturers faced with an inflexible seasonal demand have secured a better balance in their affairs by developing markets in the southern hemisphere, where, of course, seasonal conditions are complementary to those here.

A Practical Solution.

The most common method of combating seasonal irregularities has been found in this principle of complementary seasonality, applied particularly to the introduction of new lines with a different seasonal demand, and to the development of new uses for existing products. Many

examples of this type of policy can be cited. The Italian ice-cream vendor who turns over to chestnuts with the fall of the leaves is the classic instance, but among other examples may be mentioned the rubber-goods manufacturer with his summer sales of sports goods and motor tyres, and his winter sales of raincoats and rubber shoes; and the electrical manufacturer concentrating on radiators, lamps, and radio sets in the winter and on cookers, vacuum cleaners, refrigerators, and fans in the summer and spring-cleaning months.

The essential feature of this diversification of product is that the new lines should be such that a similar type of machinery and labour is involved, so that surplus help can be diverted from one class of output to the other as seasonal conditions of demand may require.

The advantages of any such policies directed towards reducing seasonality will be at once apparent. Naturally, the probable effect of such schemes must be reflected in the indices of seasonality which are to be used for the various lines in allocating budget sales by months.

A knowledge of the seasonal nature of an industry as reflected by past records is also of importance in following up progress against the budget estimates. If the nature of the business is such, for instance, that the four months of May, June, July, and August normally account for only 27·2 per cent of the total year's business, it would obviously be misleading to frame any conclusions on a comparison of actual results in those months with a quota representing $33\frac{1}{3}$ per cent of the budget for the year.

In summary, therefore, an index of seasonality must be calculated from past results for the business as a whole (or for individual lines in some cases)—

1. To serve as a basis for allocating the budget by months to secure a proper co-ordination of sales, production, and finance.

2. To indicate desirable changes in policy aimed at more regular conditions.

3. To provide a true basis for measuring actual progress towards the budgeted goal.

Cyclical Conditions.

The final step in the statistical analysis of past results is to define the cyclical nature of the business, with particular reference to the general business cycle. So far, methods have been developed for calculating the long-period trend and seasonal variations of the business. It now remains to separate these two components from the figures and analyse the resultant picture. There are exact statistical methods by which this object can be achieved. The reader who is interested in this aspect of the problem may be referred to Mr. W. Wallace's book on *Business Forecasting* or to the standard textbook on statistical methods already mentioned. For the layman, however, this same object can be achieved by rough and ready methods as follows.

First, the individual figures for each year should be corrected for seasonal variation by adjusting each monthly figure by the amount by which it normally exceeds or falls short of the average of $8\frac{1}{3}$ per cent of the year's total. That is to say, if the actual sales in a particular year were £100,000 and the seasonal variation study indicates that June represents normally 6.8 per cent of the year's total and December 11.4 per cent of the year's total, then £1,500 (1.5 per cent of £100,000) should be added to the June figure to make up for the normal amount by which this month falls short of the average, and, £3,100 (3.1 per cent of £100,000) should be deducted from the December figure. These adjusted figures should then be expressed as percentages of the corresponding figures on the trend line and charted on a graph similar to Fig. 3.

Smoothing Past Results.

If there is no clearly-defined seasonal variation, or if the monthly results are very irregular, it may be advisable

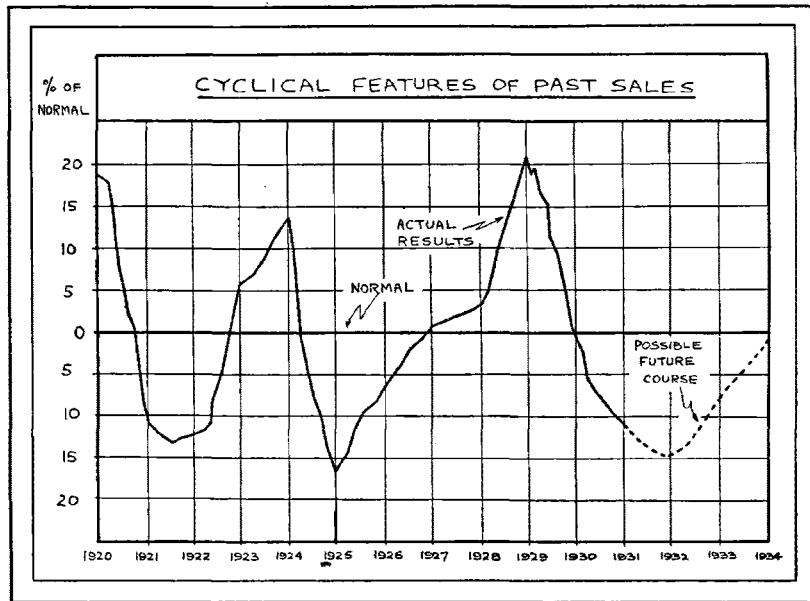


FIG. 3

to smooth the figures before attempting to analyse the cyclical conditions. This object can be achieved by taking a twelve-months moving total of the results. The twelve-months moving total for January would be the total of the results for the preceding twelve months from February to January; similarly, the figure for June would be the total from the preceding July, and so on. This process does not in any way affect the conclusions to be drawn from the figures, but it is of great value in smoothing out irregularities and thus enabling the basic facts to be appreciated more clearly.

It will be apparent that a state of affairs such as that represented in Fig. 3 has considerable significance in any attempt at forecasting future results. The nature of the business is such that the cyclical characteristic is a definite feature of the results, and the downward sweep of the curve must obviously be reflected in a tendency towards lower sales figures until the upward turn of the curve brings a revival.

Relationship with General Business.

The problem, however, cannot be satisfactorily tackled in any such arbitrary fashion as the progression of the curve on the basis of its present direction. It is very important to secure a reliable idea of when the major turns in the curve will come into effect. The cyclical nature of a business is, of course, a reflection of the results of the general cycle of business activity, and the successful forecasting of future results implies an appreciation of the probable future course of general business, coupled with an understanding of the relationship between the results of the company and the activity of industry in general.

The method of approach to this problem is to find a curve of general business showing a substantial similarity of movement to the results of the individual company. Ideally, this general business curve should be such that

its general movements precede those of the company's sales.

It is impossible, however, to be dogmatic on this point. The choice of the particular index of general activity must depend on the nature of the particular company. A firm manufacturing agricultural implements, for instance, would turn its attention to indices of stock prices and crop conditions; an electrical trading firm would be more interested in units of electricity sold and consumers added; a firm of "heavy" engineers would investigate such indices of basic business conditions as exports of manufactured goods, wholesale prices, and pig iron and steel output. The essential principle is that the results of an individual business are dependent on certain external factors, general business conditions or the prosperity of the industries to which it sells, and that any forecast of the future must be coloured by the outlook in these directions.

It is immaterial whether the business firm itself forecasts the probable future course of this general index or relies on outside guidance. The great point is that this feature should not be overlooked. In this connection, the regular forecasts of future business conditions issued by such bodies as the Federation of British Industries, the London and Cambridge Economic Service, and various trade associations, should be of considerable value to the business man who cannot afford the expense of private investigation. If the reader is interested in this line of thought, he would find much of interest in the books already mentioned. Incidentally, the question of business cycles introduces the problem of planning operations with an eye to these basic disturbances in business activity. A carefully adjusted technique is needed to enable the vicissitudes of business depression to be negotiated successfully. This aspect of the budget problem, however, may be deferred for later consideration (Chapter VIII).

Market Conditions.

In some industries, the nature of the business is such that a very reliable picture of future sales prospects can be obtained from the progression of trend and cyclical tendencies on the basis of the general business outlook. This is often the case where the unit of sales is small or where the company is handling a standard product with a very wide appeal. It is usually advisable, however, to check the results of such a theoretical investigation against the opinion of the company's salesmen and representatives in direct contact with the market. To this end, these outside men should be requested to provide an estimate of probable sales for the period under review, and if there is any appreciable difference between the aggregates of the two estimates, careful investigation should be put in hand to determine the reasons for the difference and to indicate which is likely to be the more reliable figure.

The principles of market research also offer considerable assistance to business men seeking an estimate of future demand.

Market research aims at providing a statistical measure of the potential market for a particular commodity, and thus involves an investigation into all factors affecting demand. The essence of the problem does not lie in the mere collection of statistics of population, wealth, standards of living, trade and production for the area under review. Such figures can usually be obtained with little trouble from official publications or similar sources. The true art of market research lies in the interpretation of the significance of this information as governed by the nature of the article under consideration.

Demand Factors.

The first problem in market research is to establish the nature of the article or commodity in question in so far as its peculiarities have a bearing on potential demand. Is it in the consumable or "capital" class of goods? Is

it a luxury or a necessity? Is it a novelty or a standard article in everyday use? Is it limited by price or appeal to a definite class or a particular trade or group of trades? Is it an entirely new line or a modification of or substitute for some similar article already on the market? If it is not a new article, what is the present degree of saturation of the market? Is it likely to offend against any old-established customs and thus introduce an otherwise unsuspected customer-resistance? Is the demand likely to be of a recurring nature, that is to say, is the article of a durable nature or likely to wear out quickly, and are the changes in style likely to have an influence?

An analysis of market data with these points in mind should lead to a reliable picture of the potential demand for the article in question. The next step is to ascertain what proportion of this available business could be secured at the existing selling price. This involves a consideration of competition and product-appeal.

The intensity of competition must be measured in terms of competitive brands on the market, sales of each, differences in price and differences in quality. In particular, there must also be an understanding of the real value of the competitive points of the article in question. Is it to be sold on a quality or price basis? How does it compare for convenience, cleanliness, appearance, simplicity, etc.? Does it offer any economy in use to the consumer? All these factors must be considered and their significance expressed in terms of probable sales for the period under review.

Another object of market research is to indicate the extent of the demand for each of the company's products in individual districts and trading areas. This knowledge often provides a key to considerable economy through concentrating on profitable areas and profitable products, thus eliminating waste in distribution. One successful American company is, in fact, making more money now selling only six lines than it was a few years ago when

the sales catalogue included over 2,000 items. Similarly, another company found on investigation that roughly 90 per cent of its sales were made to 10 per cent of its customers, and a considerable improvement in results was obtained by concentrating on these profitable customers to the exclusion of all others.

Market research investigations along these lines provide a valuable check on the accuracy of sales forecasts made by the other methods so far discussed. The principles are also of considerable practical value in forecasting demand for industries where the unit of sale is large. A firm selling electrical power plant, for instance, would establish a figure for the probable total market in each separate country, on the basis of a consideration of import and production statistics and the development of consumption of current compared with the capacity of the equipment in service. The results achieved in the past would be of assistance in this connection to indicate what percentage of the total business placed in any particular country would be secured by the individual company.

Plans and Policies.

So far, methods have been outlined for the preparation of a forecast of future sales on the basis of a consideration of past results, market conditions, and similar external factors. Before this estimate is submitted to the consideration of all the affected departments for the establishment of the final programme for the year, however, it is necessary to take into account any contemplated changes in the major plans and policies of the company that may have any bearing on the problem. In particular, consideration must be given to any proposals for the introduction of new lines or for dropping existing lines; changes in prices or in trade discounts; increases in advertising expenditures; increases in the sales staff; changes in methods of distribution and similar developments.

When these adjustments have been made, the preliminary estimate can then be considered from the viewpoint of whether it represents the best possible, most profitable, and practicable programme for the period under review.

CHAPTER III

THE SALES BUDGET

ADJUSTING the estimate—Fixing selling prices—Cost reductions and prices—The nature of costs—The “price-volume” study—Some practical points—A practical “price-volume” study—Big business and profits—Price cutting in the special order industry—Differential costs—Volume and costs—Orders and shop output—The manufacturing load—Under-capacity production—An even manufacturing load—Summary—Operating on a budget basis

IN the previous chapter, a technique was developed for the preparation of a sales estimate from a consideration of the trends and tendencies of the company's results, modified by market conditions, and to take into account the major plans and policies of the business. It must not be thought, however, that this forecast represents the sales budget. A budget is not a mere forecast of the future, but rather a consideration of the future expressed in terms of plans and policies for the period. It is, in short, a programme for the activities of a particular section based on a co-ordinated and profitable programme for the business as a whole.

Adjusting the Estimate.

After the preparation of the preliminary estimate as already outlined, therefore, the next step is to consider to what extent and in what directions it is desirable to influence future sales results. This is the essential difference between budget control and sales forecasting.

It will be appreciated that any figures established as the result of an investigation into the future do not represent that which must inevitably happen, but rather a picture of what may happen if present and prospective conditions hold good. So far as the sales estimate is concerned, the point is that, if desirable, the company can influence the course of its future sales results as indicated

by the forecast. Certain individual lines can, if necessary, be dropped from the programme, or sales can be increased on other lines by extra advertising and increased sales effort or by reductions in prices. The decisions on this aspect of the problem cannot be left to the sales manager's discretion. The sales budget must represent the opinions of all the departments in the business. In particular, the sales estimate must be considered and adjusted if necessary from the following aspects—

- (a) Profit-earning capacity of the various lines.
- (b) Production or purchasing capacity of the business.
- (c) Selling and administration expense involved by the various lines.
- (d) Financial requirements.

The prime object of sales is to earn net profits, so that the first consideration of the preliminary sales estimate must be made from the profit aspect. The object of this investigation is to determine whether or not the preliminary estimate represents the most profitable programme for the period, and, if not, on what lines sales should be increased and how.

The advantages of such a consideration will be at once apparent. It may be, for instance, that in the preliminary estimate undue emphasis is laid on lines bearing a low margin of profit. (Action would then become necessary towards securing a better balance. An even more important point is the question of establishing selling prices for the period on the most profitable basis.) This applies particularly to companies selling a standardized range of products where it is desirable to fix selling prices in advance for the duration of the season.

Fixing Selling Prices.

Experience indicates that the average business man usually has the idea that selling prices are governed by cost of production. He is accustomed to think of a selling price as representing shop cost, plus overhead

charges, plus a certain fixed margin of profit. In actual fact, however, this view is unsound. True, a manufacturer expects to obtain a certain margin over his cost of production, and he produces his goods with that object in view. The price he actually gets for them, however, is determined entirely by the market conditions and the balance between supply and demand. If the general condition of the market is such that the demand for the particular goods exceeds the supply, he can, and probably will, get more than cost plus standard profit. On the other hand, if the market is overstocked, he will probably have to content himself with less. He may hold his price at the preconceived figure in spite of these market conditions, but if he does so, his volume of business will suffer accordingly.

It is surprising how many concerns ignore this simple economic fact in pricing their goods. Many a sales manager fixes a selling price for a particular article on the basis of commercial cost, plus, say, 25 per cent profit, and, in spite of any changes in market conditions, holds his price at that level until he is forced to reduce the figure because of the steady decline in business. In other words, he attempts to defy market conditions.

Cost Reductions and Prices.

Apart from this question of adjusting prices to market conditions, there is the problem of whether or not to give the consumer the advantage of reduced costs arising from improvements in manufacturing methods or resulting from the adoption of mass production. One might expect that the manufacturer who fixes his prices arbitrarily on the basis of cost plus profit would automatically pass on to his customer the benefits of reduced costs. Yet, in actual fact, this type of manufacturer usually endeavours to keep his prices at the previous level in spite of the economies.

The enlightened manufacturer appreciates that this

policy is bad business. Mr. Henry Ford, for instance, works on the basis that the right sales price is always the lowest price at which the article can be produced, and he contends that the manufacturer's duty, both to himself and to the public, is constantly to lower prices. There can be few who would contend that in Mr. Ford's case this policy has not proved successful, and, in fact, many other manufacturers have proved that in the long run this is the best policy to pursue.

But although we admit that, as a general rule, the manufacturer should pass on reductions in cost in the form of reduced selling prices, we do not thus obtain a price-fixing procedure. For, although he must constantly aim at lower prices, the manufacturer cannot fix his prices on cost of production without considering market conditions. The reason for this is that cost of production is not so stable an item as would appear at first glance. Unit cost of production depends entirely on the output of the factory. The cost of unit production is lower when a factory is running at full load than when it is only running to, say, 50 per cent capacity. This fact arises from the existence of fixed overhead charges.

The Nature of Costs.

The total cost of production is made up of prime costs and supplementary costs. The former are charges which vary directly as the output, such as wages, raw materials, fuel, lighting, and power. These costs are represented directly in the commodity produced and every increase in the quantity of output generally involves a corresponding increase in total prime costs. On the other hand, supplementary costs represent establishment charges incurred in connection with fixed capital, which do not vary appreciably with changes in output. The rent of the factory, management salaries, depreciation, and similar charges, generally speaking, continue to be incurred whether the factory is working or not, and appreciably

the same amount must be charged to production whether the factory is slack or busy.

Let us assume, for example, that with a normal manufacturing load representing, say, 80 per cent activity, the prime cost of factory output is £800,000, and that indirect supplementary costs amount to £100,000, representing a loading of $12\frac{1}{2}$ per cent. If business is good and orders are received in sufficient volume to keep the factory working to full capacity, the prime cost of the output might increase to £1,000,000 while supplementary costs remain unchanged at £100,000, or 10 per cent loading. If, on the other hand, very little work was available and the factory were operating at 50 per cent load, the prime cost of output would be, say, £500,000 with supplementary costs only slightly lower than £100,000 or 20 per cent loading.

In the case of a manufacturer basing his selling prices on prime cost plus supplementary costs, we should obtain the following conditions under the three sets of circumstances. When the shop was working at normal activity, sales prices would be based on a commercial cost representing shop cost plus $12\frac{1}{2}$ per cent loading. With the shop working at full capacity, selling prices would be based on shop cost plus 10 per cent loading, and with the shop working at only 50 per cent capacity, prices would be based on shop cost plus 20 per cent loading. In other words, when business was good and orders were coming in at such a rate that the plant was already working to full capacity, the manufacturer, by reducing prices, would be encouraging still more business. While, on the other hand, when the factory was slack and orders were difficult to get, he would be charging higher prices for his goods and thus limiting his chances of obtaining a fair share of the reduced volume of business.

The "Price-Volume" Study.

If, then, the manufacturer is unwise to base his prices on cost of production, by what method is he to determine

them? Several firms have found the answer to this problem by making what is known as a "price-volume" study for each product as part of the consideration of the sales estimate, and this practice can be recommended as a practical and reasonable solution to the question.

The foundation of this "price-volume" study is the fact that price and demand have a direct relationship. An increase in price will usually result in a decrease in demand. The exact amount of change brought about will depend on the nature of the article. As a general rule, demand for the necessities of life is inelastic and price changes have only a small effect on demand, while demand for luxuries is elastic and price changes have a considerable effect on demand. For instance, a reduction of 50 per cent in the price of bread would not lead to a heavy increase in the amount consumed, but a 50 per cent decrease in the price of, say, vacuum sweepers would give a considerable impetus to demand.

The object of the "price-volume" study is to attempt to forecast the elasticity of demand for each of the main products of the company so as to determine the optimum price to adopt. The foundation of the study is an estimate of the sales that may be anticipated at various prices, bearing in mind competitors' prices. The volume of sales at each price is then converted to figures of value and against these figures is set the cost of producing that volume of sales. In this way, the company is able to fix the optimum price for each product at a figure to yield the largest net income. It may be that one article is sold considerably below cost, while another is sold at a rather high profit, but, overall, the combination of prices is such that the maximum net income is received.

Some Practical Points.

In certain cases, it may be found that the optimum price indicated by the "price-volume" study is very high compared with cost, and it would seem that the rule of

low prices established above is contradicted by such a study. Such a condition, however, arises out of exceptional circumstances, usually from the fact that the company has a monopoly of the supply of the article. The management should seriously consider its position in regard to such an item. While the peculiar circumstances remain in force, the price can probably be kept at this high level. But in the long run, the play of competition will convert these circumstances to normal, and before deciding to keep the price at the high figure, the management should consider what explanation it is going to offer of the heavy fall in the price it will inevitably have to make when competition enters the field.

When the "price-volume" study is put into practice, it will, perhaps, be found to be not quite so simple as it appears to be at first sight. The results achieved more than justify the time and trouble involved, and it is contended that this is the only logical and safe method to adopt in the determination of selling prices. In actual practice, the preparation of the "price-volume" study involves the listing in parallel columns, for each of the main products, the sales that may be anticipated with various modifications over and under the previously ruling prices. These quantity sales figures must then be converted to values, and against these sales values must be set the cost of producing the volume of goods implied. The actual steps in the procedure will probably be more clearly grasped from the consideration of a hypothetical case.

A Practical "Price-Volume" Study.

Assume, for example, that a company is selling an article at a price of £12 10s. (allowing for trade discounts), and that its prime cost is £8. Allowing for the probable trade conditions during the year under review, the company might expect to sell, say, 1,100 articles at the price of £12 10s. This would be the figure included in the

preliminary sales estimate, and the problem is to decide what sales could be expected at various reductions and increases on that figure. If the price was reduced to, say, £11 10s., sales would naturally be increased. It must be remembered, however, that if the company reduces its prices, its competitors will probably follow suit. Allowance must be made for such factors and a schedule prepared similar to that shown in the accompanying table (Fig. 4). It will be seen from this table that the optimum price, i.e. the price at which the balance over cost is largest, is £11, representing a reduction of £1 10s. over the original price. At this price, sales are expected to amount to 1,700 during the year.

Study No.:

Article :

Present Selling Price : £12 10s.

Cost Price : £8

Period : Year 1933

Proposed Selling Price	Expected Sales	Value of Sales	Prime Cost of Sales	Balance Over Cost
£ s.		£	£	£
12 10	1,100	13,750	8,800	4,950
12 -	1,200	14,400	9,600	4,800
11 10	1,400	16,100	11,200	4,900
11 -	1,700	18,700	13,600	5,100
10 10	2,000	21,000	16,000	5,000
10 -	2,200	22,000	17,600	4,400
13 -	1,000	13,000	8,000	5,000
13 10	800	10,800	6,400	4,400
14 -	500	7,000	4,000	3,000

FIG. 4. "PRICE-VOLUME" STUDY

Big Business and Profits.

The schedule shows quite clearly that big business does not always pay. Many firms have the mistaken notion that the higher their output, the more profitable is their

business. This is not always the case, and the advisability of increasing sales can only be decided on the basis of the price concessions needed to secure the added volume of business. In fact, it will sometimes be found that it would pay a company better to increase its selling price slightly at the expense of reducing its volume of sales. For instance, the assumed figures in the schedule show that in this particular case a larger contribution to overheads would be secured on a basis of sales of 1,000 articles at a price of £13 each, than on a basis of sales of 2,200 articles at a price of £10 each. Such facts as these can only be established from the preparation of a "price-volume" study, and the possession of this type of information is well worth the cost involved in making the study.

A point that must not be lost sight of is the possible effect on costs of increases or decreases in the volume of business. In the above analysis, the assumption has been made that the prime cost of the article remains at £8, whether the output is 800 or 2,200 a year. In actual fact, of course, this would not be the case, but the individual manufacturer should have a sufficiently good idea of his manufacturing position to be able to make the necessary allowances for this element. In a similar way, no provision has been made for any possible increases in overhead charges, but here again such changes can be forecast with reasonable accuracy, as indicated in a subsequent chapter. In certain instances, it may be found that these two factors offset one another. For instance, in the case chosen as an illustration, the increase in volume of business from 1,100 to 1,700 might involve an increase of, say, £900 overhead expenses. This would, of course, have to be offset against the surplus of £5,100 over prime cost to make comparisons between the figures justifiable. At the same time, however, the increased volume of output might enable the shop cost of the article to be reduced by, say, 10s. from £8 to £7 10s.

This would reduce the cost of the total output by £850, thus accounting for practically the whole of the increase in overheads.

It may be argued that, with so many factors to be taken into consideration, no really reliable results can be expected, especially as several of the factors are incapable of accurate determination. In actual fact, the "price-volume" study method has been proved in practice to be of the greatest possible assistance in enabling prices to be fixed on a scientific basis. For a firm that is using the system for the first time it may be found wise to make arrangements for frequent revisions of the study at regular intervals, until a sufficiently good grasp of the ruling conditions has been obtained to make this step unnecessary.

Price Cutting in the Special Order Industry.

Although the "price-volume" study presents a practical solution to the problem of price fixing for the manufacturer of standardized products, it is obviously not suited for application to the special order and contract industries. The nature of the products of such concerns does not usually permit of the advance establishment of definite selling prices, although a schedule of basic rates may be developed as a guide. In any case, however, it is necessary for such a manufacturer to have some idea of the economic low level to which he can reduce his prices on certain individual orders to meet exceptional competition. That is to say, he should have in mind a certain basic cost figure below which he would lose money by taking an additional order. This differential cost figure will vary with different degrees of shop activity, and it forms the basis of a low limit selling price, below which no company should consider taking new business for additional output. The basic principle behind the argument for the use of differential costs is that under modern industrial conditions the average cost per unit of output

decreases as the volume of output increases. This tendency is referred to by economists as the law of increasing returns. It must be appreciated that differential cost of added output is not the same as average cost of total output. What happens, in fact, when an order is taken at differential cost is that an actual loss is made on the individual job measured against average costs for the entire output, but that this loss is offset by the savings resulting from the increased activity being concentrated on the one order.

This state of affairs involves two distinct sets of conditions to justify the use of differential costs on a particular job. In the first place, the situation must be such that prices on the remainder of the company's output are unaffected. In the second place, the job in question must represent a definite addition to output that could not be secured in any other way. In other words this means that when the output is increased the average costs are reduced; and if the previous price can be maintained while the average costs are reduced through increasing output, a lower price may be offered against the increase in output than that measured by the average cost.

It will be appreciated that a company would be unwise to quote on differential costs if the market conditions were such that, although the particular order in question may be lost, the company might, nevertheless, expect to secure other business in the future to replace it. Theoretically, a low limit price could be established on the basis of differential cost even under these conditions, but, for practical intents and purposes, a company may well base prices under such conditions on a minimum selling price representing the average cost for the entire output at the increased rate. This same figure should also be used if there is any question of reduced prices on a particular prospect affecting the company's whole range of business.

Differential Costs.

In order to make this argument on differential costs a little more clear, it may be advisable to employ a few hypothetical figures to illustrate the situation. Assume, for instance, that a manufacturer has calculated his costs at various degrees of shop activity, as shown in Fig. 5.

ITEM	UNITS OF OUTPUT				
	50	60	70	80	90
	£	£	£	£	£
Material	75,000	83,000	91,000	99,000	110,000
Wages	70,000	78,000	85,000	92,000	101,000
Supplies	28,000	30,000	31,000	32,000	33,000
Variable Overheads	52,000	56,000	59,000	62,000	69,000
Fixed Overheads	65,000	65,000	65,000	65,000	65,000
Total Costs	290,000	312,000	331,000	350,000	378,000
Cost per Unit	5,800	5,200	4,730	4,375	4,200
Cost per extra 10 Units	—	22,000	19,000	19,000	28,000
Differential Cost per extra Unit	—	2,200	1,900	1,900	2,800

FIG. 5. DIFFERENTIAL COSTS

We will assume that the normal selling price is £6,000 per unit and that the tentative sales estimate for the budget period involves an output of 60 units. It may so happen that the company could secure additional orders from some highly competitive market for a further 10 units, and that it is desired to establish the rock-bottom price at which this business could be taken.

It will be seen that the total cost for 60 units amounts to £312,000 and that the total cost for 70 units is £331,000, so that the differential cost of the extra 10 units is £19,000, representing £1,900 per unit. In other words, if, while maintaining his previous prices, he takes an order for an additional 10 units at a price anything in excess of £1,900 per unit, the manufacturer would stand to gain

by the transaction. The way this works out is as follows: The average cost per unit at a rate of 60 is £5,200. If the rate is increased to 70, owing to the total fixed overheads being spread over a larger volume of business, and as a result of economies in other directions, the average cost per unit is reduced to £4,730, a reduction of £470 on 60 units, or £28,200 in all. Since his selling price on the 60 units remains unchanged, he secures an economy of £28,200 by increasing his output, so that, although the average cost for 10 units at the 70 rate is £47,300, owing to the economies effected he can afford to quote £19,000 for these extra 10 units and still preserve the same overall net profit.

It is the existence of such conditions as these which results in the adoption of dumping policies by manufacturers with a protected home market.

These figures should make it quite clear that a company can afford to quote on a differential cost basis only if by doing so it is not going to affect the market price for the bulk of its product. It will be seen that the justification for differential costs as a basis of quotation rests wholly on the assumption that the entire economy involved by increased output is concentrated on the extra units, and if this cannot be guaranteed, then the policy is not justifiable. Under these conditions, it may be suggested that even so brief a consideration of the fundamentals of differential costs is out of place in a book on "Business Budgets." On the other hand, the existence of such conditions as those outlined above may have a very practical bearing on the policy to be adopted in connection with ordering for stock in periods of depression. If the nature of the company's products is such that manufacture for stock is practicable, it often happens that a realization of the true differential cost of the stock order proves that stock ordering is an economic proposition, where at first sight it might be discarded as involving undue investment charges.

Volume and Costs.

Reverting to the question of adjusting the sales estimate, although studies along the lines indicated may indicate quite clearly what would be optimum selling prices so far as the profits aspect is concerned, it is not usually wise to make any such changes in prices without considering the overall financial and manufacturing aspects in more detail. In particular, the total volume of business involved must be analysed in the light of production possibilities to determine how far it represents a well-balanced and practicable programme.

To this end, if the preliminary sales estimate has been prepared on an *£ s. d.* basis it must be converted to physical terms showing the volume of probable sales of each major line or group of lines. If, by nature of the type of product handled, this is not possible, the sales estimate should be converted to a shop-cost basis by deducting gross profit and expense loadings. The physical or shop-cost estimate of orders to be received must then be converted into an estimate of output requirements from the factory. This involves a consideration of when dispatch of the anticipated orders will be required, and an adjustment for available stocks on hand at the beginning of the budget period and desired stocks on hand at the end of the manufacturing period.

Orders and Shop Output.

The preliminary sales estimate represents the probable volume of orders to be received from customers during the period under review. The conversion of this figure to shop output requirements is comparatively simple in the case of a company selling goods from stock. For each line, a deduction must be made from the sales figures representing the goods that are in stock (or expected to be in stock) at the beginning of the budget period. This gives a figure for the volume of goods that is to be sold and that is not yet manufactured. To this figure must

be added the desired stock which is to be on hand at the end of the budget period and which obviously must be manufactured during the budget period. Expressed as a formula, the determination of shop output requirements is as follows—

$$\begin{aligned} \text{Shop output} &= \text{Sales} \\ &\quad - \text{Stock on hand at the beginning of} \\ &\quad \quad \text{the period} \\ &\quad + \text{Desired stock at the close of the} \\ &\quad \quad \text{period.} \end{aligned}$$

In the case of a company manufacturing goods to special orders or in the case of a contracting firm, the solution is not so simple. The essential principles involved, however, are the same. The estimate of new orders must be adjusted to allow for any available stocks at the beginning of the period that can be applied against the anticipated new orders and for the desired stock position at the end of the period. A further adjustment is then necessary to include in the output requirements the volume of work that has to be done in the budget period on orders that were on hand uncompleted at the beginning of the period, and to deduct an allowance for the work on the anticipated new orders that may be carried over to the following period. Expressed as a formula, the determination of shop output requirements in this type of industry is as follows—

$$\begin{aligned} \text{Shop Output} &= \text{Carry-over from old jobs} \\ &\quad + \text{Anticipated new orders} \\ &\quad + \text{Desired stocks at the close of the} \\ &\quad \quad \text{budget period} \\ &\quad - \text{Stocks at the opening of the period} \\ &\quad - \text{Carry-over on new jobs (and existing} \\ &\quad \quad \text{jobs) to the following period.} \end{aligned}$$

Incidentally, the question of whether a company is of the special order or stock order type of business implies a considerable difference in budgeting technique so far as the production budget is concerned. This problem will

be examined in detail in the subsequent chapter, and for the moment it may conveniently be omitted from consideration.

The Manufacturing Load.

The shop output figures established as above represent what the manufacturing department would have to produce (or purchase) to fill the estimated sales for the period. It is the tentative output programme for the factory, and it must be considered in the light of the output capacity of the plant to determine how far it represents a balanced programme, and to what extent it may be desirable for the company to endeavour to change the course of these results through the measures already indicated.

It may so happen that the sales estimate is found to call for a larger volume of output than the factory can handle. In such a case there are three courses of action open—

(a) New plant may be acquired to enable the output requirements to be met.

(b) Arrangements may be made to contract out part of the work.

(c) Steps can be taken to reduce the volume of business to be received, by increasing prices or by deciding to refuse certain orders.

No company likes to refuse work or to take steps openly aimed at restricting the volume of its business; but it must be borne in mind that any capital expenditure on new plant must be strictly justified by future sales prospects. It would be unwise in the extreme to install new plant unless the increased sales demand is likely to be permanent. If it is only a temporary increase, the wisest course of action is usually to arrange to contract out part of the work involved.

At the other extreme, it may happen that the volume of work on a particular line is so small that it does not justify the cost of setting up machines to manufacture

the quantity of parts involved. Here, again, there are three courses of action—

- (a) Arrangements may be made to increase sales.
- (b) The requirements may be purchased from an outside firm.
- (c) If there is any future sales prospect in the following period to justify the step, an economical order may be put on the shops and the balance in excess of immediate sales requirements carried in stock.

Obviously, the first solution here is the one that would commend itself to most business men. But, if it is not possible to increase sales, before deciding to drop the particular line from the programme serious thought must be given to the possible effect of this step on business in other directions.

Under-capacity Production.

At the present day, a depleted volume of business has placed many firms in a position where they have a much bigger output capacity than that needed to meet sales requirements. Under-capacity production inevitably involves a loss of profits, and the situation has tempted many firms into considering the advisability of disposing of some portion of their surplus equipment. If a productive machine is definitely redundant, the wisest policy is undoubtedly to dispose of it, if necessary at scrap value. But, in many cases, it is felt that the existing capacity is fully justified by the sales requirements of a normal year. Under these circumstances, certain companies have adopted the policy of scrapping those surplus machines that are nearing the limit of their normal working life or that are obsolete, with the idea of replacing them with modern equipment when demand picks up. This policy can be strongly recommended in those cases where it is applicable, but many firms, particularly newly-established concerns, cannot adopt this line of procedure.

In such cases, where it is desired to keep existing plant

intact a considerable measure of relief can often be obtained from special sales campaigns to secure work for the idle machines in fields outside the normal range of business.

One large engineering firm in this country has found this policy very successful. The company has made painstaking investigations to find new uses for its existing lines of manufacture and profitable new lines involving the use of available equipment. Particular stress has, however, been laid on efforts to secure work for piece parts from firms who do not possess complete manufacturing facilities. To this end a comprehensive list was prepared showing the different types of work that could be handled by the machinery temporarily thrown idle. On the basis of this list the company's salesmen carefully combed their territories for new business, and all inquiries, where necessary, were followed up by factory specialists with an intimate knowledge of the type of work that could be handled and the costs involved. (In this way, valuable results were achieved in the direction of filling gaps in the manufacturing programme caused by lack of orders in the main lines of business handled.)

An Even Manufacturing Load.

Supplementary to this line of approach, it is necessary to consider the manufacturing programme involved by the sales estimate from the viewpoint of how far it represents an even load on the production facilities over the period under investigation. For instance, if the output capacity of a certain section of the works is 1,000 units a year, and the sales estimate calls for production of 800 units, it might be assumed the load of 80 per cent represented a reasonable programme. If, however, it so happened that the sales estimate actually involved an output of, say, 600 units in the first half of the year and 200 in the remainder of the period, the situation would need careful investigation towards securing a more even load. Basic

low costs can only be secured where there is a steady run of work, and a manufacturing load that fluctuates considerably from month to month is not only uneconomic but often impracticable.

To enable a decision to be reached on this point it is very necessary for the manufacturing output requirements to be reduced to a monthly basis. If the load involved is seriously uneven, investigations should be made to see what can be done to secure a better balance, either by influencing sales, or, if practicable, by manufacturing for stock in the slack months. This problem is closely akin to that of seasonality already discussed, and similar remedies are called for.

If it is not possible to even the manufacturing load, there should be a full appreciation of the added costs involved by overtime rates to secure over-capacity output in the busy periods and the cost of idleness in the slack periods. In any question of output under conditions of variable rates of activity, careful comparison is needed between selling prices and costs. It may well happen that the increased volume of business in busy periods, although representing a fair margin over average costs of output, in fact involves a loss when measured against the extra costs involved by the increase in production above normal capacity. Similarly, it will be appreciated that if a factory is working at a low rate of output, by virtue of the law of decreasing cost of production, an increase in output can be handled at a lower unit cost than that pertaining to the initial small volume of output.

This problem of cost of output at various degrees of shop activity has already been mentioned above, and will be discussed in more detail in the chapter on the Expense Budgets. The essential point, so far as the present discussion is concerned, is that the preliminary sales estimate should be adjusted as far as possible to give a manufacturing programme that is in line with production possibilities.

It is also important to check the estimated sales figures against selling and advertising expenses to ensure that too much emphasis is not being given to lines bearing a low rate of profit. As far as possible, efforts should be made to obtain an approximate profit and loss statement for each group of products to ensure that each line is contributing a fair percentage to the total profits.

Finally, the whole programme must be considered tentatively from the financial aspect. In practice, it is often not possible to give this consideration until after the preparation of the manufacturing and expense budgets. This need not affect the practical success of the budget system, provided it is appreciated that the sales budget may have to be adjusted when these other budgets have been completed. It is obviously preferable, however, for these adjustments to be made in advance, as any change to the sales budget must be reflected in all the other estimates, and, although such last-minute adjustments are occasionally essential, they should be avoided as far as possible.

Summary.

In summary, the preparation of the sales budget involves the following steps—

1. The preparation of a preliminary sales estimate, based on—

- (a) A study of normal business growth.
- (b) A forecast of general business conditions.
- (c) An appreciation of the relationship between the individual company and general business.
- (d) A knowledge of the potential market for each of the main products handled.
- (e) The practical judgment of the salesmen and head office staff.
- (f) A realization of the probable effect on sales of any changes of the company's basic policies.

2. The adjustment of this preliminary sales estimate:
 - (a) In the light of the seasonal nature of the business.
 - (b) From the viewpoint of the most profitable selling prices.
 - (c) In line with the overall production or purchasing capacity.
 - (d) From the viewpoint of securing even manufacturing loads.
 - (e) From the viewpoint of overall net profits and selling expenses.
 - (f) In line with the financial capacity of the business.

This procedure should result in the formulation of a sales budget for the period under review which will represent the most profitable and most practical programme for the business as a whole.

Depending on the nature of the individual company, these anticipated sales (which will represent the basis for the budget estimates of all the other departments in the company) should be classified by commodities, departments, customers, countries, salesmen, terms of sale, methods of sale, methods of delivery, and rush or normal deliveries. Before proceeding to an examination of the preparation of the manufacturing, expense, and financial budgets from this sales estimate, it may be advisable to discuss the methods by which the sales budget is put into operation.

Operating on a Budget Basis.

It is highly important that all necessary practical arrangements should be made to put into effect any decisions made in the preparation of the sales budget. It should not be necessary to point out that if it has been decided to change selling prices or increase advertising on certain lines, these steps must actually be taken to ensure that actual results will fall in line with the budget. Yet it is not at all uncommon to find cases where, although it is decided that the emphasis of the sales programme

needs adjustment, no practical steps are taken towards this end. The sales budget is not a mere forecast of the future. It is a plan of campaign, and it is very necessary that all parties concerned should be aware of any alterations that have been made to their original estimates, together with the reasons and objects of the alterations.

The final sales budget estimate should be allocated by districts and salesmen to provide quotas for all persons whose operations have an effect on sales. Actual results throughout the period should be compared with these quotas and all necessary steps taken to counteract any developments that tend to militate against the realization of the estimates. The administration of the budget is as important, if not more important, than its preparation, and this aspect is discussed in detail in Chapter VII.

CHAPTER IV

THE PRODUCTION BUDGETS

THE plant and equipment budget—Consideration of proposed plant expenditure—The materials budget—Factors governing purchases—The labour budget—The manufacturing expense budget—Estimating expenses—Shop balance sheet—Costing and overhead expense—The cost of idleness—The cost of preparedness—Machine-hour rate system—Costs and volume—Production planning—Nature of manufacturing industry—Stock order industries—Production and stock schedules—Minimum stock control—Seasonal industries—Stabilizing production—Special order industries—Reducing delivery periods—Production control—Routing the work—Budgets and special orders—Contract, jobbing, and style industries—Economic manufacturing quantities—Carrying costs—Formula for ordering quantity—Other practical points

IN the previous chapter, consideration was given to the problem of adjusting the preliminary sales estimate from the viewpoints of production capacity and of profits. Reference was also made to the need for converting the estimate of orders to be received into figures of deliveries and shop requirements. As a result of these steps, a programme is left showing the volume of output that is required on each main product or group of products for each month of the period covered by the sales estimate. The budget problem facing the manufacturing department is—

1. To decide what is involved by this output programme in the direction of manufacturing facilities, labour, raw materials and shop expense, and to establish the probable cost of operations on this basis.
2. To set up some system for the actual manufacture of the goods involved to ensure that deliveries are made in accordance with the requirements of the sales department.

The estimate of costs involved is provided by separate budgets of plant, materials, labour, and manufacturing overheads. The development of the programme in terms

of units to be produced is provided for in production scheduling. It may be advisable to examine the principles behind these subsidiary aspects of the manufacturing budget.

The Plant and Equipment Budget.

The plant and equipment budget is the outcome of the examination of the output programme in the light of machine and floor space requirements. To a certain extent, this analysis will have already been carried out in the preparation of the sales budget. Items involving capital expenditure on new plant and equipment will have been carefully considered from all aspects, and the major lines of policy to be pursued will have already been laid down. The plant budget is needed, however, to record the details of plant expenditure, and to ensure that no expenditure on new equipment is incurred unless strictly justified by future business prospects.

The plant budget should represent a detailed list of all of the new equipment to be purchased during the budget period, together with the estimated cost of each item and an indication of when it is needed. At the same time, an estimate should also be made of the probable receipts from any equipment to be disposed of during the period, together with the time of disposal. Incidentally, the same sort of estimate should be made by all the other sections of the company to cover probable purchases or sales of office furniture and fixtures, so that when the time comes for the preparation of the financial budget, the necessary estimates are available to show receipts and disbursements resulting from these physical changes in fixed assets.

Consideration of Proposed Plant Expenditure.

It must be appreciated that the preparation of the plant and equipment budget does not end with the tabulation of a list of necessary new equipment. Each item must

be considered carefully by the management to ensure that it is justified. If it represents a replacement of an existing machine, the saving in operation costs must be compared against the cost of the new purchase, to show how many years the machine would have to be in operation to justify the cost. If the machine represents a definite addition to the manufacturing capacity it must be considered, as has already been mentioned, from the viewpoint of future business prospects, particularly from the angle of return on investment. In this connection, it is frequently found to be wise to base the plant expenditure policy of a growing business on a long-period analysis of future sales covering several years ahead. This aspect of budgeting will be discussed in more detail in Chapter VIII.

The control of actual plant expenditure on a budget basis is comparatively simple. All that is necessary is to institute a routine whereby requisitions for the purchase of new equipment must be approved by the official in charge of the budget before a purchase order is issued to the supplier. Should it so happen that a need develops during the budget period for a new machine not covered in the estimate, the new need may be substituted for some other item in the budget or the estimate may be revised, with the authority of the management, to incorporate the new requirement.

Expenditure on new tools and repairs will be considered under the heading of the manufacturing expense budget, together with the question of depreciation charges on new equipment.

The Materials Budget.

The materials budget has a dual nature. In the first place, it provides an estimate of the raw materials and purchased parts necessary for the manufacture of the goods called for by the shop output programme. In the second place, it serves as a basis for the establishment

of a purchasing programme in terms of quantities to be purchased at specific periods.

The actual estimation of material requirements involved by the output programme will depend on the nature of the individual company. A company manufacturing a line of standard articles, for instance, would have a very exact knowledge of the amount of raw material and outside purchases required by various output quotas. In some cases, however, the nature of the individual products may not allow of the preparation of any standard lists of material requirements. In such an instance it is usually found that there is a sufficiently reliable basic relationship between the total volume of business handled and requirements for the principal raw materials involved, to enable reasonably accurate forecasts to be made. A cable-making company, for instance, has found that, although the nature of the various cables handled varies considerably from year to year, there is a reliable ratio between the shop cost of total output and requirements for copper, lead, and insulating materials, so that the raw materials budget can be prepared successfully on this basis.

The second aspect of the materials budget must tie in closely with the production scheduling arrangements to ensure that the raw materials are available for use as required by the manufacturing department, and yet are not carried in stock in excessive quantities. This object is frequently achieved through the control of purchases on the basis of "balance of stores records."

Factors Governing Purchases.

The factors governing purchases of raw materials and parts may be summarized as follows—

1. The time taken after the issue of a purchase order for the delivery of material ready for use.
2. The rate of consumption of material implied by the production schedules.

3. A safety factor of stock on hand that is felt desirable to cover possible delays in delivery of raw material.

On the basis of these factors it is possible for the manufacturing and purchasing departments, working in conjunction, to establish figures of minimum stocks and order quantities for each of the main lines handled that will ensure that stocks are maintained on the lowest practicable level. It will be shown later that this same policy can be applied to the problem of actual manufacturing orders.

Incidentally, there is a valuable advantage to be realized from the preparation of the materials budget which offers considerable economy in raw material costs, and yet which is commonly overlooked by firms operating their business on a budget basis. This advantage is the economy in purchasing to be obtained from placing bulk supply contracts. This does not mean that the manufacturer must place an order for the whole of his raw material requirements to be delivered at once. Deliveries must be spread over the budget period to suit the convenience of the production schedules. But, in practice, this does not prevent the firm from securing price advantages from bulk purchasing. This policy is particularly advisable in periods of rising prices and, conversely, not so desirable in periods of declining prices, so that its adoption must depend on the anticipated future trend of prices. The factors governing fluctuations in prices are beyond the scope of this book, but it will be appreciated that a valuable key to the probable future trend of prices is available in the analysis of the trend of future business on which the preliminary estimate of sales was based. The problems discussed in Chapter VIII also have an important bearing on this question.

With regard to the question of purchases of supplies and other indirect materials, for the sake of convenience these items are considered under the heading of expense, but it will be appreciated that they can be transferred

to the raw materials budget if so desired, and their actual purchase can be controlled on very much the same basis.

The Labour Budget.

The purpose of the labour budget is to analyse the shop output requirements in terms of pay-rolls and man-hours. This provides an estimate of the labour costs involved which is obviously needed for the purpose of planning the finances of the business. It also provides the basis of plans for hiring and training new workers as occasioned by the fluctuations of the output programme. The actual estimation of man-hour requirements will depend on the nature of the products handled, whether standard products with a definite standard time allowance permit an accurate estimate to be worked out, or whether an approximation must be made from past experience.

In this connection it may be advisable to stress the point already made that the budget schedules should not merely be interesting tables of figures. The potential value of all of the budget estimates must be measured against the cost of their preparation. It may so happen, for instance, that an individual firm is not vitally interested in the question of actual man-hour requirements, and that an *£ s. d.* cost of labour figured on the basis of a ratio to cost of goods sold would be sufficient for practical purposes. In such a case there would be no advantage in estimating physical labour requirements, although in another case such a figure might be of prime importance. A further point to be guarded against in the administration of the labour budget is the danger of treating labour as a "raw material." It is very necessary to take into account the broad lines of the company's employment policy in establishing the labour budget, particularly in the direction in which it is intended to frame production plans towards stabilizing employment.

Arising out of the labour budget, the need for time

studies to establish standards of labour frequently becomes apparent. The existence of such standards not only facilitates the preparation of the labour budget, but also enables a constant check to be kept of the actual efficiency of labour.

It is a matter of opinion whether the labour budget should include indirect labour as well as direct labour. In actual practice, it is often convenient to consider indirect labour as an item of overhead, but to provide for the hiring and training of new staff through a subsidiary labour budget. Arrangements should also be made to include in the labour budget the cost of pension and benefit schemes, medical departments, and similar welfare expense, unless these items are to be covered in the manufacturing expense budget.

The Manufacturing Expense Budget.

The manufacturing expense budget covers an estimate of the indirect charges involved in keeping the factory ready for operation throughout the period. To a certain extent, this expense will depend on the volume of output to be handled over the period, but it will be found that there are many items of expense that remain appreciably the same, irrespective of the volume of actual shop output. For reasons which will be developed later, it is very advisable to bear in mind this differentiation between fixed and variable expense.

In the actual estimation of probable overheads for the budget period, considerable assistance will be obtained from records of past results. Care must be taken, however, not to base the forecast arbitrarily on the basis of a fixed increase over past results. Each item of expense must be considered carefully, and a reasonable quota established for the period under review.

The manufacturing expense budget offers a very valuable control over expense through advance consideration, and through a regular monthly comparison of actual

expenditure on the various items of overhead against the budget quota. In fact, many companies which claim that the budget system is impracticable for the general conduct of their business, at the same time praise the system as an assistance to the control of overhead expense.

Estimating Expenses.

The actual form in which the manufacturing expense budget is prepared will depend on the nature of the individual company. It may, however, be advisable to indicate the basic headings under which estimates should be made. Separate figures should be shown for—

Rent	Indirect materials
Rates and taxes	Supplies
Insurance	Supervision
Depreciation	Inspection
Repairs	Indirect labour
Maintenance	Experimental work
Changes to layout, etc.	Fuel
Small tools	Gas
Travelling	Electricity
Telephones and telegrams	Water
Stationery	Miscellaneous

The figures for rent, rates, and insurance represent fixed charges that can be established with ease. Depreciation is another fixed item of expense, although, in figuring the depreciation total, necessary allowance will, of course, have to be made for the charges on the new plant included in the plant budget, based on the normal working life of the individual machines. An estimate must be prepared of the probable cost of repair work and of any necessary new tools and jigs and fixtures involved by the output programme, and the expense included in the expense budget. The cost of indirect labour, if not already included in the labour budget, must be estimated under such headings as supervision, inspection, packing, shipping, production control, and general shop clerical. Similarly, if indirect supplies have not been included in the materials budget, an estimate of their probable cost must

be made on the basis of past experience and the output requirements for the period. Estimates must also be made on the basis of past records, coloured by the required output for the period, of the probable cost of fuel, gas, electricity, water, and similar expenses. An allowance must also be made for the office expenses of the shop clerks, the principal items under this heading including stationery, telephones, and telegrams, travelling and miscellaneous expense. If the utmost advantage is to be realized from the preparation of the manufacturing expense budget, it is essential that every care should be taken towards making the estimate as reliable as possible. If it is practicable, the estimates should be made by the individuals actually responsible for the section of activities that they cover, and, in any case, the final estimate should be broken down along the lines of the factory organization, so that actual results can be compared against the budget in such a way that a proper measure can be taken of the efficiency of the individual departmental units.

Shop Balance Sheet.

The operation of any factory can very conveniently be considered in the form of a balance sheet. On the one side, there is an input of man-hours, material, and shop expense; on the other side, there is an output of finished merchandise and an "output" representing improvements or repairs to plant carried out by the factory staff.

The direct labour cost is given by the labour budget, the cost of raw materials and purchased parts can be taken from the materials budget, and the expense figure, representing the cost of running the factory, is provided by the expense budget. On the other side of the picture, the shop cost of merchandise output is, of course, the figure on which the other production budgets have been based. It is the output requirement quota which has been obtained by adjusting the sales budget for anticipated

changes in the stock position. The value of "expense" output can be readily calculated from the plant budget.

The cost and expense side of running a factory can thus be summarized as follows—

<i>Input</i>	<i>£</i>	<i>Output</i>	<i>£</i>
Direct Labour .	100,000	Merchandise .	450,000
Raw Material .	250,000	Expense . . .	50,000
Purchased Parts .	30,000		
Shop Expense .	120,000		
	<hr/>		<hr/>
Total Input	<u>£500,000</u>	Total Output	<u>£500,000</u>

This means that the sales budget for the period, converted to shop cost values by deducting freight charges, anticipated profits, and commercial expense loadings, and adjusted for opening and closing stocks, calls for an output of merchandise worth £450,000. On the basis of this estimate, the manufacturing department has calculated through the materials budget that the required output will call for expenditure of £280,000 on raw materials and parts purchased outside. Similarly, it has been estimated in the labour budget that expenditure of £100,000 will be required on direct labour, and the overhead cost of running the factory for the budget period has been figured at £120,000. These items of expense, however, include the cost of work done in the factory on the repair and maintenance of machinery and on the making of small tools and similar fixtures, so that a credit must be given for the value of this work which is estimated at £50,000. Incidentally, this latter figure does not represent the total capital cost of new plant which is shown in the plant budget. In the hypothetical case chosen as an illustration, it will be seen that the two sides of the account balance. It must not be assumed that this is always the case. Whether or not, shop output and shop input balance depends entirely on the policy that the company pursues in connection with charging overhead expense to output. This problem and the related question of standard costs are closely connected with the application of

budget control and may with advantage be examined in detail.

Costing and Overhead Expense.

The costing problem of any firm is of a dual nature. On the one hand, there is the question of whether or not the whole overhead expense should be distributed to the product irrespective of volume of output. On the other hand, there is the closely associated problem of deciding the basis on which overhead is to be charged. The solution to these problems depends in a measure on the nature of the particular industry concerned, but the adoption of budgetary control has introduced a tendency away from the practice of charging the whole of overhead expense to output irrespective of volume. It is being appreciated that this practice is unsound, in so far that it gives fictitious and misleading figures when there is any considerable fluctuation in business volume. The scheme of charging overhead on the basis of the cost of productive labour consumed on an order is also now regarded as unscientific.

Management to-day is coming to regard overhead expense as a charge for preparedness, to be charged to output only in proportion to the extent to which capacity is utilized. That is to say, overhead expense is calculated to represent a certain definite hourly charge per machine for keeping it available for production, and is charged to output only for the time that the machine is in use. Any excess or deficit resulting from idleness or "overtime" activity is charged or credited separately to the profit and loss account, thus providing a very valuable indication of the true effect of fluctuating activity.

The purpose of costing is to provide an index of the efficiency of manufacturing methods and to serve as a basis for fixing selling prices. The orthodox policy of apportioning overhead expense to various orders actually executed, no matter what the volume of output, is unwise

in so far that it gives a false picture under both these headings. Costs should not fluctuate with volume of output. The only directions in which they should be affected are through—

1. Changes in manufacturing methods involving a reduction in the time taken to execute an order, or in the amount of its material and direct labour content.
2. Changes in the cost of raw materials and direct labour.
3. Basic changes in the total volume of overhead expense.

The Cost of Idleness.

The cost of idleness should be regarded as a tax on profits, not as an element of cost, and any "profit" resulting from overcapacity activity should similarly be regarded as an increase in profits rather than as a reduction in costs.

The fallacy of charging total overhead to actual output will, perhaps, be better appreciated from a hypothetical example.

Assume, for instance, that the total oncost in a particular factory is £120,000, representing all expenditure which cannot be directly charged to the articles manufactured. Then, if the normal output of the factory is 10,000 units, the overhead cost charged to each unit on the basis of normal output would be £12. Then see what happens when orders are obtained in such a volume to require more than normal output. Under these conditions, the total oncost would remain at very much the same figure, while output might jump to 15,000 units, when the unit overhead cost would be £8. Similarly, business might fall off, and with an output of 6,000 units and total oncost showing very little change, overhead cost charged per unit on the orthodox basis would be £20. In other words, when the volume of business is already straining the maximum output capacity, costs are being reduced,

pointing to reduced selling prices and a consequent further increase in volume of business; while, when business is falling off, costs are being increased, pointing to higher selling prices and, consequently, a further decline in business volume.

A proper factory costing system should be such that costs are affected only by changes in material and labour costs, and in the time taken to do a particular job. It is true that, whatever system of costing is employed, total overhead expense is actually met out of selling prices and ultimately out of profits. But it is a short-sighted policy to charge the whole of this expense on the basis of factory cost irrespective of output. Under such a system, it is impossible to distinguish and evaluate losses due to idle machinery in the factory and losses due to market conditions and uneconomic manufacturing.

The Cost of Preparedness.

Overhead expense is not an element of cost of output. It is the sum of all expenses that are incurred in keeping the plant in condition for operation. That is to say, it is the cost of preparedness. If overhead expense is considered as a definite *£ s. d.* cost per hour of preparedness to do process work, it will be appreciated that every process hour not utilized means that much money going to waste. A logical costing system would, therefore, be to determine hourly process costs on the basis of normal output, to charge actual orders on the basis of the true cost of the hours of process time actually utilized, and to charge the cost of idle process time to an adjustment account against profits. Only with such a system can true manufacturing costs be obtained.

Machine-hour Rate System.

The way in which the existence of a budget control system assists in the establishment of a machine-hour rate system such as the above, will be appreciated from

the following explanation of the steps necessary to set up a costing scheme on this basis. These points are extracted from a pamphlet on "Changing Cost Records," issued by the Policyholders' Service Bureau of the Metropolitan Life Insurance Company of New York and London, to which the reader who is interested in the application of the system can refer for full practical details.

The steps necessary to inaugurate a Machine Hour Rate set-up may be summarized as follows—

1. A standard classification of expense accounts for the collection of this information under the functional headings for comparison and control.

2. Careful departmentalization of each of the above expense accounts. (This has already been mentioned as a necessary pre-requisite to the introduction of budget control.)

3. A study of each item of expense and the determination of the most equitable basis for distribution to individual machines or groups of machines within a department. (This is facilitated by the existence of a budget control system.)

4. The distribution of each item of department expense to the individual machines on the basis determined under 3.

5. An estimate of the normal operating machine hours of each machine or group of machines, for the period under review. (This is not necessarily the budgeted estimate of output, but the figure can conveniently be established from past records.)

6. Final determination of the normal Machine Hour Rate from the material noted above.

7. The collection of additional information to show the actual number of machine hours worked on an individual machine for each production order.

8. The distribution of burden over production orders by multiplying the number of machine hours by the Machine Hour Rate for each operation.

9. The collection and the analysis of the amount of unearned burden, representing the difference between the actual factory overhead and the portion charged to production orders by means of the above rate. This unearned burden represents the cost of idle facilities.

10. If necessary, an annual revision or recalculation of the Machine Hour Rates. (This will depend on the probable future course of business and changes in expenses.)

Costs and Volume.

The conditions that would become effective under such a costing system are shown graphically in Fig. 6. In the

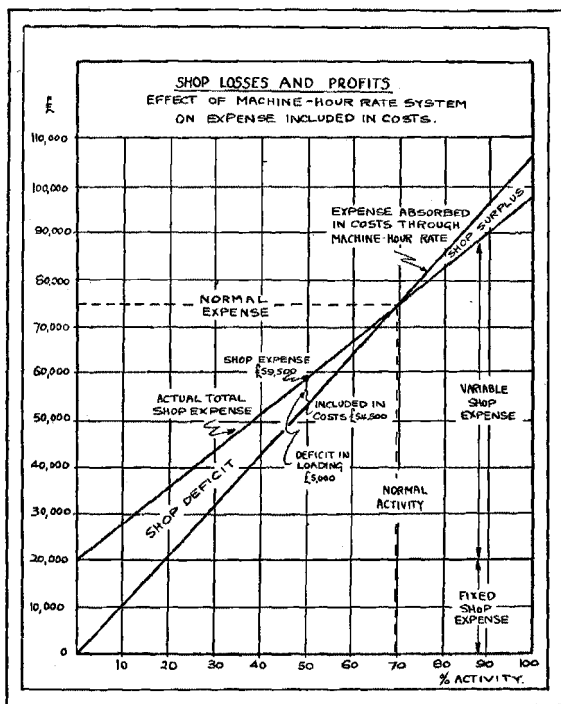


FIG. 6

particular illustration it has been assumed that normal activity is 70 per cent of capacity, and the costing system is so arranged that with this activity the whole of overhead expense is absorbed in cost. That is to say, a system of machine-hour rates is established that will enable

overhead expense of £75,000 to be recovered in costs at an activity representing 70 per cent of capacity. Shop activity for the budget period, however, may perhaps be only 50 per cent of capacity, thus resulting in an unabsorbed burden, or shop deficit, of £5,000. The management is thus presented with a very clear picture of the loss involved by undercapacity production, which is of considerable assistance in framing any policies for handling the situation.

It will also be noted that the chart gives a good idea of the probable shop surplus or shop deficit that would be realized at various degrees of shop activity. Thus, a shop merchandise output representing an activity of 40 per cent would involve a shop deficit of £7,500, representing the amount of unabsorbed overhead expense. Similarly, an activity of 90 per cent represented by a shop would yield a surplus of £5,500 in the factory accounts, assuming in both cases that the activity is spread evenly throughout the factory. In actual practice, of course, the probable shop surplus or deficit would be calculated on the basis of an analysis of the individual lines to ensure that due allowance was made for any irregularities in the load implied by the output programme. It will be appreciated that the existence of a machine-hour rate costing system which definitely stabilizes the amount of overhead expense charged to each unit of output enables standard costs to be established for every article handled. All that is necessary is to calculate the standard amount of material and direct labour involved, together with the normal machine time taken to produce the article.

In passing, it should be remembered that the principle on which the machine-hour rate is based is that where the productive operations of a plant are performed principally by mechanical means, the overhead expenses are more equitably distributed when the relative share of each type of expense that is absorbed by various types of machines is considered, rather than on the basis of the

amount of production labour or number of productive man-hours consumed on an order. If, however, direct labour is the principal element of costs, a parallel system can be established for computing and charging overhead expense on the basis of a productive labour-hour rate.

Production Planning.

The manufacturing budgets, as far as they have been analysed up to the present, have provided an estimate of the volume of work to be done by the manufacturing department in the period under review, and a forecast of the costs involved. The next step is to make arrangements for the actual production of the goods. Before proceeding to a discussion of this aspect of the problem, however, it may perhaps not be inadvisable to establish the basic principles of production planning and scheduling.

There are two distinct elements in factory administration, one involving the making of advance plans and the other entailing day-to-day arrangements to deal with orders as they are received. The relative importance of these two factors depends on the type of product manufactured by the company, but their common objects are—

1. To enable maximum production to be secured at minimum costs.
2. To maintain, as far as practicable, an even load on the manufacturing facilities.
3. To keep delivery periods as short as possible.
4. To keep investment in work in process and stocks at as low a level as possible.

It is not possible to prepare a standard scheme of production planning suitable for universal application. Different businesses demand different procedures to suit their peculiarities, and it is doubtful whether any single library in the world holds all the literature that has been produced on the many aspects of the subject. It is possible, however, to draw a broad distinction between two different

types of manufacturing firms with two basic systems of production planning.

Nature of Manufacturing Industry.

Manufacturing industry falls within two extremes. On the one hand, there are companies manufacturing standard items exclusively for sale from stock; on the other, there are those which produce exclusively on special orders in accordance with customers' specifications; while in between there is a variety of industries whose output represents a combination of the two types. In the case of the stock order type of industry, advance preparations form the major part of production planning. Advance plans in such a company must be carried to the extent of scheduling the actual production of goods before the receipt of any customers' orders. In the case of the special order type of industry, however, advance preparations cannot be carried to the same extent, and the careful scheduling of production on the basis of actual orders received becomes of prime importance.

The advantages of the application of budget control in the stock order type of industry will be at once apparent. In such a company, the advance planning of production is essential. An estimate of future sales must be made as the basis for arrangements to produce the goods involved if they are to be sold from stock. The only alternative to operating on a logical budget basis, aimed at a proper balance between sales and production for such a company, is to base production on a haphazard guess at future sales with the possibility of excessive production, an unduly large amount of working capital tied up in inventory, or insufficient stocks to meet sales demands, with obviously detrimental results. The production budget is more than a convenient aid to a company of this type. It is the only sensible method by which the company can be operated.

The practical advantages of the budget system on the

production side of the special order company are not so apparent. It, nevertheless, offers very real advantages in the direction of facilitating the preparation of advance plans to ensure quick and orderly production. The reader will, however, probably be in a better position to appreciate the advantages of the budget system in the special order type of industry after an explanation has been given of its application in the stock order company.

Stock Order Industries.

The main object of the stock order type of industry is to co-ordinate production with sales so as to avoid excessive inventories and yet give deliveries from stock as and when required. To this end, it is necessary for an estimate of probable orders for each line handled to be prepared on the basis of a consideration of business trends and market conditions. The principles behind such a forecast of future business have already been developed in detail in previous chapters, together with an explanation of the methods by which such an estimate can be converted to figures that will show delivery requirements. As a matter of interest, in the case of a stock order company, anticipated orders and delivery requirements would represent appreciably the same figure if delivery was required to be made for stock.

On the basis of the estimate of future business, the production executive can arrange to lay out the factory in the most convenient way to handle the volume of work. Bulk orders can be placed for raw materials, and arrangements can be made in advance for training any extra staff that may be required. But it is not enough to have an estimate of the amount of goods that will have to be produced over the budget period. Production must be tied in with sales so that the goods are available when orders are received.

It is obvious that it would be uneconomic to manufacture the whole of the requirements within the first few

weeks of the budget period. Not only would the capital cost of carrying the large inventory be unduly heavy, but from the point of view of practical production the work must be distributed throughout the year so as to keep the machinery and equipment in steady operation and to provide regular employment for the labour force. It is necessary, therefore, to co-ordinate sales and production to prevent an excess of inventory and yet provide a sufficient amount of goods on hand at all times to meet sales demands. This implies the setting up of an inventory of finished goods and a production schedule to maintain that inventory.

Production and Stock Schedules.

The sales estimate will have been made for a period ranging from three months to a year or more. This budget period, however, must be split up into smaller production periods, corresponding to the normal time from the placing of an average-sized order to the delivery into stock of the finished goods called for by the order. Depending upon the seasonal nature of the business, the total sales figure should be split up into smaller totals representing the probable sales during the various production periods. Records of previous years should prove of assistance in this respect.

The stock on hand at the beginning of each period must be at least sufficient to cover the probable sales for that period. If it were possible to arrive at an exact forecast of sales, it would then be sufficient to manufacture in each production period just enough goods to meet the sales of the subsequent period. This ideal state of affairs would imply the greatest economy in stock investment; but, in practice, it is not possible to forecast sales or the production period exactly. Additional stock must, therefore, be carried to provide a margin of safety. Depending on the degree of confidence imposed in the estimate, this safety factor will vary from, say, 10 to 25

per cent of the probable sales in each production period, and added to the anticipated sales for the period it will give the minimum inventory for the beginning of the period. When the minimum stock requirements have thus been established, the amounts to order during each production period can be determined from the equation—

$$\begin{aligned} & \text{Probable sales for period} \\ + & \text{Required stock at end of period} \\ - & \text{Actual stock at beginning of period} \\ = & \text{Amount to order for manufacture during the} \\ & \text{period.} \end{aligned}$$

The way in which this principle is put into practice will depend on the regularity of the demand for the particular product in question. If sales are steady, with no serious fluctuations from month to month, the production of goods can conveniently be controlled on a minimum stock basis, although a modification of this practice is needed to enable the periods of peak sales and slack demand to be negotiated successfully.

Minimum Stock Control.

There is nothing very complicated in the minimum stock control system, and many textbooks are available to explain the practical application of the idea. The objects of controlling stocks and ordering on this basis are to ensure that—

1. There shall always be enough stock on hand to meet customers' normal requirements.
2. There shall not be a larger stock on hand than that representing probable sales during the period required for their replacement by manufacture.
3. Goods shall be produced in sufficient quantities to ensure economic production.

In putting the system into operation, it is usual to have a separate stock card for each important item, which will show minimum stocks (i.e. indication to order) and

ordering quantity. As a simple illustration, we may assume that a company has a demand for item XYZ at the rate of 200 a month, and that the item takes two months to manufacture in quantities. It may also be felt desirable always to have on hand a stock of 150 to represent a safety factor against inaccuracies in the estimates and breakdowns in manufacturing. The way the scheme would work in this instance is that a minimum stock figure would be established to represent the safety stock plus probable sales in the manufacturing period, that is, 150 plus twice 200. When available stocks in hand and on order fell to this figure of 550, an order would be placed for the quantity that would be sold in the period taken for the manufacture of the new order, that is 200 a month for two months, or 400. Under normal conditions, this order would thus be completed and delivered into stock by the time that the original stock in hand had been depleted to the safety factor, and a further order for the same quantity would then be placed. The actual condition of day-to-day stock in hand or in process would be shown by the usual "balance of stores record."

This system, by closely co-ordinating sales and production, results in the maximum economy in merchandise investment, but there are certain cases where it may be desirable to depart in a measure from this basic principle. For instance, there may be certain slow-moving items, of which only a limited amount is sold during each production period. In such a case, the small shop orders involved by the system already outlined would entail a relatively high production cost, and the savings that could be realized by producing in larger quantities would often be sufficient to balance the expense of carrying larger inventories. This question of economic ordering quantities is very important, in both the stock order and special order industries, and will be taken up again at a later stage in the discussion.

Seasonal Industries.

Another case where some modification of the minimum stock control system is needed in practice is in industries where there are marked seasonal fluctuations in demand. In such a company there are two alternative lines of policy. Either a schedule of monthly shop orders can be established to co-ordinate production and demand, or a steady manufacturing programme may be established with the idea of building up stocks in the slack periods to be depleted in the busy months.

It may, perhaps, be advisable to illustrate the application of these principles by reference to a hypothetical case where the anticipated sales of a particular article for an impending period of twelve months are as follows—

January	900	July	700
February	850	August	700
March	900	September	800
April	800	October	900
May	700	November	1,000
June	680	December	1,150

For the sake of convenience, it will be assumed that the article in question takes one month from the issue of the order to manufacture and deliver into stock. Obviously, then, it is necessary to have a stock of at least 900 on hand at 1st January, as any orders placed on that date will not materialize until February. In addition to this, however, it is necessary to have an extra number of articles in stock as a safety margin to take care of any probable inaccuracies in the estimates and unavoidable delays in the factory. Previous experience may indicate that actual sales in a particular month may vary from the average figure by as much as 250 one way or the other, and that a further 150 units represent a stock sufficient to cover temporary hold-ups in production. This shows the need for a safety stock of 400, which, added to the requirements for January delivery, gives a total required stock at 1st January of 1,300 articles. In a similar way,

desirable stock at 1st February would be 850 for February deliveries, plus a safety stock of 400, making a total of 1,250. Desirable stock at 1st March would be 900 plus 400, or 1,300, and so on. Applying the formula established above, the amount to order for manufacture in January would be probable sales (900), plus desired closing stock (i.e. stock at 1st February, or 1,250), less opening stock (i.e. stock at 1st January, or 1,300), representing a total of 850. Similarly, the production order for February would be 850, plus 1,300, less 1,250, or 900, and the required orders for the other months could be calculated in the same way.

Arrangements would, therefore, be made to issue an order on the shops at 1st January for the manufacture of 850 articles, and the whole year's activity would be scheduled ahead on a similar basis for the issue of regular orders to keep production in step with sales and to ensure minimum stocks. The execution of these orders would be followed by the planning section of the manufacturing department who would also keep watch, through their stock records, on the progress of actual customers' orders against the budget, to enable any necessary adjustments to be made to the production orders. In exceptional cases, special developments in this direction might occasion the need for the complete revision of the budget estimates and the plans based thereon, but this point may conveniently be left for later consideration.

Stabilizing Production.

Under the above system, the load on the factory would vary from 680 units to be ordered on 1st May to meet June sales, to 1,150 units to be ordered on 1st November for December sales. With such a wide fluctuation in the monthly production order, it might be felt desirable to stabilize production and build up stocks in the slack period to meet the peak demands.

It will be seen that the average sales for the period

amount to 840 units. If a steady output at this rate was planned, the following would be the result—

Month	Sales	Excess of Production Over Sales	Excess of Sales Over Production	Cumulative Excess of Production
January	900	—	60	(60)
February	850	—	10	(70)
March	900	—	60	(130)
April	800	40	—	(90)
May	700	140	—	50
June	680	160	—	210
July	700	140	—	350
August	700	140	—	490
September	800	40	—	530
October	900	—	60	470
November	1,000	—	160	310
December	1,150	—	310	—

In order to enable the factory to operate on this basis, therefore, it would be necessary to have an additional stock of 130 units at 1st January, over and above the normal figure, to make up for the excess of sales over production in January, February, and March. The normal operations of the business would then allow of the building up of an extra stock of 530 units by the end of September to cater for the winter rush. Here, again, the progress of actual orders against the budget would be studied to indicate any need for revision of the plans.

The seasonal type of industry presents a rather peculiar problem for budget control purposes, and, depending on the efficiency of the management, it usually takes some considerable time to work up a really good detailed budget system for such a company. The key to success is often *festina lente*, and a suitable technique must frequently be built up stage by stage, through the adoption of budgeting first for the control of expenses and then gradually for the other activities of the concern. It has been pointed out that, on the one hand, the management can approach the problem along the lines of securing an even production

load by manufacturing in excess of requirements in slack periods to the limits governed by financial considerations. On the other hand, there is the possibility of influencing the peaks and valleys in consumer demand through intensified advertising and sales effort, through greater diversification of product and through extensive market research aimed at finding new "out of season" uses for the company's products. Several prominent American concerns have shown what can be achieved in this direction, and there is no reason why their success should not be duplicated by British firms.

Special Order Industries.

Where a firm is manufacturing special equipment against customers' orders it is obviously impracticable to produce completed articles for stock. In such a firm, the object of production planning is to set up a system that will enable actual orders to be handled in the shortest time possible.

Although it is not possible to forecast future sales in such an industry with sufficient detail to justify complete advance manufacture, it is, however, usually possible to obtain a sufficiently accurate idea of impending volume of business to enable the production of certain basic piece parts to be programmed ahead on a stock order schedule. And, in any case, the budget system offers real practical advantages in enabling the factory to be laid out in the most convenient and efficient way to handle the expected business. For this purpose, the estimate of requirements is reduced to terms of basic components, and figures are established for the overall quantities of castings, stampings, mouldings, piece parts, etc., required during the year. On this basis, the space in the factory can be allocated to the various operations in the best way to produce the required output and accommodate assembly work, allowing for unavoidable idle time. Furthermore, as has already been pointed out, raw material control

systems can be set up to ensure economic inventories, overhead expense can be kept down to minimum figures, and all necessary arrangements for training additional staff can be put in hand sufficiently far ahead to cope with impending changes in the volume of activity.

It has been claimed that "a week's or a fortnight's notice of a coming load can save considerable sums of money" in any factory. The advantages of the existence of a budget system in this direction will be readily apparent.

The advance planning of actual manufacturing operations in the special order industry, although limited by the nature of the product, is, nevertheless, possible to a degree in certain cases. To this end, typical orders are analysed to determine what are the vital items so far as manufacturing time is concerned. If arrangements can be made to start work on these items and the implied sub-assemblies in advance of the receipt of an actual order, delivery periods can be shortened accordingly. The arrangements for doing this preliminary work on items that are required in the initial stages of the job, or that take an exceptionally long time to complete, will depend on the circumstances of the particular firm. In some instances, the items concerned may be so far standardized as to allow a regular production schedule to be set up covering the whole year's programme irrespective of the peculiarities of particular jobs. Alternatively, it may be reasonably safe to start work upon submitting a tender, where information is available as to the probability of the tender materializing into an order. In either case, a careful consideration of the manufacturing problem to be faced over the budget period will undoubtedly indicate certain lines along which considerable progress can be made in the reduction of delivery periods.

Reducing Delivery Periods.

Stress has already been laid on the importance of establishing machinery to ensure that delivery periods

are kept as short as possible. This feature is of equal importance in the special order and stock order industries. Broken contract dates inevitably lead to discontented customers and probably to the loss of their future business, and many a company has been forced into liquidation through inability to fall in line with competitors' delivery possibilities.

Apart from their effect on future business, long deliveries are a serious drag on the finances of the company. A good measure of the efficiency of an undertaking can be obtained from a consideration of the rate at which the concern turns over its investment.

Normally speaking, a company cannot expect complete payment for a contract until the job has been completed and the goods delivered to the customer. While the work is proceeding through the shops, an investment is being built up which the company cannot liquidate until the contract has been completed. Obviously, then, the longer the time taken to manufacture the particular product, the longer will the company be carrying the investment involved, and any steps taken which result in a reduction of the manufacturing period must have a valuable effect on the net return on investment.

For the stock order type of company, a properly developed budget system offers a virtually complete answer to this problem.

Production Control.

So far as the company manufacturing equipment on special orders is concerned, however, the production budget offers only a partial solution to the problem. In such a concern, the production budget is necessary to guide the making of such advance preparations for production as the provision of additional plant to cater for any anticipated extension of business. Further, arrangements can frequently be made to enable the manufacture of certain standard items to proceed in advance of actual

orders, in the same fashion as in the other type of company. But the real problem in the special order company is the arrangement of the best possible method for passing the work through the shops after the customer's order has been received. To ensure maximum profits, the budget system of such a company must essentially be backed up by an efficient production control organization.

From its nature, a factory of the special order type cannot carry a very large stock of finished parts. Moreover, the work in such a factory does not move automatically along a standard sequence of operations. Each job frequently requires a different process of scheduling and control of material through the shop, and in the majority of cases the work cannot be started until the customer's order is received.

The object of production planning in such a case is to arrange the best method for controlling the flow of material through the factory. This usually entails the setting up of a special planning department, whose function is to decide what work is to be done and when, where, and how it is to be done. To achieve this object, the planning department prepares a schedule for each order as it is received, and lays out the work involved so as to regulate and control the progress of each machine or producing group, and to ensure that arrangements are made to have the next job ready for each particular operator before he has finished the job in hand.

Shop schedules must be based on two sets of information. On the one hand, it is necessary to know the jobs to be completed and their completion dates, together with the amount of work to be done in each process involved. On the other hand, the planning clerk must know the available capacity in the factory after allowance is made for jobs already scheduled. This involves the preparation of assembly diagrams or route sheets for each job, showing when the respective operations must be completed to finish the job on time.

The preparation of a reliable route sheet for the job, showing all of the principal operations to be performed, and indicating the date by which they must be completed, obviously presupposes a fairly accurate knowledge of operation times. In many instances, this information is not in the possession of the executive, but unless the manufacturing situation is constantly changing, the time and money involved in obtaining this information would be well spent.

Routing the Work.

Having prepared the dated route sheets, the next step is to pass this information to the shop foreman. In the case of smaller factories, copies of the route sheet are sent to each foreman, thus giving him the earliest possible information as to when his particular section of the work in connection with each order has got to be completed, and also where the jobs are coming from. Where the factory is large and the number of orders consequently greater, the planning department usually carries its work a step further, by reclassifying the information on the individual route sheets to bring together by machine groups all the various orders to be done by each individual machine group. The job programmes are thus converted to machine programmes.

One of the most simple arrangements for this purpose is the Taylor planning board, which consists of a number of pockets, each representing a particular machine, and each split into two or three sections. Time cards or instruction cards for each operation are made out by copying the data from the route sheets, and these cards are filed in the respective machine pockets in the order they are scheduled for the machine. With such an arrangement, the foreman has only to go to the planning board when he has finished a job to obtain instructions for the next job, and, at the same time, he can see exactly what work is in front of him. Further, in the event of any physical

change in the schedule of a particular job, it is only necessary to re-arrange the cards in the pockets representing the affected machines.

Since the various orders in the factory have thus been converted to machine programmes, it is necessary to have some method of recording the progress and present location of each job. It would, of course, be possible to locate the job by tracing it through each operation on the basis of the route sheet, but usually it is more convenient to keep a progress record, checking each operation as it is completed and showing exactly the location of the job.

On the basis of these progress records, "chasers" can periodically check up each order in the shop to see that it is proceeding satisfactorily and according to schedule. This step is very necessary to avoid jobs being overlooked, and to counter the fact that the shop foreman looks at the situation from the point of view of machine programmes rather than that of shipping dates. Given efficient scheduling, this chasing, or follow-up work, will not be excessive. On the other hand, weak scheduling inevitably leads to the need for an excessive follow-up, so that the balance between follow-up and scheduling provides a good measure of the reliability of the planning methods.

Date planning admittedly involves an increase in overhead costs. It is found in practice, however, that this extra cost is more than offset by the improved efficiency of manufacture resulting from such planning and by the reduction in the number of overdue orders following its adoption.

Budgets and Special Orders.

Given the existence of a reliable production control system, budgeting can be adopted by the special order industry with every hope of success. Many of the companies which are obtaining the best results from the budget system are, in fact, of this type. The diversity of output, although limiting the extent to which the budget idea

can be carried, does not imply that the principle of budgeting is impracticable or in any sense undesirable. While the exact nature of the output may vary considerably from year to year, raw material and labour requirements are not usually affected to anything like the same extent. In fact, these two elements are found to bear very much the same percentage relationship to total output irrespective of its detailed make-up. Raw material and labour can, therefore, be planned very closely; budgetary expense control systems can be established whose efficiency is in no measure impaired by diversity of product, and, as previously indicated, in many instances the advance manufacture of standard piece parts can be carried out. And, apart from these general advantages, a particular benefit frequently accrues to the special order industry through greater standardization and elimination of unprofitable lines following the adoption of budget control.

Contract, Jobbing, and Style Industries.

The contract and jobbing types of industry present closely parallel cases to that of the special order business, and an interesting modification of the budgetary system in such companies is that budgets are sometimes prepared for individual contracts rather than for calendar periods. That is to say, the estimates on which the company bases its quotations against particular inquiries are prepared in such a way that, in the event of the receipt of the order for the job, they can be used to enable actual progress to be checked against the preconceived picture. This is not truly budgetary control, in the sense that it does not provide for any complete co-ordination of activities in the light of a considered study of the future. But it presents a useful intermediary stage to the ultimate adoption of a complete budgetary system and assists considerably in the control of expenses and costs.

Industries with a decided "style" factor also tend to find the introduction of budgetary control somewhat

difficult through inability to forecast demand. Here, again, the problem can frequently be simplified by greater standardization of products or through sending samples to representative customers with the object of obtaining their opinion on sales prospects. But, apart from these remedial measures, budgetary control can almost always be successfully adopted by such concerns provided the period for which the estimates are prepared is kept sufficiently short. It must be realized that there is no hard-and-fast rule about the period which any budget should cover.

Economic Manufacturing Quantities.

In an earlier section of this chapter, the question of economic machine runs was considered in relation to slow-moving items. The introduction of a budget system into a company, however, involves the preparation of a mass of information that can very conveniently be used for a much closer examination of this problem. This question of economic ordering is of particular importance when management is seeking possibilities for reducing costs to preserve profit margin.

The object of these studies in the direction of machine runs and the economic quantity of parts to be ordered at one time is to secure the full benefit from quantity production, without increasing the investment beyond the point where the savings resulting from producing in large quantities at a time would be offset by increased investment charges for carrying large stocks. Apart from overhead expense, three distinct sets of items are included in the cost of manufacture, viz. unit cost, initial cost, and carrying cost. The unit cost represents the actual raw material used and the direct labour charge, and is, therefore, unaffected by the quantity of parts made at one time. Cost of production can, of course, be reduced through unit cost, either by obtaining cheaper raw material or by decreasing labour costs, by improvements in

manufacturing methods, or by the reduction of wages. Under any one set of conditions, however, the unit cost of an order must remain the same, whatever the quantity produced. The other two sets of items constitute opposing variables, and the problem is to find the point at which their combined total is a minimum.

The initial costs involved in the manufacture of an article include the cost of setting up the machine and the cost of all the associated clerical work involved in placing the order, selecting raw material, recording, and arranging for inspection. For any particular article, this group of costs represents appreciably the same total, irrespective of the number of parts that are produced on the order, so that the larger the number of parts actually produced, the smaller is the individual initial cost for each part. Unfortunately, however, this has a tendency to increase total costs through the implied carrying costs on large stocks.

Carrying Costs.

The group of items referred to as carrying costs includes interest on investment, insurance charges, stock losses and obsolescence, rental and maintenance of store-room space. It is apparent that the total of these carrying costs depends on the quantity of goods produced and the time for which they must remain in stock as governed by the rate of consumption. For instance, if we assume that the monthly rate of consumption is 100 and the quantity produced at each run is 200, the concern would have to run six orders during the year, but the average quantity to be carried in stock would be 100, on the basis of 200 at the beginning of a two-months' period and nil at the end. The firm could save on initial costs by producing the whole year's requirement of 1,200 at one run, but under these circumstances the average quantity in stock would be 600, with consequent increased carrying costs.

The accompanying curves (Fig. 7) show the cost per individual article on the basis of the quantity produced

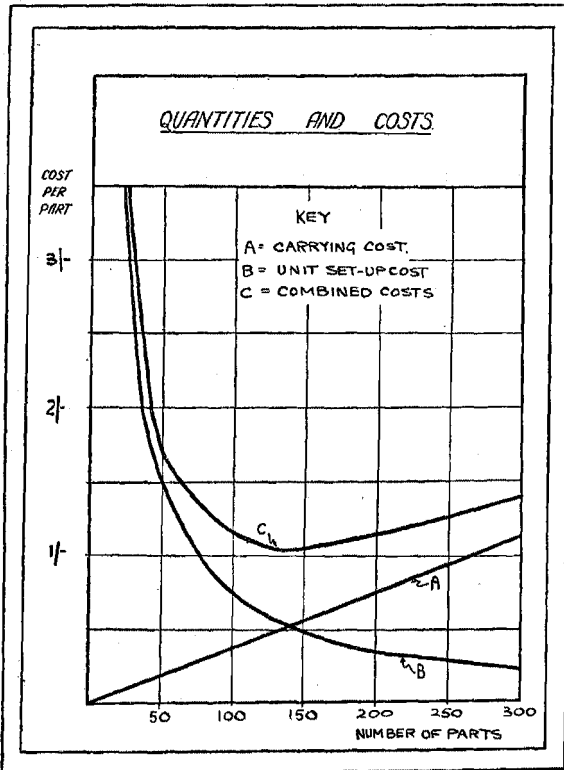


FIG. 7

at each run. It will be noticed that the initial cost or unit set-up cost decreases rapidly as the quantity produced at one time is increased, while the carrying cost increases

in direct proportion to the quantity produced. The problem is to find the point at which the combined initial and carrying costs, representing the sum of the two opposing groups, are a minimum. This, of course, represents the lowest point on the curve combining the two series, which, incidentally, is directly above the intersection of the two opposing series. Actually, it is not practicable to determine economic quantities from such a curve, and special formulae must be developed to take into account such factors as the rate of consumption, the set-up cost, unit cost, and carrying rate. Provided the principles behind the scheme are firmly understood, this should present no serious difficulty.

Formula for Ordering Quantity.

The economic ordering quantity can be determined with reasonable accuracy, however, by multiplying the set-up cost by twice the annual consumption, dividing the product by the unit cost (or prime factory cost) times the carrying cost per £ of investment, and taking the square root of the result. This relationship may be expressed by the formula—

$$O = \sqrt{\frac{S \times 2T}{C \times I}},$$

where O = Economic ordering quantity.

S = Set-up cost.

T = Annual consumption.

C = Prime factory cost.

I = Carrying cost per £ of investment.

To illustrate this point, we may assume a hypothetical case where the rate of consumption is 400 per year, the factory cost £1.25 per unit, the set-up cost for each order with associated clerical work £2.5, and the carrying rate 12 per cent per £ of investment. To determine the economic production quantity, we would proceed to multiply the set-up cost of £2.5 by twice the annual consumption,

or twice 400. This would give us a figure of £2,000. The second step in the calculation would be to multiply the unit cost, £1.25, by the carrying rate, 12/100, thus obtaining a figure of $£1.25 \times 0.12$, or £0.15. The third step would be to divide the result of the first calculation by the result of the second. This would give us $£2,000 \div £0.15$, representing 13,333, and the economic production quantity would be the square root of this figure, which is approximately 115. This means that under the conditions of this case the total unit cost would be a minimum if the article was made at the rate of 115 per order.

Other Practical Points.

It must be appreciated that the calculation of economic order quantities by the above formula is only an approximation, as several theoretical points have been omitted from consideration. In the first place, it has been assumed that machines are completely reset for each order and that only one machine is set up for each operation, whereas, in actual practice, this is not always the case. Finally, the consideration of process investment has been left out of the question. If desirable, a formula could be developed to allow for these theoretical points. Such a formula, however, would be much too complicated for general use, and the simpler form may safely be used in spite of the theoretical objections, particularly as the errors introduced more or less offset one another, although, in certain cases, it may be necessary to develop special formulae to meet the particular needs of the company in question.

Some of the advantages that have actually been obtained from the establishment of economic production quantities include more production on fewer orders and with a smaller labour force, reductions in raw material inventories, increases in the turnover of finished goods, an increase in the application of mechanical handling of materials, greater supervision of production at reasonable

cost, closer control of overheads, and improvements in cost-collection methods. The scheme of economic production quantities is not suggested as a panacea for all industrial ills, but experience has proved that if sufficiently careful consideration is given to its application, very surprising economy can be effected.

CHAPTER V

THE EXPENSE BUDGETS

EXPENSE classification—Some practical points—Expense budget principles—Manufacturing expense—Selling expense—Selling expense and market conditions—Bonus system of payment—Advertising expense—Advertising expense and sales—The advertising programme—Shipping and packing expenses—Auxiliary expenses—Administrative expenses—Profit and loss account—A new attitude towards profits—Fundamental features—Costs and profits—Profit points—Improving profits—Planning for profits—Lines of approach

IN so far as it has been described up to the present, the budget system has resulted in the establishment of a sales objective for the period under review; in a production programme to ensure that the goods involved are manufactured in accordance with delivery requirements, and in the most economic way possible; and in the setting up of an estimate of the shop cost of the required output, coupled with a control system for the supply of the necessary raw material, outside supplies, and labour. The next step is for a forecast to be made of all other expenses incurred in running the business, so that a profit and loss balance can be struck for the budget period, and so that expense quotas can be adjusted where necessary and standards established to ensure that the best possible profit is earned.

The expenses involved in running a manufacturing business may be considered as falling under the following headings—

(a) *Direct Producing Costs*, including—

Materials.

Wages.

(b) *Indirect Producing Costs (or Manufacturing Expense)*, including—

Depreciation.

Heat, light, power, and fuel.

- Supplies.
- Tool-room expense.
- Plant maintenance and repairs.
- Indirect labour.
- Development expense.
- Manufacturing planning.
- Design or engineering.
- Inspection.
- Other expense.

(c) *Selling Expense*, including—

- Salaries and commission.
- Materials.
- Travelling.
- Entertaining.
- Postage.
- Telephones and telegrams.
- Patents.
- Royalties.
- Other expense.

(d) *Advertising Expense*, including—

- Insertions in journals.
- Booklets, pamphlets, and catalogues.
- Trade subscriptions.
- Exhibition expenses.
- Other advertising.
- Periodicals.
- Postage.
- Stationery.
- Salaries.
- Supplies and other expense.

(e) *Shipping and Packing*, including—

- Materials and supplies.
- Wages.
- Freight.
- Other charges.

(f) *Auxiliary Expense*, including—

Salaries,
Supplies, and
Other expense for the
Accounting division,
Credit and collection division,
Employment division, etc.

(g) *Administrative Expense and Company Charges*,
including—

Cost of management, salaries and supplies, etc.
Rent.
Rates and taxes.
Insurance (including employer's share of National
Health Insurance schemes).
Pensions.
Bank interest and charges.
Benevolent expenses and charities.
Canteen losses.
Bad debts.
Loss on sale of fixed assets (at less than book value).

Expense Classification.

It must not be assumed from this list of accounting classifications that it is necessary in every instance for the expense budget to be prepared in sufficient detail to provide separate figures for each heading. The number of sub-estimates involved in the preparation of the expense budget will depend on the organization and accounting systems. It is not possible to establish any arbitrary rules. In certain instances, perhaps only two expense figures may be needed, one covering manufacturing expense and the other embracing selling and administrative expenses. In another instance, however, it may be desirable to have substantially more detail than that involved by the seven groups and 52 headings mentioned above.

The extent to which detailed analysis of expense is

desirable depends on the size and nature of the individual company concerned. Generally speaking, the sub-classification should not be carried any further than is necessary to enable an effective control to be maintained over expense, and to assist the management in focusing its attention as necessary on individual aspects of the business.

Another point that must be borne in mind in any application of the subsequent discussion to the practical problem of expense forecasting in the individual company is that the above sub-classification of expense does not represent any ideal arrangement, and must not be taken to imply that the actual division of expense headings in the individual company should be adjusted in line with this set-up. It is a purely arbitrary classification adopted as an illustration.

Some Practical Points.

In actual practice, it is quite probable that certain of these individual functions may be grouped together. It may, for instance, so happen that the sales department controls advertising, while the manufacturing department may include the shipping function as an integral part of its activities. On the other hand, there may be a more detailed subdivision of functional organization with, perhaps, a separate engineering department for example. The essential point to remember is that the budget estimates must be in line with the organization, so that the attention of the management can be focused on the individual functional groups of the business, and it is towards this end that any adjustment of accounting classification should be directed rather than towards any theoretically "ideal" basis.

Another important point is that the methods employed for the actual allocation of expenses to the various functions vary considerably in different companies. At the one extreme, there are companies who charge to individual departments only those expenses which are directly

under the control of the official in charge of the department, and carry all other expenses in a general expense account or under an administrative expense account. At the other extreme, there are companies who allocate all expenses to individual departments. The treatment of income tax and insurance of property is, perhaps, a good example of the point under consideration. In the first case, the total figure would be carried under administrative expense (which, for the sake of illustration, is assumed to include corporate charges), while in the second case, the income tax and insurance would be spread over the individual departments on some arbitrary basis. The preferable policy is to charge individual functions only with those expenses for which they are directly responsible. In any case, the departmental head is not in a position to give a reliable estimate of such indirect expenses, which must necessarily be computed by the accounts department (or financial department). If, however, for other reasons, it is felt desirable to continue with an existing practice of charging all indirect expense to individual departments, this need not militate against the successful adoption of budget control. The subject can be negotiated by arranging for the individual functions to estimate their direct expenses, and for the responsible budget or financial official to allocate the estimated indirect expenses to departments in the usual way. Care should be taken, however, to distinguish between these "controllable" and "non-controllable" elements of departmental expense, so that in the comparison of actual results against budget estimates a proper picture of the efficiency of the individual departments can be obtained.

Expense Budget Principles.

There are thus two broad principles which must be taken into account in framing the expense budgets. In the first place, the estimates must tie in with the organization of the company, so that the responsibility for the

actual performance can be fixed quite definitely on one individual or group of individuals. In the second place, the estimates must be in line with the classification of expense employed by the accounts department, so that actual expenses can conveniently be compared with budget estimates. Reference has already been made to the importance of such an interlocking between budgets, accounting records, and organization. This is particularly desirable on the expense side of the budget if any effective measure of control is to be secured, and any necessary readjustment of accounts procedure, organization or budget forms towards this end should be put in hand as a preliminary step to the preparation of the expense budget itself.

The actual steps involved in the preparation and administration of the expense budget are as follows—

1. Each functional department of the business must prepare an estimate of the probable expenses of the section for the budget period based on anticipated sales, the production programme, standards established from past results and other relevant detail.
2. These estimates must be interpreted by some competent official in terms of a financial programme and estimated profit and loss account for consideration by the management.
3. As an outcome of this consideration, the preliminary estimates must be adjusted where necessary to establish fixed allocations for each departmental unit which will serve as limits on expenditure for the period under review.
4. Regular reports must be prepared to show the progress of actual expense against the budget estimate.

For the sake of illustration, it will be assumed that the selling, advertising, manufacturing, shipping, auxiliary, and administrative sections of the business are handled by individual functions, and that all non-controllable expense items, such as rent, rates, and insurance

are estimated separately, and not allocated separately to the various operating functions.

Manufacturing Expense.

The preparation of the budget for manufacturing expense has been discussed in detail in the previous chapter, and is mentioned here only to avoid any possibility of its being overlooked. The estimate will represent a forecast of the probable cost of running the factory for the period under review, and will show the amount that the manufacturing department expects to spend on—

- Indirect wages.
- Heat, light, power, and fuel.
- Supplies.
- Tool-room expense.
- Plant maintenance and repairs.
- Development.
- Manufacturing planning.
- Design or engineering.
- Inspection.
- Other items.

For costing purposes, depreciation, insurance, rates, and similar fixed charges might also be included in the estimate. These expenses would, however, be calculated by the accounts department, and would be shown separately as "non-controllable expense," both to avoid any danger of counting these items twice in the ultimate addition of all expenses, and to provide a fair basis for comparing actual expense with the budget estimate.

Selling Expense.

The estimate of selling expenses for the budget period will, of course, be prepared by the sales department to include those expenses that would be involved in securing the volume of sales called for by the sales budget. The

principal items of sales expense, apart from advertising, will probably be salaries and commissions, and travelling, entertaining, and office expenses. Separate estimates should be prepared for these items, and, if necessary, for sub-classifications of these items to enable a sufficiently close control to be exercised over expense. Office expense, for instance, may be analysed to show separate figures for stationery, telephones and telegrams, postage and contributions, while the figure for "other expenses" may often be analysed in detail with advantage.

In certain cases, it is sometimes advisable further to break down this estimate of selling expense to provide figures for the unit marketing cost of individual lines, selling expenses per individual territory, etc. The extent to which this analysis should be carried must be governed by the practical advantages likely to be secured from the preparation of the figures.

Selling Expense and Market Conditions.

The actual estimation of future selling expense is rendered difficult by the fact that there is frequently no tangible relationship between volume of sales and selling expense. Where salesmen are paid on a commission basis, the computation of expense is facilitated, but, in many cases, expense must be estimated on the basis of past records adjusted for changes in business volume. That is to say, if anticipated sales showed an increase of 10 per cent on the previous year, sales expense might be estimated to increase in similar proportion. This is not always a perfectly logical conclusion. In periods of trade depression, for instance, it may require a substantial increase in expense to enable sales volume to be maintained at the previous figure, and, in the face of restricted markets, the cost of increasing volume of sales might be prohibitive. Incidentally, a certain measure of advance consideration would have been given to this aspect of the problem in the preparation of the sales budget, so that the desirability

of the proposed sales programme could be judged from the viewpoint of cost of marketing.

Although the estimation of future selling expenses is sometimes difficult, it is nevertheless very important that reliable standards should be established. It will be shown later that this problem can often be approached more successfully from the aspect of desired profits. Some sort of estimation of the future by the executive in charge of the sales department is, however, necessary towards this end. Although his estimate may differ substantially from the allocation finally made to his department as a result of the overall consideration of the expense budget, the sales manager will be inclined to give more whole-hearted support to the budget policy if he feels that his own opinion has been taken into consideration, than would be the case if the selling expense budget represented an estimate made by the management with no reference to actual market conditions.

Bonus System of Payment.

As a sideline on the development of budget control in the sales department, it is frequently a good policy to establish a system of bonus payment on the basis of budget realization. This is a particularly convenient system for rewarding efficiency in industries where the nature of the articles sold precludes the adoption of the usual salary-and-commission basis of payment. Here again, however, the details of the actual scheme must be framed with an eye to the peculiarities of the business rather than on the basis of any arbitrary preconceived formula. The general principle of payment by results must be applied to reward efficiency resulting in an excess of sales over budget, but economy in operation must also be taken into account to avoid any such situation as that by which salesmen might earn big bonuses through concentrating on lines that are easy to sell, but which do not perhaps carry a very big margin of profit. If any sort of bonus

system is to be introduced, it is also important that the sales budget should represent a reasonable goal capable of achievement.

One important concern which analyses its actual expenses by individual salesmen, and which breaks its budget down into quotas on a similar basis, uses a bonus formula whereby the salesman is paid a percentage of the excess over budget, realized on the figure representing gross profit on sales less selling expenses. It may not be practicable to apply such a scheme in a company where the accounting records are not so complete, but, in any case, it is usually possible and desirable to pay the sales manager on some such basis, although the individual salesmen may be remunerated on a straight salary basis with annual increases in pay as the reward for a successful record. The sales manager's salary under such a scheme might be calculated on some such formula as the following—

Basic salary Plus $\frac{1}{2}$ per cent of salary for each 1 per cent increase in sales over budget and less $\frac{1}{2}$ per cent of salary for each 1 per cent deficit of sales against budget.

Less $\frac{1}{2}$ per cent of salary for each 1 per cent excess of actual selling expenses over selling expense budget and plus $\frac{1}{2}$ per cent of salary for each 1 per cent reduction in actual expense against budget.

Advertising Expense.

Advance planning of the operations of the advertising department is quite a common feature of business administration, although there is no standard procedure in use for determining the actual allocation to advertising expense, or for establishing a working programme on this basis.

Many firms which do not attempt to forecast any of their

other expenses, systematically set up an allocation for advertising expense at the beginning of each year or each trading season. This allocation is, however, more usually based on an arbitrary percentage increase or decrease on the previous year's figure than on any attempt to secure a logical advertising programme co-ordinated with probable or desired future sales. In some instances, this may represent the best and most convenient system for controlling this type of expense. This applies particularly to firms where the advertising is of a general propaganda nature and not aimed at furthering the sales of any individual products. Usually, however, it is advisable to endeavour to ensure some more definite relationship between advertising expense and sales.

The ultimate object of all advertising should be to maintain or improve sales, and a system whereby advertising expense is computed as some fixed percentage of future sales is a distinct advance on the more usual bulk annual appropriation scheme.

Advertising Expense and Sales.

An even better system for the type of company with an extensive advertising programme is for the advertising expense budget to be based on a consideration of the publicity effort required to secure the desired sales of individual lines, bearing in mind the general market conditions likely to be ruling in the period under consideration. This would result in a list showing the lines of goods that are to be advertised, together with the amount of money to be spent on each.

At the present day, publicity effort assumes many forms. Insertions in journals and daily papers, together with the preparation of pamphlets, catalogues, leaflets, and bulletins, are, perhaps, the most common types encountered in practice. Trade exhibitions, cinema advertising, billboard advertising, sky-writing, free gift schemes, Press write-ups, and many other avenues are, however,

also available, and the desirability of using these media must be taken into account in framing the advertising budget. There are also two distinct methods of actually carrying out advertising operations. On the one hand, there are firms who prepare their own advertisements, and arrange for their insertion. These firms usually maintain a fairly large staff of experts and often have their own artists and block-makers. On the other hand, there are firms who entrust the bulk of their advertising work to agents and thus dispense with the need for an elaborate, highly-skilled staff. The nature of the advertising arrangements in this direction will, of course, be reflected in the set-up of the advertising expense budget, so that it is impracticable to give any standardized form suitable for this purpose.

The Advertising Programme.

Similarly, it is not possible to draw up any typical advertising programme showing how an advertising allocation is to be spent. The advertising programme will vary in different industries, depending on whether the emphasis falls on Press advertising, mailing campaigns, or personal canvassing. Generally speaking, however, the advertising budget should embrace a list showing the lines of goods that are to be advertised, the total amount that is to be spent on each, and details of the distribution of this total expenditure over the main types of advertising effort. The advertising manager should prepare a detailed programme, tied in with this schedule, for the budget period, showing the various media selected for Press advertising, the number and size of insertions, their frequency of appearance, and the subjects to be covered. Other types of publicity effort should be treated in the same way.

Actual operations throughout the period must be followed systematically in relation to the budget allocation, with particular reference to unappropriated amounts.

Under such a scheme, expense would be regarded as being incurred as soon as actual commitments were made, rather than when actual cash outlay was involved.

An essential feature of the advertising budget is that it should be as flexible as possible to facilitate any revisions that may be desirable. This is a point that should not be lost sight of in framing the detailed advertising programme for the period. Changes in market conditions may call for a radical alteration in the emphasis of the company's advertising. The extent to which this is practicable within the limits of the original budget estimate will be indicated by the record showing the balance of the total appropriation available at the end of each month.

Shipping and Packing Expenses.

Whether shipping and packing expenses should be considered as part of the cost of the goods sold or as selling expenses depends on the peculiarities of the particular business. It is not uncommon to find firms where the shipping department represents an integral function of the manufacturing department, and, of course, in such instances, shipping expense would be included under a sub-classification of manufacturing expense. There are, however, certain features which justify separate consideration of this aspect.

In general, there is insufficient knowledge available in industry of the costs of distribution. Many firms have a very exact idea of the unit manufacturing cost of the articles they sell and keep a very close control over these expenses. But shipping and packing expenses (and often selling expenses) are allowed to develop unchecked without any attempt to relate them to selling prices. It is felt that many firms would benefit from a geographical study of their distributing expense, aimed at discovering any instances where freight and package charges represent an undue burden on profits. In any case, sound business practice demands that some standard should be established

to control these expenses, and an appreciation of these items is also necessary to enable sales figures to be converted properly to a basis of manufacturing programmes, if conditions demand that this calculation must be worked backwards from selling prices in the absence of data concerning physical requirements.

The actual calculation of shipping and packing expenses must depend on the nature of the products handled, but it will be obvious that they must have some relationship to the volume of sales anticipated. In some instances, packing represents an essential part of the article, and the cost of the necessary supplies and labour can be calculated on this basis. This situation might be encountered in the case of manufacturers of patent foods, soaps, high-grade perfumes, etc. At the other extreme, a special-order type of company might be obliged to estimate this expense on the basis of typical jobs handled in the past.

The estimate of shipping expense will also depend on the nature of the company. In some cases, this may involve an estimate of the maintenance and running expenses of the company's private fleet of lorries; in other instances, anticipated sales must be considered by geographical areas.

Admittedly, it is frequently very difficult to arrive at an accurate estimate of shipping and packing expenses. This fact, however, only makes it all the more important that every possible care should be taken to arrive at a reasonably reliable figure, so that a proper measure of control can be exercised over these expenses to ensure maximum profits.

Auxiliary Expenses.

Under this heading must be included estimates of the expenses to be incurred in maintaining the accounting, purchasing, secretarial, personnel, credit and collection departments of the organization, so that these expenses can be included in the overall picture.

These estimates will usually all fall under the class of office expense, and separate estimates should be prepared for each of the sections that represents an independent entity associated with any individual executive. The principle of associating budget estimates with the organization and with the accounting system should be applied to decide the actual separate estimates required in practice. If, for instance, the secretarial, credit, and collection and accounting functions are all intimately associated under the control of the secretary, it would not be necessary to prepare three separate estimates for these functions, as one overall estimate for the department would enable a sufficiently detailed administrative control to be maintained. Similarly, if any of these so-called auxiliary functions represents an integral part of the activities of any other department, there is no need for the preparation of a separate estimate simply to line-up the budget system with any preconceived theoretical system of forms and estimates. The essential feature, as already pointed out, is that these estimates of expenses should follow the lines of the organization chart, so that responsibility for the cost of running the various departments can be placed effectively on the executive heads in charge.

Administrative Expenses.

The final estimate in the expense budget structure is a forecast of the expenses of the general executives of the company whose activities are not confined to any one individual department. Here, again, it is impossible to lay down any arbitrary rules as to whose expense should be included in administrative expenses—apart from the managing director's—but the standard accounting routine in use will readily give the solution to the problem.

If the company is not following the practice of charging fixed expenses to individual departments under a "non-controllable expense" heading, those fixed company charges such as income tax and insurance can be included

under administrative expenses. The actual estimation of these fixed charges is relatively simple, and they can readily be figured by the accountant or budget officer from past records and other data. Incidentally, even though the system is followed of charging out such expense to individual departments, the original estimates must still be made by the accountant or budget officer and allocated to individual departments by that official.

Profit and Loss Account.

With the completion of estimates of probable expense for all of the operating and other departments, a point is reached where a preliminary profit and loss account can be established to show the estimated results for the period under review. The actual preparation of this statement is relatively simple. All that is involved is an arithmetical application of the individual estimates according to debits or credits. The actual mechanics of the statement and the origin of the various figures will be clear from the accompanying illustration (Fig. 8). The schedule should not, however, be considered as a standard form suitable for universal application. It is intended only to show the principles behind the preparation of the preliminary profit and loss account, and the actual type of schedule used by any individual company must be in line with its own accounting system.

It must not be thought that the preparation of the preliminary profit and loss account represents the final stage in the development of the expense budget. This statement is the prelude rather than the epilogue. It represents a picture of what would happen if the various estimates submitted by the individual departments were realized. It is a forecast, not a plan, and must be examined carefully—

(a) To determine whether the individual estimates are accurate.

(b) To decide whether the indicated profit balance is desirable.

XYZ COMPANY

SUMMARY OF ESTIMATED RESULTS

Year ending 31st December, 19..

No.	ITEM	£	DERIVATION
1	Anticipated Sales . . .	408,000	From Sales Budget
2	Cost of Raw Materials . . .	95,000	From Materials Budget
3	Direct Wages . . .	83,000	
4	Depreciation . . . £7,000	71,000	From Manufacturing Expense Budget
5	Supplies . . . 32,000		
6	Tools and Repairs . . . 10,000		
7	Other Shop Expense . . . 22,000		
8	Total Manufacturing Expense . . .		
9	Cost of Goods Manufactd.	249,000	Total of 2-8
10	Reductions in Stocks . . .	22,000	From Production Schedules
11	Total Cost of Goods Sold . . .	271,000	Total of 9 and 10
12	Total Gross Profit . . .	137,000	Difference between 1 and 11
13	Selling Expense . . .	33,000	From Expense Budgets
14	Advertising Expense . . .	15,000	
15	Packing and Freight . . .	8,000	
16	Auxiliary Expense . . .	13,000	
17	Administrative Expense . . .	10,000	
18	Rent, Rates, and Fixed Charges . . .	18,000	
19	Net Profit on Trading . . .	40,000	Difference between 12 and 13-18
20	Shop Deficit . . .	7,000	From Production Budgets
21	Net Profit . . .	£33,000	Difference between 19 and 20

FIG. 8. PRELIMINARY PROFIT AND LOSS ACCOUNT

(c) To serve as a basis for fixing allocations for expenses to ensure the realization of the best possible profit objective.

A New Attitude Towards Profits.

The usual approach to net profits in manufacturing industry is that they are considered as being established by the formula—

$$\begin{aligned} & \text{Sales} \\ & - \text{Costs and expenses} \\ & = \text{Net profits.} \end{aligned}$$

That is to say, profits are regarded as a surplus resulting from the deduction of costs and expenses from sales income, and it is this line of approach that has been taken in the preceding discussion. In recent years, however, partly as an outcome of business depression and partly as a result of improvements in management technique, there has developed a new attitude towards net profit. This is reflected in a growing tendency to plan operations to ensure the realization of a desirable profit, in place of the old practice of leaving net profit as the chance balance of uncontrolled costs and expenses and sales.

This new attitude may be expressed by the formula—

$$\begin{aligned} & \text{Sales} \\ & - \text{Desired profits} \\ & = \text{Allowable costs and expenses.} \end{aligned}$$

This is a highly significant development. Instead of leaving profits as the outcome of the relationship between sales and uncontrolled expense, definite standards are set on all items of expense and cost to ensure the realization of a predetermined desirable profit. The net-profit objective is thus given proper weight as the decisive factor in business operations.

Step by step with this development there has been a marked tendency on the part of industrial management to analyse more closely the profit-making possibilities of industry. It is appreciated that it is impossible to budget operations ahead with 100 per cent accuracy, and it is

felt desirable to have some measure of the minimum volume of business required to enable a net profit to be earned. A measure is also required of the profits that should be earned at various degrees of shop activity, together with the complementary information of what sales are required to enable certain selected profit achievements to be realized.

Towards this end, a true appreciation is needed of the nature of expenses and costs. Total costs and expenses are not a definitely related function of the volume of business handled. There are certain expenses which are associated with fluctuations in business volume and which vary in direct proportion to the rise or fall of sales. But there are other expenses with no direct relationship to the volume of business handled. These expenses represent charges, such as rent and insurance, which must be met irrespective of whether the company is operating at normal or sub-normal capacity. The segregation of these fixed and variable elements of costs and expenses must be the first step towards any effort to plan operations for a profit or to establish profit standards.

Fundamental Features.

An analysis of the fundamental nature of costs and expenses in a typical manufacturing company is shown in the accompanying illustration (Fig. 9). It has been pointed out that there are certain fixed charges in any business which have to be met irrespective of activity. If the premises are rented, then rent must be paid irrespective of the amount of work that is actually being done in the factory. Rates and insurance represent similar fixed charges, and depreciation can conveniently be considered under the same heading. In the hypothetical case chosen as an illustration, these fixed charges are calculated to amount to £110,000, and they are represented on the chart by the area *A*, which remains unchanged with changes in productive activity.

Apart from fixed charges of this nature, there are other expenses involved in running a business, which, although

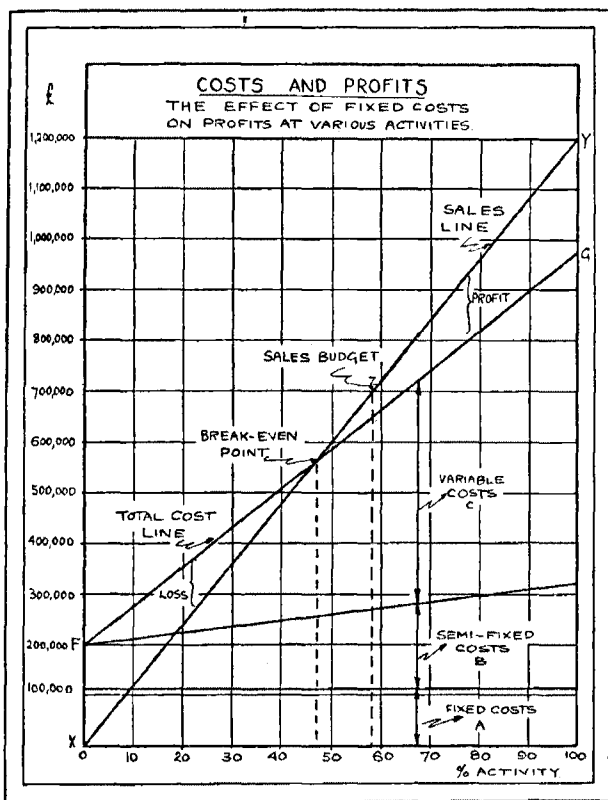


FIG. 9

fluctuating with changes in activity, could not be reduced to zero if the factory were temporarily shut down. These expenses may be termed semi-fixed items, and are represented on the chart by the area B. The significance of this section of the chart is that the cost of maintaining

a nucleus organization in the event of a complete temporary shut-down would amount to £90,000. In such a case, for instance, the managing director and other principal executive officers would be retained on the pay-roll, together with other key men in the organization. Depending on the reason for the shut-down, further expenditure would probably be involved in advertising, selling expenses, and office supplies. This element of expense would not, of course, remain stationary as activity was resumed, and it is assumed that, with the factory running at full capacity, these charges would amount to £220,000.

Finally, there are other costs which fluctuate directly with the volume of business done. These are represented on the chart by the area *C* and include items such as direct labour, raw material, manufacturing expenses and supplies (apart from the items included in the semi-fixed classification), and similar expenses. It is calculated that these expenses amount to £650,000 at 100 per cent activity, and that they are negligible if the factory is shut down.

The line of total cost for the factory is thus represented by the combination of the fixed, semi-fixed, and variable elements of expense, and, as shown on the chart by the line *FG*, this total cost amounts to £200,000 when the factory is shut down (point *F*), and increases to £980,000 on the basis of 100 per cent activity (point *G*). It now remains to analyse the relationship of these costs to sales income at various degrees of activity.

Costs and Profits.

In the particular instance, it is assumed that 100 per cent productive activity is represented by sales of £1,200,000, and that sales are strictly in proportion to activity. This is shown on the chart by line *XY*. When the factory is working at 100 per cent activity, total sales amount to £1,200,000 (point *Y*) against total costs of £980,000 (point *G*) leaving a net profit of £220,000. It

will be seen, however, that as the volume of business decreases, the profit margin between costs and sales declines until, at a point representing approximately 48 per cent activity, there is no profit. As this break-even point is passed, costs continue to decline slower than sales, so that an increasingly high loss is involved which reaches a figure of £200,000 at zero activity, when there is no sales income to offset fixed costs and nucleus charges of £200,000.

The significance of such a cross-over chart to any individual business will be at once apparent. It is, in summarized form, a complete variable budget for the business on a normal basis. It provides a measure of the volume of sales required to enable the company to break-even. Figures can be read from the chart to show the amount of profit that should be earned at various degrees of sales activity or, on the other hand, to show the volume of sales required to yield certain desired profits. For instance, a spread of £100,000 between the sales and cost lines is reached at 70 per cent activity, indicating that £840,000 sales are required to enable this net profit to be achieved.

Profit Points.

In any particular firm, similar readings could be taken from the chart to indicate—

(a) The volume of sales required to enable preference dividends to be earned.

(b) The volume of sales required to cover normal ordinary dividends.

(c) What net profits should be earned at various rates of turnover of capital.

(d) What net profit should be earned at normal activity.

(e) The maximum profit-earning possibilities of the business.

Similar "profit points" could be established for any other significant stages of activity, and, in this way, a

very valuable detailed knowledge of profit-earning possibilities could be established.

Apart from its other advantages, the cross-over chart provides a useful check against the accuracy of the budget estimates, since readings can be taken to show what expenses and profits should normally be at the budget activity. For instance, if the company was budgeting for sales of £700,000 a reading from the chart would indicate that a net profit of £50,000 should be earned at this activity. If the preliminary profit and loss account showed a smaller profit than this, a careful analysis would be made to detect any cases of "over-estimating." This would be facilitated by preparing a cross-over chart, including all the individual fixed and variable costs involved in running the business, so that the separate estimates could be checked against these standards.

After this analysis has been made, the management should be able to assure itself of the reliability of the actual forecasts of expenses. It may well happen, however, that the normal profit indicated by the anticipated sales figure is insufficient. It is here that the art of profit planning comes into operation.

Net profit is the fundamental objective of all business activity. The ability to maintain profits is not only a reliable measure of managerial efficiency; it is often a deciding factor whether a company remains in operation or is forced into liquidation.

Improving Profits.

There are two avenues of approach towards improved profits. On the one hand, profits may be increased through an increase in selling prices or in the volume of sales. On the other hand, the objective can be reached through reductions in cost.

In the hypothetical case chosen as an illustration, the anticipated sales figure is £700,000, and, by deducting normal costs and expenses, a probable net profit of £50,000

is shown. Following the procedure of planning for profits, however, this probable profit achievement would be examined in the light of company requirements to see how far it represented a desirable achievement. It will be appreciated that the figure represents a net profit rate of only 7 per cent on sales, which is distinctly low. Furthermore, the capital structure of the company may be such that capital charges and normal dividends call for substantially higher earnings. Bearing these points in mind, and allowing for the market conditions likely to be ruling in the period, the company might decide that £90,000 is a desirable and possible profit achievement for the period under review.

Reference to the cross-over chart shows that this net profit could be assured by increasing sales to £840,000. It can be assumed, however, that the sales budget on which the estimates were based represents the best possible sales figure for the period under review, and that market conditions preclude any question of increasing sales to this figure without corresponding sacrifices in selling prices. The extra profit must, therefore, be secured from reductions in costs and expenses.

Planning for Profits.

The estimates already made show anticipated sales of £700,000, probable expenses and cost of £650,000, and normal net profits of £50,000 against the desired objective of £90,000. Applying the formula developed above, it will be seen that, under the new conditions, a limit of £610,000 is set on allowable costs and expenses. That is to say, although the aggregate expense figure estimated by the individual departments amounts to £650,000, only £610,000 can be allocated to these departments. Towards this end, the individual estimates would be analysed to decide where cuts could be made, and allocations would be made on this basis. The sales department, for instance, might have estimated its expense at £110,000 but, as a

result of examination, only £95,000 could be allocated to the department. This latter figure would represent the expense budget for the sales department for the period, and the executive in charge would have to plan his operations to ensure that this quota was not exceeded. Similar adjustments would be made for all other departments.

Actual expenditure would be studied closely in relation to the budget allocations to ensure that the estimates were not exceeded and, if necessary, arrangements would be made to establish authority in some person to cut off supplies in respect of any section of the organization consistently spending more than its quota, unless the head of that section could advance definite proposals for reducing expenditure to the budget level.

Lines of Approach.

It is comparatively simple to establish a quota against the expense of an individual section of an organization, and to lay down the law that this quota is not to be exceeded. But the effective control of operations on this basis to ensure that expenditure is kept down to the budget level without any sacrifice of efficiency is a different matter. It is impossible to lay down any arbitrary rules as to how this objective can be achieved. Each company must work out its own solution around its own individual problems. It may, however, be advisable to indicate a few general lines of attack that can be followed successfully in most companies.

1. Improvements in processes. Valuable economies can frequently be introduced through time and motion study aimed at finding the best and cheapest way of performing each operation.

2. Improvements in handling. Unnecessary handling is a common source of lost profits in industry, and the regrouping of productive machinery or the installation of mechanical handling facilities is frequently profitable.

3. Regrading labour. Substantial economies in direct

labour costs can frequently be achieved through a check-up to ensure that high-grade skilled labour is not being used on operations that could be performed with equal success by semi-skilled or unskilled labour.

4. Quality. Degrading of quality is not usually advisable, but economies can often be effected through improvements in quality, thus reducing rejects and returns.

5. Spirit of economy. The company that can get the spirit of economy into its workpeople has won half the battle of reduced costs. This applies particularly to office staff, where prodigal use of stationery, postage, telephones, etc., is a frequent source of loss. It is often desirable to institute a suggestions scheme, under which practical possible economies suggested by employees would be suitably rewarded.

6. Elimination of waste. Every attention should be given to this aspect, particularly in the direction of supplies and electric light. Anti-waste exhibitions showing the annual cost of common instances of waste are a good way of bringing home the importance of this matter.

7. Reclamation. The reclamation of trade waste and disposal of scrap are often worth while following up.

8. Payment by results. It is contended that minimum unit cost can only be secured through adoption of the principle of payment by results. This often applies as much to the salesmen and to the management as it does to the productive labourer.

The above is by no means an exhaustive list, but it is, perhaps, sufficient to indicate the broad lines along which an attack should be made on costs and expenses to safeguard predetermined desirable profits.

CHAPTER VI

THE FINANCIAL BUDGET

OBJECTS—The cash position—The financial programme—Cash receipts from sales—Accounts receivable and cash—Monthly billings—Receipts from billings—Other receipts—Cash disbursements—Comparison of cash income and outgo—The surplus cash balance—Balance of receipts and outgo—Financing the programme—The efficiency of management—Functions of management—Managerial standards—Significance of the balance sheet—The estimated balance sheet—Forecasting the stock position—Forecasting balance-sheet liabilities—Analysing the balance sheet—Financial ratios—Profit standards—Standards for turnover—Significance of turnover ratios—Balance-sheet relationships—Revising the programme—The master budget

A COMMON cause of business failure is lack of capital, arising from neglect to estimate financial requirements in advance and plan operations accordingly. The adoption of budget control will not, in itself, solve all the financial problems confronting business management, nor will it automatically turn conditions of insolvency to prosperity. Its advantage, however, is that it establishes a clear picture of the nature and extent of the problems lying ahead, and indicates the best courses of action that can be followed to cope with the situations as they arise.

Objects.

There are two distinct aspects to the financial budget. In the first place, it provides an advance indication of the probable cash and working capital requirements throughout the period, and so serves as the basis for a financial programme to ensure that these requirements are met. In the second place, it gives an estimated balance sheet and estimated profit and loss account which show the effect of the financial programme on income and on the financial structure of the business, and which serve as the basis for an advance measurement of managerial efficiency.

The statements and estimates involved by the financial budget structure are somewhat complicated. It may, therefore, be advisable to give a brief outline of the steps involved before proceeding to a discussion of the details.

The Cash Position.

The procedure for budgeting the cash position entails the separate consideration of every individual item in the sales, production and expense budgets to establish what cash collections and disbursements are implied, and when these can be expected. In a manufacturing company, the prime source of income will be collections of receivables arising out of past and future sales. To these cash receipts from sales must be added anticipated receipts from the disposal of scrap material and surplus or obsolete plant, collections on special notes receivable, income from new capital issues and calls, and income from any other source, whether of a "capital" or "revenue" nature. The total monthly figures of cash income so established must then be offset against disbursements.

Cash disbursements will be involved by notes and accounts payable arising out of the purchase of materials, expense supplies, advertising space, and new plant, as indicated by the operating budget schedules. These payables, together with any outstanding from the previous period, must be assigned to the particular months in which the actual outlay is anticipated and added to disbursements for pay-rolls, rents, rates and taxes, miscellaneous expenses, dividend and interest payments, and any other sources of outlay indicated by the budgets.

Ideally, future cash receipts and disbursements should be calculated on a daily basis. In practice, however, this is not feasible, and the finances of the concern must accordingly be so planned as to leave a small surplus cash balance to cover this situation and to provide a safety factor against inaccuracies in the estimates. The relationship between cash receipts and disbursements must be

considered from the viewpoint of its effect on this cash balance.

The Financial Programme.

On the basis of these estimates of cash receipts and cash disbursements, a programme can be made for controlling the finances of the business. Although a company must, of course, pay its way over any long period, there may well be intervals when there is an excess of outgo over income. With the advance knowledge of the extent of temporary financing that will be needed at certain definite dates in the future, the management is obviously in a much stronger position to negotiate for such loans than if no such advance knowledge is available—particularly so, as a concrete picture can be shown to indicate how such temporary indebtedness arises. On the other hand, the estimates will show whether any surplus cash balances will be available, and arrangements can be made for the investment of such funds for as long as may be safe.

Reference has already been made to the preparation of an estimated profit and loss statement by a straightforward arithmetic application of the various items in the operating estimates, according to debits and credits. The preparation of the final profit and loss estimate follows very much the same lines, but includes the details of operations that, for the sake of convenience, are commonly omitted from the initial analysis of this aspect.

Finally, to serve as a check on the accuracy of the profit and loss estimate and of the cash budgets, the financial analysis can be carried to the extent of forecasting the company's balance sheet a year ahead. This does not involve very much additional clerical effort and provides valuable information as to the effect of any proposed changes in policy on the ratio of current assets to liabilities and other balance-sheet relationships.

Broadly speaking, the effects of the adoption of budgetary financial control are to place in front of the responsible

executives at the commencement of a particular period all those facts and figures with which they would normally be confronted at the close of the period. Business administration is thus elevated from a place of "post-mortems" to one of forward thinking, and for blind hit-or-miss policies carefully considered plans are substituted, calculated to give the best possible results under the conditions that have to be faced.

Cash Receipts from Sales.

The method to be used for the determination of future cash receipts from sales will depend on the nature of the individual company. Cash may be received with orders on the one hand, while, at the other extreme, there may be a considerable lag between sales and cash receipts, representing the period of time taken to complete the following cycle—

1. Order received.
2. Goods manufactured or taken from stock.
3. Goods shipped or delivered to customer.
4. Account rendered to customer.
5. Collection made against account.

In between the two extremes there are a variety of companies operating on a cash-on-delivery basis, or under special arrangements for billing against the progress of manufacture in advance of actual delivery of the completed article, while the business of many firms represents a combination of the different types.

If the terms of sale are cash-with-order, the sales budget figure can obviously be taken as representing cash receipts. Similarly, if the terms are cash-on-delivery, the estimate of shipments computed as the basis of the manufacturing budget will represent cash receipts. Where credit is given, however, the conversion of the sales budget to an estimate of cash receipts from sales is relatively complicated and may with advantage be analysed in detail.

Accounts Receivable and Cash.

In a manufacturing business, or in any similar form of credit trading, the main source of cash receipts is from the collection of accounts receivable, and the reliability of the financial programme depends very largely upon the accuracy with which the forecast of these receipts is made. The sales budget must, therefore, be interpreted in terms of accounts receivable and billings. At the commencement of the budget period, the company will have outstanding a certain amount of accounts receivable representing goods that were completed and billed in the previous period, but against which collection has not been made. There will also be certain orders on hand which have not been completed, and for which accounts have not yet been rendered. New receivables will arise during the budget period from the completion of work on these orders. Figures must also be established for the amount of goods to be invoiced out during the budget period against the anticipated new orders represented by the sales budget.

Usually, a certain volume of the orders represented by this sales budget will remain on hand uncompleted at the close of the budget period. There will also be certain accounts outstanding against which collection has not been made. The total amount of cash to be received from sales during the budget period can be determined from these figures according to the formula—

Cash receipts equal

- Accounts receivable outstanding at the commencement of the budget period
- + Billings on orders on hand and on new sales (or shipments, if accounts are rendered with deliveries)
- Accounts receivable outstanding at the end of the budget period.

It is, however, not sufficient to have an estimate of

the total cash receipts over the whole budget period. Although the total receipts of a business over a year may be more than sufficient to offset disbursements, there may, nevertheless, quite easily be intervals when cash outgo is larger than income. Detailed figures are needed to bring such situations to light.

Generally speaking, monthly estimates represent sufficient detail to enable the finances of the business to be planned with safety. It must be appreciated, however, that if the forecast is prepared on this basis, a reasonable cash balance must be provided to cover any possible day-to-day difference between monthly receipts and cash payments, and the peculiar needs of particular companies may often make weekly forecasts essential.

Monthly Billings.

Assuming that monthly figures for cash receipts are sufficient for practical purposes, the first step in the determination of probable cash income is to establish monthly totals for billings against orders on hand and new sales. The determination of these monthly totals will be assisted if any large contracts on hand, or expected to be booked during the budget period, are excluded from the general picture and are considered separately on a basis of contract delivery dates.

For the remaining small orders, it will usually be found that there is a close relationship between sales and billings, the two series being separated by a period representing the normal delivery situation. That is to say, if billing figures available over a fairly long period are charted, they will be found to bear quite a close relationship to the corresponding sales curve, major fluctuations in the one curve following those in the other at a fairly regular interval, with perhaps occasional irregularities representing the effects of special contracts.

The application of this time lag to the sales budget

and anticipated carry-over from the previous period should give a fair approximation of future billings. Alternatively, if the company's policy is such that accounts are rendered to customers at the end of the month in which shipment of the goods involved was made, the delivery figures already established in connection with the production budget can conveniently be used as the basis for the billings estimate.

When these figures are adjusted to take account of special conditions existing in regard to large contracts, and of any known factors likely to affect this aspect of the results, it should be possible to prepare an accurate estimate for the business as a whole. The next step is to estimate when collection may be expected on each month's invoicing, as well as on the carry-over of accounts receivable from the preceding period.

Receipts from Billings.

If there are any individually large customers with whom special terms of payment have been agreed, it may be advisable to consider this element of the business separately. The bulk of the business will, however, usually represent a large number of individually small orders that must be dealt with as a whole.

In considering the aggregate figure for small orders, it is not practicable to estimate cash receipts on the basis of payment terms, and a different method of treatment must be adopted.

An analysis of the collections of past months should show that there is a fairly uniform ratio between billings and collections. This ratio may vary owing to general trade conditions, but, by careful study, percentages may be set up representing the average portion of each month's billing likely to be paid in the same month and in each following month. These percentages, applied to the actual billings of relevant months in the immediate past and to the expected billings of each month of the budget period,

will serve to indicate the amount of cash receipts to be expected for each month.

Billings and accounts receivable with the more important customers may be treated in a similar way, any special arrangements for payment that may be in existence being borne in mind. Care must be taken to give effect to any proposals for discounting large bills that will result in the receipt of cash earlier than would be indicated by the normal collection periods.

In the case of certain types of companies with but few contracts, it is frequently possible to list outstanding bills and new bills expected to result from orders on hand and sales in accordance with maturity dates.

The peculiar conditions will indicate what line of approach should be adopted in tackling the problem of estimating cash receipts from sales. In some fortunate cases, the conditions may be such that 30 days or some similar fixed credit is given, and virtually all customers pay their bills regularly on the due date. In such a case, the computation of cash receipts is very simple, as one month's shipments represent the following month's receipts. Usually, however, the lag between billings and collections varies at different times of the year, and special studies must be made along the lines already indicated to establish the peculiarities of the collection system. Often, separate consideration of various lines is needed, the collection policy on line *A* being radically different from that on line *B*. The geographical disposition of sales is also a deciding factor in certain cases, but all these peculiarities can be discovered by careful study.

Other Receipts.

When final figures for cash receipts from billings have been established by the most suitable method or methods, receipts from cash sales can be included under the correct months, and the various sections of the estimate can be combined to give total monthly cash receipts from sales.

Careful consideration must then be given to determine whether there are any other sources from which cash may be received.

Any notes taken from customers and others must be considered from the viewpoint of receipt of interest and collections on the notes. Other possible sources of cash income include interest on investment and bank balances, receipts from the sale of scrap materials and surplus machinery, and income from any contemplated share issues. Receipts of this type may fluctuate considerably from month to month, but they can usually be estimated with a fair degree of accuracy.

Cash Disbursements.

Having considered all probable sources of cash receipts, it is next necessary to estimate what cash disbursements will be necessary over the period under review. In this connection, it is very important that a proper distinction should be drawn between actual cash outgo and accrued expense. For instance, the accounting system may be such that income tax is accrued against each month's results to give a current picture of operations. From the viewpoint of the cash budget, however, income tax must be considered strictly from the viewpoint of when the money involved is actually to be paid. The estimate of cash disbursements is based on the budget forecasts for all the departments of the business, this distinction between actual outgo and accrued expense being borne in mind.

Disbursements will arise mainly from accounts and notes payable, representing purchases of raw materials, supplies and plant; from pay-rolls; and from selling, administrative, and shop expense. Rent, rates, taxes, interest on loans, dividends, and the redemption of debentures and loans may also involve cash outlay. A company has much closer control over its payments than over its receipts, and it should be correspondingly easier to forecast disbursements than to estimate receipts. The

most difficult item to handle will most probably be accounts payable.

At the beginning of the budget period there will be certain accounts payable representing purchases and commitments outstanding from the previous period. New payables will arise from orders already placed, but against which deliveries have not yet been received from the suppliers, and from fresh purchases to be made in accordance with the various operating sections of the budget programme. These accounts can conveniently be assigned to the specific months in the budget period in which payment is to be made.

Disbursements in payment of any notes falling due within the period can be allotted to the proper months, and cash payments on account of wages and salaries can be estimated on the basis of the production and sales programmes. Rent, rates, taxes, and similar fixed items, will demand disbursements at intervals which can be predicted with comparative ease. Dividends and interest payments have a definite due date, while payments for plant extensions and for purchases of additional premises and equipment are more or less under the control of the company.

Comparison of Cash Income and Outgo.

Any other possible source of cash outgo should be taken into consideration, so that the total cash disbursements can be compared against cash receipts to show the effect of the plan of operations on the cash balance, and to serve as the basis of a programme for financing the business over the period. This comparison can conveniently be made on a form similar to that shown in the accompanying illustration (Fig. 10).

It will be noticed that the form is constructed to show the monthly balance of receipts against disbursements. If a business is to pay its way, it is necessary for its operations to be planned so that its cash receipts are at

ANTICIPATED CASH POSITION

Year ending 31st December, 19..

ITEM	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
<i>Cash Receipts</i>												
From--												
Accounts Receivable												
Notes Receivable												
Loans												
Royalties and Commissions												
Investments												
New Capital Issue												
Disposal of Assets												
Other Sources												
Total Receipts												
<i>Cash Disbursements</i>												
For--												
Wages												
Salaries and Commissions												
Royalties												
Accounts Payable												
Advertising												
Rent, Rates and Taxes												
Dividends and Interest												
New Assets												
Other Expenses												
Total Disbursements												
Excess of Receipts												
Excess of Disbursements												
Cash Balance at beginning of month												
Cash Balance at end of month												
Additional Finance required to maintain Cash Balance												
Surplus Funds available for Investment												

FIG. 10. CASH RECEIPTS AND DISBURSEMENTS

least equivalent to its cash disbursements. Nevertheless, it is quite normal for there to be a temporary excess of cash outgo over cash income at certain periods, and this situation can be negotiated by carrying a sufficient cash balance or by recourse to temporary financing. It is, however, very important that advance information should be available as to the probability of such circumstances arising, and the main object of the cash budget is to provide this information.

Towards this end, receipts and disbursements are considered in the light of their effect on the cash balance. It will, for instance, be apparent that if the budget shows cash receipts of £55,000 in January against disbursements of £75,000, additional funds must be found during the month if the cash balance on hand at the beginning of January is less than £20,000. The extent to which additional financing is required is not, however, indicated truly by the arithmetic balance of receipts and cash in hand, and disbursements.

The Surplus Cash Balance.

It is impossible to forecast cash receipts and cash disbursements with absolute accuracy. The finances of the business must, therefore, be planned so as to ensure that there is always a sufficiently large cash balance on hand to cover any possible inaccuracies in the estimates. Similarly, although the receipts and disbursements for a month may be such that no additional financing is implied, it is quite possible that there may be a temporary excess of disbursements early in the month offset by an excess of receipts later. A reasonable cash balance must be provided to cater for this emergency. If the company is being financed to any extent by bank loans, it is further possible that the bankers may insist on a certain cash balance being maintained.

Bearing in mind these factors, a figure must be established to represent a cash balance which should always be kept on hand as a safety factor, and the financial programme must be constructed to ensure the maintenance of this figure. In order to illustrate this point, it may be advisable to introduce a hypothetical example.

Balance of Receipts and Outgo.

Assume that the estimates of cash receipts and cash outgo for the first six months of a budget period compare as follows. -

	Cash Receipts.	Cash Outgo
	£	£
January	55,000	55,000
February	65,000	75,000
March	60,000	80,000
April	80,000	60,000
May	85,000	70,000
June	80,000	60,000
	<u>£425,000</u>	<u>£400,000</u>

It will be noticed that, for the six months, total receipts exceed outgo by £25,000, but that there is an excess of disbursements in certain individual months, notably February and March. Assuming that the desired minimum cash balance is £10,000 and that the anticipated actual cash balance at 1st January is £15,000, the following comparison can be made—

	Jan.	Feb.	March	April	May	June
Excess of Receipts	—	—	—	20,000	15,000	20,000
Excess of Outgo .	—	10,000	20,000	—	—	—
Cash Balance at beginning of month	15,000	15,000	5,000	(15,000)	5,000	20,000
Cash Balance at end of month . .	15,000	5,000	(15,000)	5,000	20,000	40,000
Funds required to maintain Cash Balance at £10,000	—	5,000	25,000	5,000	—	—
Surplus Funds .	5,000	—	—	—	10,000	30,000

That is to say, the cash balance in hand at 1st January is £5,000 in excess of requirements, and this sum is available for outside employment until 1st February. During February, however, this surplus is required to meet an excess of outgo, and a further £5,000 must be found in the month to maintain a safe cash position. This situation gets worse in March when a deficit of £15,000 indicates

that a further £25,000 must be found from outside, in addition to the financing required in March, to meet the needs of the business. In April, the position improves so that it should be possible to pay back £20,000 of this temporary financing, leaving £5,000 outstanding, which is more than offset by an excess of receipts in May and June.

Financing the Programme.

The advantages of such an advance picture will be apparent. In the case chosen as an illustration, the management of the company would have at least two months' notice of the impending need for additional financing (the budget forecast would have been completed before 1st January), and would have had ample time to prepare plans to deal with the situation.

Arrangements might, for instance, have been made to take up a loan of £5,000 at 1st February for three months and an additional loan of £20,000 at 1st March for 30 days, with complementary arrangements for the investment of surplus funds in January, May, and June. If reasonable notice can be given, such arrangements can obviously be made more easily and on better terms than if the company is suddenly faced with an embarrassing and unexpected lack of cash. This applies particularly to seasonal industries, although advance consideration of receipts and disbursements is equally important for adequate financial planning in any business.

The Efficiency of Management.

The balance sheet is probably one of the most useful statements to business management in so far that it gives an analysis of the financial position of the business that cannot be obtained in any other way. Too often, however, the balance sheet is not used effectively to enable the proper conclusions to be drawn.

Present-day trade conditions demand maximum efficiency in business management as an essential to economic survival. Slipshod methods and rule-of-thumb practice cannot hope to succeed in the face of falling prices and reduced profit margins.

It is essential that every avenue towards lower costs in industry be explored with utmost care and diligence. Maximum profits rely on the utilization of all the available tools of management to the fullest practical extent and in the most efficient manner possible. The problem is: how can the business executive gauge the true efficiency of his managerial system and discover the weak spots?

Essentially, the true measure of business success is the ratio of net profits earned to total capital invested in the business. If this ratio is not as high as it should be—if, for instance, it is lower than the ratio realized by competitive firms—there is something at fault somewhere in the organization. Either the net profits are not as high as they should be, indicating uneconomic selling prices, high costs, or undue expense; or, alternatively, investment is excessive, indicating faults in the financial policy or in production methods. How can the executive diagnose these weaknesses in his system and how can they be cured? The only logical means of approach is to measure the actual efficiency of management in every section of the business against competitive standards, and then to consider all the available tools of management to see whether they can be used to increase profits or reduce investment.

Functions of Management.

Broadly speaking, there are three functions of management—

1. The merchandising function, involving the link between the company and its markets, and including the buying and selling sub-functions.

2. The operating function, including the performance of all manufacturing and distributing services.

3. The financial function, involving the efficient control of the use of capital in the business.

The combined results of management in these three functions are all ultimately reflected in the profit and loss returns and in the balance sheet. The problem before the individual company, therefore, is to analyse the detail of its *£ s. d.* returns in the light of competitive standards, and to consider what improvements can be effected to enhance efficiency in financial administration, in merchandising, and in operations and costs.

Managerial Standards.

The significant factors in these financial results will be discussed in more detail later. It will be appreciated, however, that unduly high expenses, or any funds invested in the business which are not used as efficiently as indicated by competitive standards, must of necessity tend to cut down the return on investment. It is not the actual amount of plant investment or inventories that is the point at issue, but the proportions of capital they represent and their inter-relationship as compared with standards of efficiency. There are, in other words, competitive and reasonable standards for turnover of inventories, for investment in fixed plant and properties, for gross profits on sales and for labour and factory costs, etc., and it is an essential duty of management to determine these standards and direct operations towards their realization.

Whether these standards are determined from actual statistics relating to the industry of which the company forms part, or whether they are based on a careful study of the business of the individual concern, is immaterial to the purpose in mind. The essential points are that the standards must be reliable and such that, if they are achieved, the company is assured of maximum efficiency

in all its operations, and, most important of all, that the standards must be used intelligently to direct executive decisions.

Significance of the Balance Sheet.

Although a balance sheet is, in fact, a record of the past, its value in business is that it gives an insight into the future. This apparent contradiction in terms will be admitted as truth after a little consideration. The real interest of the managing director in his balance sheet is not so much that it provides a record of the past as that it gives a pointer to future policy. If the balance sheet discloses an unsatisfactory working capital position, the managing director does not, or should not, use the information simply as an indication of a regrettable factor in past results, but rather as an indication of the steps that are necessary to improve the situation. The investor's interest in the balance sheet is not that it shows him how his last dividend was earned, but that it indicates the soundness of his investment for the future.

If a balance sheet of historic data is thus of value in indicating the future, how much more valuable would the same information be if it were available in the form of a forecast showing an anticipated future condition! This is the prime object to be served by the preparation, from the various operating budgets, of a balance sheet showing the position at the close of the budget period. The estimated balance sheet is the ultimate test of the desirability of the budget programme as a whole.

The Estimated Balance Sheet.

Before proceeding to a discussion of the significant factors in the balance sheet, it may be advisable to indicate how the estimated balance sheet is prepared. A typical balance sheet is shown in the accompanying illustration (Fig. 11). To consider the assets side first, any changes involved by the acquisition of new land, buildings, and

equipment or by the sale of obsolete or surplus facilities can be taken from the plant budget discussed in Chapter IV. Depreciation of these items will have been calculated as part of the preparation of the expense budget. Investments will probably not change physically from year to year, although it may be necessary for a revised value to be taken, based on the probable effect on share values of the anticipated trend of future business. Any new investments contemplated for the utilization of surplus funds, or for reasons of basic policy, will, of course, be taken into account.

ESTIMATED BALANCE SHEET

Position as at 31st December, 19..

<i>Liabilities</i>			<i>Assets</i>										
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	%	
Issued Capital—						Land							
Preference						Buildings							
Ordinary						<i>Less Depreciation</i>							
Mortgages and Debentures						Plant & Machinery							
Bills Payable						<i>Less Depreciation</i>							
Sundry Creditors						Furniture and							
Interest on Debentures						Fixtures							
Unpaid Dividends						Goodwill							
Reserve Funds						Stocks in Hand—							
Accrued Items						Materials							
Profit and Loss A/c.,						Goods Unfinished							
Balance available						Manufactured							
						Goods							
						Bills Receivable							
						Sundry Debtors							
						Investments							
						Deferred Charges							
						Cash at Bank							
						Cash in Hand							

FIG. II. ESTIMATED BALANCE SHEET

Goodwill will probably remain unchanged, unless the company is following a policy of reserving against depreciation in goodwill or writing-off this asset, in which case the necessary information will be available in the expense budget.

The value of cash on hand or at bank at the end of the budget period can be taken from the financial programme discussed in an earlier part of this chapter, care being

taken, of course, to allow for the effect of any proposed plans for new loans, capital issues, or investments.

A figure for accounts receivable (sundry debtors) at the close of the budget period will be available from the working sheets used in the calculation of probable cash receipts from sales during the period. It will be appreciated that accounts receivable at the close of the budget period are dependent on the three factors (*a*) accounts receivable at the beginning of the period, (*b*) new accounts arising from shipments against orders on hand and new orders, (*c*) cash receipts from receivables. Obviously, the figure for accounts receivable at the close of the period is $(a) + (b) - (c)$.

Notes receivable can be calculated along much the same lines as accounts receivable. The significant factors are: (*a*) notes receivable at the beginning of the period; (*b*) new notes taken in payment of goods or in payment of accounts; (*c*) cash receipts against notes; the balance-sheet figure being again indicated by the formula $(a) + (b) - (c)$. As already mentioned, these forecasts of notes and accounts receivable may be calculated by individual consideration of the important customers or by the application of ratios based on a study of past operations.

Forecasting the Stock Position.

Stocks on hand will represent stocks of raw materials and supplies, stocks of work in process and stocks of finished goods. There are, in practice, several ways by which these inventory figures may be estimated. Usually, however, the budget programme will have been based on certain predetermined closing stocks. In figuring the volume of work implied for the manufacturing department by the sales estimate, for instance, the sales figure was adjusted for actual opening and desired closing stocks. Similarly, desired closing stock would have been taken into account in planning actual purchases to meet the raw-materials budget.

Closing stocks of work in process are the resultant of the three factors: (a) opening stocks, (b) cost of materials, labour and manufacturing expense, (c) finished goods transferred from the factory to the stock of finished goods. If no predetermined desirable closing inventories have been established as a basis for the sales budget, the figures can be calculated from the formula $(a) + (b) - (c)$.

The stock of finished goods at the end of the budget period will depend on (a) opening stocks, (b) goods transferred from factory to stock, (c) stock sold. Here again, the formula $(a) + (b) - (c)$ can be applied, in which case the item (b) will, of course, represent the same figure as item (c) in the formula for work-in-process stocks.

Deferred charges represent generally formation and similar preliminary expenses, unexpired portions of insurance premiums and other prepaid expenses. These items can usually be calculated with comparative ease from the estimate of cash disbursements in conjunction with the expense budgets. This comparison will indicate what payments have been made against expense that is not accrued in the budget period.

Forecasting Balance-sheet Liabilities.

On the liabilities side of the balance sheet, changes in mortgages and share capital will be indicated by the financial programme for the period. A contemplated extension of business, for instance, might involve a fresh issue of ordinary shares.

Accounts and notes payable can be determined from the working sheets used for the estimation of cash payments in much the same way that receivables were figured.

The factors affecting accounts payable (sundry creditors) include: (a) accounts payable at the beginning of the period, (b) new accounts payable representing purchases of materials, supplies, advertising space, etc., (c) cash payments against accounts payable. The formula is, of course, $(a) + (b) - (c)$.

Factors governing notes payable are : (a) opening bills, (b) new notes given for materials, (c) new notes given against accounts payables or borrowings, (d) payments against these notes, and the formula is $(a) + (b) + (c) - (d)$.

Dividends payable will, of course, depend on the dividend policy for the period under review. Accrued receipts can be calculated from the expense and cash budgets.

Reserves can be calculated by making necessary allowances for the policy to be followed during the period, while the profit and loss account is a resultant of all the other items in the various budgets calculated in the usual way.

Reference has already been made to the procedure for the preparation of a preliminary profit and loss account (see Fig. 8). Following these same lines, a final profit and loss estimate can be made in the form of the usual accounting report to take into account allocations to reserves, stock depreciation, and any other items omitted from the original consideration.

Analysing the Balance Sheet.

Having prepared the estimated balance sheet and profit and loss account, it now remains to assess the significance of the figures as indicating the desirability of the budget plan. The first step towards this end should be to express the individual items of the balance sheet as percentages of the total, for comparison against predetermined standards.

Significant relationships in this connection are—

1. Liquid assets to total assets, being the proportion of total assets represented by cash and accounts and notes receivable. This ratio should not fall below a certain figure, although this bottom limit may vary with the peculiar needs of particular companies.

2. Inventories to total assets. It is important to know what proportion of the company's funds is tied up in

stocks, as there is obviously a "high" limit which should not be exceeded.

3. Fixed assets to total assets. It is obvious that not more than a certain proportion of the funds should be invested in fixed assets such as land, buildings, and equipment if an unduly high burden of fixed overhead expenses is to be avoided.

4. Intangible assets to total assets. If intangible assets, including goodwill, represent too high a proportion of the balance-sheet total, the situation may become dangerous unless steps are taken to write-down such assets.

5. Current liabilities to total liabilities. Current liabilities are represented by accounts and notes payable, and should not exceed a certain proportion based on the peculiarities of the business.

6. Mortgages and share capital to total liabilities. It is undesirable for too much of the capital to be represented by these items, although they will necessarily represent the bulk of the total liabilities.

7. Reserves and carry-forward to total liabilities. It is a wise policy to "plough back" earnings into a business, and this is reflected by a desirable proportion of reserves and carry-forward to total liabilities, below which the actual figure should not fall.

Financial Ratios.

When these proportions have been computed and compared against the established standards, it is possible to get a very good picture of whether or not the business is likely to get "out of bounds" in the budget period. Before taking any corrective steps, however, it is advisable to carry the study of balance-sheet ratios a step further in the direction of establishing the relationships between the important items as distinct from the proportions of the total they represent. This analysis should be extended to include an investigation of turn-overs and profit-earning features.

A full discussion of the significance of financial ratios is outside the province of this book. All that can be done is to give a brief explanation of the most useful relationships for guiding managerial policy. The reader who is interested in this aspect of financial management may, however, be referred to *Financial and Operating Ratios in Management*, by Mr. J. H. Bliss (U.S.A.).

Profit Standards.

One of the first relationships in which the business man is interested is the ratio of profits earned to share capital. This factor is obviously the key to the dividend policy of the firm and is, perhaps, the most important test of the success of operations, measuring the situation from the viewpoint of the shareholders or owners of the business.

The managing director, however, has a wider responsibility than that implied by the earning of a satisfactory percentage of profits on share capital. From his viewpoint, profits must be measured against the total amount of money invested in the business. It will be appreciated that total investment is not necessarily the same as share capital.

Referring to the balance sheet shown in Fig. 11, it will be seen that there are funds invested in land, buildings, machinery, equipment and fixtures, receivables, and stocks, which must "earn their keep." It may, for instance, so happen that the total of these tangible assets amounts to £500,000, while the total issued share capital is only £200,000, the balance being represented by reserves employed in the business and payables. If the net profits anticipated for the budget period amount to £20,000, it will be seen that they represent earnings of 10 per cent on issued capital. Comparing these earnings with the total amount of money invested in the business, however, the return on total investment is only 4 per cent. This is a return which could be exceeded

by investment in Government stocks, so that the obvious significance is that the funds are not being used profitably.

It will be appreciated that the return on total investment earned by any manufacturing company should not be less than the return that could be obtained by investing the same funds in an undertaking with corresponding risks. It is doubtful, for instance, whether any ordinary business venture could be considered profitable unless it offered a return of at least 8 per cent on total investment as distinct from share capital, while, in many cases, the figure should be much higher to compensate for the additional risks involved as to the security of the investment.

A situation where earnings are on a lower scale than that offered by trustee securities should call for immediate corrective action, unless the situation is the result of special and temporary circumstances outside the control of the individuals concerned.

Another significant feature of profits earned is their relationship to the fixed charges of the business representing prior charges on earnings. There is, perhaps, no need to develop the significance of this feature.

There are thus three measures of efficiency of profit earnings—

1. The ratio of profits to share capital.
2. The ratio of profits to total investment.
3. The ratio of profits to prior charges.

Each company would be well advised to establish "desirable" limits for these three factors on the basis of a study of its peculiar conditions, so that a proper check can be made against the financial success of past or proposed operations.

Standards for Turnover.

In addition to this analysis of profits it is also important to make an analysis of the turnover of investment. To

take the best known and most widely used ratio first, it is important to measure the turnover of stocks as indicated by the relationship of sales to stocks. For any company, there should be a desirable limit for the number of days' sales to be carried in stock. Any excess of stocks over this figure implies that the amount of capital actually employed in carrying stocks is greater than it should be. This same conclusion can be drawn from any other cases where the turnover of capital is lower than it should be, so it will be appreciated that an analysis of turnover factors on these lines may often provide the key to an unsatisfactory return on investment.

The more important turnover ratios against which limits should be set for measuring the efficiency of performance are as follows—

1. $\frac{\text{Sales}}{\text{Stocks of finished goods}}$
2. $\frac{\text{Sales}}{\text{Stocks of material and work in process}}$
3. $\frac{\text{Sales}}{\text{Total stocks}}$
4. $\frac{\text{Sales}}{\text{Receivables}}$
5. $\frac{\text{Sales}}{\text{Fixed assets}}$
6. $\frac{\text{Sales}}{\text{Total investment}}$

Significance of Turnover Ratios.

The comparison of actual ratios for the first three items against the standards gives a measure of whether or not excessive stocks are being carried. If, for instance, a standard of three months' sales was regarded as a desirable limit for total stocks, the desirable ratio would be

4, implying that stocks should be turned over four times during the year. If against this limit the budget programme showed anticipated sales of £500,000 and average stocks of £200,000, the actual ratio for the programme would be $\frac{£500,000}{£200,000}$ or 2.5, implying too high an investment in stocks. The supplementary ratios of stocks of finished goods and of stocks of materials and work in process to sales would help to show where the cause of the discrepancy was to be found, and corrective action could be taken in the direction of improving manufacturing methods to reduce manufacturing periods and thus reduce shop inventories, or in the direction of a closer control over finished-goods stocks, through revised stock limits on individual items aimed at eliminating any tendency towards unduly heavy stocks.

The significance of the fourth ratio is that it provides a measure of the efficiency of the collection policy. Broadly speaking, accounts receivable represent the uncollected sales values which customers are being allowed to use without payment. This factor is always of importance, but it assumes particular significance in cases where these uncollected sales values are represented on the opposite side of the balance sheet by borrowings on which the company is paying interest. To make the actual mechanics of the ratio clearer, it might be pointed out that if the standard period of credit given on accounts is 30 days, the desirable limit of sales to receivables should be 12. Annual sales of £480,000 should, for instance, be carried with an average investment in receivables of £40,000, representing one month's sales. Any increase in receivables above this figure would mean that the relationship must fall below the standard figure.

The fifth ratio is intended to give a measure of the economic use of fixed assets. It will be appreciated that an unduly high investment in plant and equipment implies high overhead charges, so that the ratio is a

good measure of competitive efficiency in production facilities.

The final ratio is a combination of the previous five factors and shows whether or not the total funds invested in the business are being utilized to the best advantage in securing sales.

Balance-sheet Relationships.

The final step in the analysis of financial ratios is the study of the balance-sheet relationships apart from turnover and profit features. The most commonly known ratio in this field is the working-capital ratio, or "acid-test" ratio.

There is no need to stress the importance of the maintenance of adequate working capital. Two of the disadvantages implied by a shortage of liquid funds can be cited as shortage of materials and a need for long credit, with consequent loss of cash discounts and perhaps failure to secure best possible market prices for purchased supplies. When the balance of liquid assets over floating or current liabilities is smaller than that implied by the normal needs of the business, the company cannot hope to operate as efficiently as it could with sufficient working capital at its disposal.

The amount of working capital required by any business depends on its individual peculiarities, but in many cases a desirable limit can be taken as $\frac{I}{I}$. That is to say, current liabilities, representing notes and accounts payable, should not be in excess of liquid assets, representing cash and accounts and notes receivable. Supplementary to this ratio, an analysis should be made of the relationship of actual cash to current liabilities. Cash is, perhaps, the most important item of liquid assets, and it is very important that the amount of current liabilities in excess of cash should not exceed a certain margin if a desirable liquid position is to be maintained.

Other important ratios to be taken into account include the relationship of reserves to assets, which will indicate the degree of conservatism in the distribution of profits by showing the extent to which the business is financed out of its own resources, and the relationship of fixed liabilities to reserves, which serves as a check on the previous ratio.

Revising the Programme.

In summary, the preparation of the financial budget from an analysis of the various operating budgets involves the following steps—

1. The analysis of the budget to determine probable cash receipts.
2. The determination of probable cash disbursements.
3. The comparison of cash receipts and outgo to show their effect on cash in hand.
4. The preparation from (3) of a programme for financing the business during the period.
5. The interpretation of the entire budget programme in the shape of an estimated balance sheet and profit and loss account.
6. The study of the significant factors of the financial results by measurement against desirable standards.

It will be obvious that this procedure may indicate the need for a revision of the budget programme before it is put into operation. The situation may, for instance, be such that an unsatisfactory financial position is implied, or the programme may involve financial requirements that the company is unable to meet. If this is the case, the necessary revisions must be made to the various budget estimates before they are put into operation. It is not possible to indicate in any detail the direction of these adjustments, as they will depend on the peculiarities of particular cases. The types of adjustment most frequently encountered are those involving curtailment of plant-expenditure programmes, revision of sales

programmes to direct their emphasis more towards short-credit sales than towards business involving long credits, elimination of unprofitable lines, readjustment of policy towards reducing stocks, and reduction of expense appropriations.

MASTER BUDGET

Year ending 31st December, 19..

No.	ITEM	Actual 1932	Budget 1933	Notes
1	Sales			
2	Opening Stocks			
3	Cost of Goods Manufactured			
4	Closing Stocks			
5	Cost of Goods Sold			2 + 3-4
6	Gross Profits			
7	Expenses			
8	Net Profit			
9	Average Investment			
10	Number of Employees			
11	Liquid Assets to Total Assets, %			S.L.—
12	Stocks to Total Assets, %			S.L.—
13	Fixed Assets to Total Assets, %			S.L.—
14	Current Liabilities to Total Liabilities, %			S.L.—
15	Reserves to Total Liabilities, %			S.L.—
16	Net Profit to Share Capital, %			S.L.—
17	Net Profit to Average Investment, %			S.L.—
18	Stocks to Sales			S.R.—
19	Receivables to Sales			S.R.—
20	Fixed Assets to Sales			S.R.—
21	Average Investment to Sales			S.R.—
22	Capital Expenditure			

NOTES : S.L. indicates standard limit; S.R. indicates standard ratio

FIG. 12. MASTER BUDGET

The Master Budget.

When any necessary revisions in this direction have been made, the preparation of the budget is virtually completed. All that remains is for the adjusted estimates to be approved by the managing director, before they are put into operation. Towards this end, it is usual in the larger companies to summarize the various budgets in the form of a condensed master-budget, to avoid any confusion between the essential facts and supporting details. The exact nature of the master-budget form will vary in individual companies. An idea of the type of information that should be included will, however, probably be clear from the accompanying illustration (Fig. 12).

CHAPTER VII

BUDGET ADMINISTRATION

DIFFICULTIES in practice—Managerial support—Supervision and administration—Budget officer—Budget committee—Other points—Budget reports—Sales reports—Advertising reports—Production reports—Manufacturing expense reports—Purchases reports—Plant and equipment reports—Expense reports—Financial reports—Executive reports—Budget charts—Sales, orders on hand, and shipments—Interpreting the chart—Stocks, deliveries, and production—The Z Chart—Budget revision

THE most frequent cause of failure to obtain satisfactory results from the introduction of the budget system arises from inadequate supervision and administration. Budget estimates are scarcely worth the paper they are typed on if they are regarded merely as interesting tables rather than as a programme of operations. Unless arrangements exist for the efficient administration of the budget system, the time and trouble involved in the preparation of the estimates are, to a large extent, so much waste effort.

The budget estimates must be aimed at a definite objective, they must be co-ordinated on this basis, and they must be used as a check on actual operations to ensure that this objective is reached. There must be some system for investigating any discrepancies between the course of the actual operations and that laid down in the budget programme. If the discrepancy implies an unfavourable development, every available avenue must be explored in an effort to get the business "back on the rails." If the deficit against the budget implies a basic change in underlying conditions, then the whole budget programme must be revised in line with the new situation. A budget that is impossible of achievement is worse than no budget at all. It must always represent a possible goal, though not necessarily an easy goal.

Difficulties in Practice.

Before proceeding to discuss the principles governing the application and administration of budgetary control, it may be advisable to explain the difficulties that have been encountered in practice. In this connection, the National Industrial Conference Board of New York has made a valuable contribution to the available knowledge on budgeting practices through the issue of a budgetary study based on a survey of some 300 representative American manufacturing firms. The object of this survey was to ascertain the extent of the adoption of budgetary control by manufacturing industry, the methods used and the results obtained. The study has brought out a list of mistakes and misunderstandings that have militated against the success of budgetary control, which may, perhaps, with advantage be quoted in full in rather different order from that in which they appear in the Board's report.

1. Inadequate accounting system.
2. Inadequate cost system.
3. Inadequate statistics of past operations.
4. Failure to obtain co-operation.
5. Bad organization.
6. Routine procedure not sufficiently definite.
7. Insufficient market analysis.
8. Attempted to forecast too far in advance.
9. Insufficient use of quantity figures.
10. Failure of managing director to give active support.
11. Too many forms—too much detail.
12. Inadequate supervision and administration.
13. Expected too much.
14. Failure to analyse results and ascertain causes of variations.
15. Did not revise the estimates—not sufficiently flexible.
16. Expected results too soon.

17. Installed too rapidly.

18. Insufficient attention to co-ordinating inventories with production and shipments.

Certain of these points have already been mentioned in the preceding discussion. Attention has been drawn, for instance, to the need for an efficient organization of personnel and for an adequate cost and accounts system interlocked with the organization and with the budget system. The question of the period to be covered by budget estimates has also been examined at some length, and the necessity for reliable records of past results and for a certain degree of market analysis has been indicated through an explanation of the steps involved in forecasting future sales. Several warnings have been given against the tendency to confuse the budget system with unnecessary forms and useless details, and it has been pointed out that management must have, before the budget is put into operation, a clear understanding of what it expects to obtain from the budget system and how these results are to be secured.

It will be noticed that these aspects of the situation that have already been reviewed fall under the classification of what might be called pre-requisites to the success of budgeting. They represent steps that must be taken before the system is installed. The remaining points apply more particularly to the actual administration of the budget system rather than to its introduction, and have, consequently, been omitted from consideration until the present stage.

Managerial Support.

It is doubtful whether any budget system can be expected to succeed without the full support of the management of the company to which it is applied. To use an American idiom, the management and the principal executives must be "100 per cent sold on the idea," or the idea of budget control is predestined to failure. The budget

system is not intended as a substitute for management. It is an aid to clear thinking in business, but not a substitute for executive ability. In short, it is a managerial tool. But no tool and no system can be better than the men who use it, and, for complete success, the budget must be used intelligently and sympathetically with an appreciation of its fundamental mechanism and of its weak and strong points. In particular, there must be thorough co-operation of all concerned to obtain the best results from the introduction of budgeting.

If the spirit behind the idea is not thoroughly grasped, the budget system will produce, in place of improved profits and efficient operations, a first-class group of "alibi merchants." This is a danger that can be avoided by a clear understanding of the aims of the system and by thorough co-operation to secure the desired results, but it is a weakness that should not be disregarded. This obstacle to the success of the system usually arises from attempts to introduce budget control without first explaining to all concerned the reasons behind the innovation and the goal at which it is aimed. It is a difficulty that has been surmounted in practice by many firms through the circulation of a budget manual outlining the principles and objects of the system. The same step can also be followed to ensure that the routine procedure for the introduction of the system is sufficiently definite and understood.

Supervision and Administration.

Most of the failures in budget systems can be attributed to inadequate arrangements for supervision and administration. Lack of flexibility and failure to revise the estimates when necessary usually reflect inadequate administration.

It is highly desirable, in fact almost essential, that some one person should be delegated to supervise and direct the budget system. This budget officer may be

the secretary of the company, the chief accountant, the treasurer, an assistant to one of these officers or an assistant to the managing director. His exact status does not matter so long as he is not definitely controlled by the head of any individual operating department. The budget officer should not, for instance, be an assistant to the sales manager, or the budget policy may be biased in the direction of the sales department. It may be convenient in large companies for the sales manager to have an assistant in charge of the budget work of his department, but there should also be an officer in charge of the whole system who is able to take a broad and unbiased view of the company's operations. Ideally, this budget officer should report direct to the managing director. As a second best, he should be a member of the accounting department.

The budget officer should not be regarded as a statistical clerk. His duties are wide and call for corresponding abilities and breadth of outlook. Essentially, a man of sound common sense is called for, with good judgment and the ability to lead and teach other men. The budget officer must also be thoroughly familiar with the major problems and features of the business, and, generally speaking, the larger the size of the company concerned, the greater must be the ability of the man in charge of the budget system. In practice, in large-scale industry it is frequently necessary for the budget officer to be backed up by a budget committee representing the main operating departments. The budget officer would act as secretary to this committee, while the chairman would be the managing director.

Budget Officer.

The duties of the budget officer are to supervise the introduction and administration of the budget. The survey of American practice by the National Industrial Conference Board of New York, to which reference has

already been made, lists the duties of a budget officer as follows—

1. To see that the heads of the several departments who are charged with preparation of the respective budget estimates are furnished with the necessary figures of past periods as a basis for forecasting the future.
2. To see that adequate forms are designed and furnished to the department heads. These forms may be typewritten.
3. To see that the estimates are completed promptly according to scheduled dates, and to confer with and assist department heads in co-ordinating their estimates.
4. To prepare summaries of the estimates and to furnish the budget committee with copies thereof and of the underlying budgets, and to assist the committee in its consideration thereof.
5. To make such revisions as are decided upon by the committee or by whatever other final authority is provided, and to transmit the approved copies to the various department heads.
6. To see that the figures of actual operations are subsequently furnished to the committee and to the departments, and to furnish such explanations as are obtainable relative to the variations between the estimated and actual accomplishments.

It would, of course, be unwise to follow blindly an American precedent simply on the strength of its initiation in the land of modern business methods, but, in this instance, the scheme has been proved in practice to be suitable to conditions in this country.

Budget Committee.

It will be gathered from the foregoing that the function of the budget committee is to support the budget officer in the consideration of the budget estimates and in the supervision of the operation of the system. The existence of such a committee is of considerable assistance towards

ensuring a proper co-operation on the budget among the executive officials. An added advantage is that there is less danger of the essential interdependence of the various activities being overlooked. The plans of one department may obviously have an important bearing on the activities of other departments. The extent to which the manufacturing department is concerned by the sales programme is, perhaps, the best illustration. The proper co-ordination of plans to a common objective is considerably facilitated when they are considered jointly by all the individual interested parties.

The usual procedure in the case of a company operating a budget system through a budget committee is as follows—

1. The budget officer co-ordinates and adjusts the various estimates prepared by the operating and expense departments of their operations for the budget period.

2. The budget committee considers these estimates and makes any necessary adjustments.

3. The budget officer incorporates these revisions in the estimates for submission to the managing director for approval.

4. After the budget has been approved by the management, the budget officer advises the individual department heads of their budget quota for the period, and provides any explanations that may be desirable to indicate the reason for any changes compared with the original estimates.

5. The budget officer keeps both the operating departments and the budget committee advised of the actual progress of current results in relation to the budget estimates, and makes any investigations that may be necessary towards discovering and correcting the causes of discrepancies. Towards this end, the budget officer usually maintains a series of charts showing budget realization in graphic form.

6. As and when necessary, the budget committee revises the budget in accordance with radical changes in underlying conditions.

Other Points.

The possibility of failure of the budget system through the other mistakes and misunderstandings mentioned above may, perhaps, be allowed to pass without comment. There are, however, one or two minor precautions that should be taken to ensure maximum success. In particular, it is very important that both the budget estimates and the comparison of actual results against these estimates should be prepared promptly. Dates should be fixed on which these estimates and reports fall due, and every possible effort should be made to ensure that these dates are kept. It is particularly important that the preparation of the budget should be completed and the adjusted estimates approved sufficiently in advance of the commencement of the budget period to enable any necessary advance steps to be taken towards guiding activities in the proper direction. The unfairness and futility, for instance, of not advising a department head of his expense allocation for the year until, perhaps, two months have passed will be obvious. Reports showing actual results against budget quotas should also be available as promptly as possible if effective control is to be maintained.

Another point of practical interest is that care should be taken not to confuse budget figures with the routine book-keeping of the company. It is neither desirable nor advisable, for instance, to include the budget entries in the ledger against actual records. Budgeting may be "advance accounting," but it should be kept separate from the usual accounting mechanism, although the actual *reports* issued by the accounts division may include a column for the budget figures.

Budget Reports.

In Chapter I it was pointed out that the business budget differs from the State budget in that it is more flexible and subject to adjustment to fit changing conditions. To this end, the whole field of operations must be kept under constant review in relationship to the budget estimate. This analysis of actual results may be carried out by the budget officer, by the individual department heads, or by the accounting department. It does not so much matter who prepares the reports provided they are prepared regularly and used intelligently as a guide to policy.

Because of the wide range of industrial activity it is no more practical to design a series of forms suitable for universal application for following budget progress, than it was possible to draft a series of forms for the original estimates. Broadly speaking, however, the scheme of budget reports should tie in with the budget estimates, so that reports are available to show progress against every separate item for which an estimate was made.

In connection with the preparation of budget reports, it is possible to draw a broad distinction between two separate types. On the one hand, the various administrative sections require reports to show them the full details of their actual operations measured against the budget programme and to assist them in the enforcement of the plans settled for their activities. On the other hand, the executive officers of the company require reports covering a wide field without any redundant details, to serve as the basis for the formulation of plans of operation and as an indication of any necessary revisions to the original budget.

It may be advisable to develop these two aspects a little more deeply. The reader will appreciate that, although the basic principles are applicable, the actual detail of the various reports discussed must be adjusted to suit the needs of his particular business. It may be repeated, however, that, whatever their form, the reports

should always be prepared as promptly as possible and should be accurate and sufficiently comprehensive to meet the purpose in view.

Sales Reports.

It is very important that a constant check should be kept on the progress of actual sales in relation to the budget estimate. For the use of the sales department, these reports should measure actual performance of individual lines, by individual salesmen, and in individual selling countries or districts, depending on the nature of the products sold and the territory covered. Comparison should also be made against actual results in the corresponding portion of the previous trading period to enable a measure to be taken of the general tendency of the results. An illustration of the type of report involved is shown in Fig. 13, representing a comparison of sales by lines against budget and against actual previous performance. Similar reports would show progress of sales by countries, by salesmen, etc., and the reports would be

SALES BUDGET REALIZATION, 19..

Month Ended

LINE	This Month			This Year to Date			Sales Last Year to Date	Increase or (Decrease) over Previous Year
	Actual Sales	Budget	% Realized	Actual Sales	Budget	% Realized		
TOTAL								

FIG. 13. SALES REPORT

prepared weekly, monthly, or quarterly, depending on the significance and value of the comparisons.

The sales department must also be provided with regular reports at weekly or monthly intervals comparing actual expense against the budget quota. In many instances, these reports may follow the lines of the illustration shown as Fig. 14. The column "Available Quota in Months" (column *g*) represents the balance of the budget unspent divided by the average monthly expenditure for the period determined from column *e*. The significance of the resulting figures is that they indicate how far ahead the available budget balance would cover expenditure at the current rate, and measured against the number of months still to run they show quite clearly whether any steps are necessary towards correcting excessive expenditure. It is frequently desirable to prepare similar reports showing the progress of actual expense against the budget quota for individual sections of the sales department and sometimes for individual salesmen. If the ratio has any

SALES EXPENSE BUDGET REALIZATION, 19..

Month Ended

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>
ITEM	This Month			Actual Expense This Year to Date	Balance of Budget Unspent	Available Quota in Months	Actual Expense Last Year to Date	Increase or (Decrease) Over Previous Year
	Actual Ex- pense	Budget	% Realized					
TOTAL .								

FIG. 14. SALES EXPENSE REPORT

significance, additional columns may be added to the report to show the percentage of actual sales expense to actual sales, compared with the budget ratio and with the actual ratio for the corresponding period in the previous year.

In connection with the control of expense, it is sometimes desirable to establish authority in the budget officer or corresponding official to cut off supplies in cases where the budget quota is overspent, unless and until the department head concerned comes forward with reliable plans for the reduction of expenses to the desired level or proves his case for a revision of the quota. This applies to the whole of the "expense departments" as well as to the sales department. Care must also be taken to separate items of uncontrollable expense from the elements over which the individual department head actually has control.

Advertising Reports.

The comparison of advertising expense against the budget quota may follow lines similar to the form used

ADVERTISING EXPENSE BUDGET REALIZATION 19..,
Month Ended

ITEMS	This Month			This Year to Date			Balance of Budget	Out-standing Commitments	Available Funds
	Actual Ex-pense	Budget	% Realized	Actual Ex-pense	Budget	% Realized			
TOTAL									

FIG. 15. ADVERTISING EXPENSE REPORT

in reporting on sales expense, but, as already pointed out, it is usually advisable to show in this report the effect of commitments. With this end in view, the advertising expense report is usually prepared on a form similar to that shown in Fig. 15.

It will be appreciated that, although the advertising expense budget is essentially a limitation on expenditure, revisions of the allocation may be necessary to allow for changes in the market conditions and sales programmes on which the original estimate was based.

Production Reports.

In a manufacturing company of the stock-order type, reports will be necessary to show the progress of production against the quota. The exact nature of these reports will vary considerably, depending on the extent to which the company is planning its actual production schedules on a budget basis. Care should be taken, however, to recognize the progress of actual sales against the budget if misleading conclusions are to be avoided in comparing actual production with the predetermined quota. The report should show to what extent actual production varied from the quota and how far this original estimate of production is incorrect. It is felt that no valuable purpose would be served by including a specimen "production versus budget" report by reason of the wide differences between the types of form necessary to meet the needs of different classes of industry. In practice, the form on which the budget estimate was prepared offers the solution to the problem.

Supplementing the report on production, regular reports should also be prepared to show actual performance against the estimates on the materials and labour budgets. The materials report should compare actual purchases against estimated purchases and actual stocks against estimated stocks. The labour report should be framed to compare the ratio of direct labour to production against

the budget ratio on a form similar to that shown in Fig. 16.

LABOUR COST BUDGET REALIZATION, 19..

Month Ended

<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>h</i>	<i>i</i>	<i>j</i>
DEPARTMENT	Production			Labour Cost			Ratio Labour to Production		
	Budget	Actual	% Realized	Budget	Actual	% Realized	Budget $\frac{e}{b}$	Actual $\frac{f}{c}$	Actual Last Month
TOTAL									

FIG. 16. LABOUR COST REPORT

Manufacturing Expense Reports.

In preparing reports to compare actual manufacturing expense against the budget quota, special care should be taken to give due effect to the relationship of expense and production. If a study has been made along the lines previously indicated to determine the true relationship of the various elements of manufacturing expense to actual production, it should be possible to establish a set of adjustment figures that would enable the manufacturing expense budget to be expressed in terms of an expense quota for any particular volume of output. Under such an arrangement, actual expense can be compared against the budget on a form similar to the illustration, Fig. 17. In a large company separate reports would be issued along these lines for each individual factory and each individual department in the separate factories.

MANUFACTURING EXPENSE BUDGET REALIZATION, 19..

Month Ended

a	b	c	d	e	f	g	h
ITEM	Production			Expense			
	Actual	Budget	% Realized	Actual	Budget	Budget Adjusted to Date for Actual Production	% Realized on Adjusted Budget
TOTAL . .							

FIG. 17. MANUFACTURING EXPENSE REPORT

Purchases Reports.

In the case of a company relying to any extent on outside purchases, a retail store, for instance, the purchases budget assumes particular significance, and regular reports would be prepared to show the relationship of actual purchases to the budget plan. Care should be taken, however, to allow for the effect of differences between actual sales and the sales budget.

Plant and Equipment Reports.

The plant and equipment budget is very similar to the advertising budget in that it represents a limitation on expenditure. Very much the same type of form may be used as that used in reporting on the advertising budget, to take into account commitments against the available balance of the budget quota and actual expense.

Expense Reports.

Regular reports should be issued to all of the departments for which expense budgets have been prepared indicating the relationship of actual expense and the budget quota. A form similar to that used for the sales expense report (Fig. 14) may be used, and the same comments on the actual control of expenses apply with as much force to these aspects as to the sales aspect.

Financial Reports.

Under this heading, reports should be prepared showing the relationship of collections against receivables compared with the budget ratio. Actual cash receipts and cash disbursements must be compared against the budget, although, in this instance, it is advisable to include a column on the form for any notes that may be necessary to indicate the reasons for any discrepancies due to failures in some other part of the budget programme. Care must be taken, for instance, not to draw the inference that there is something at fault with the collection system when, in actual fact, the shortage of cash receipts reflects the fact that actual sales have been below the budget estimate.

Executive Reports.

The budget reports that have so far been discussed include a considerable amount of detail that is very necessary from the viewpoint of the individual department head, but that would only tend to confuse the issue from the viewpoint of the managing director. Reports must be prepared to enable the major executive of the company to study actual progress in comparison with the budget plan, but these reports should represent summarized information, and details should be eliminated as far as possible. If there are any significant variations between actual and budgeted performance, the details explaining the differences may be included in an attachment to the

reports, or their inference may be indicated in the form of notes.

At the conclusion of the previous chapter, reference was made to the advisability of preparing a summarized master budget to enable the essential facts of the situation to be separated from supporting details for managerial consideration. Regular monthly reports should be prepared along these same lines to enable the management to keep abreast of the current development of affairs in their relationship to the budget. The exact form of this budget report, while varying considerably as between individual companies, should be substantially similar to the form actually used for the submission of the master budget itself.

Budget Charts.

It has been established as a principle that the reports to be used by the executive of a company in measuring progress against the budget should be as concise as possible and free from unnecessary details. Towards this end, it is possible in any company to prepare a series of report forms along the same lines as those already discussed in this chapter, but including only the basic facts of the individual situations. It has been proved in practice, however, that this same object can be served much more conveniently and with less expense of time and trouble by the preparation and maintenance of a series of charts showing the progress of actual affairs against the budget in graphic form. A picture, it is said, is worth 10,000 words. An exaggeration perhaps, but there is no doubt that the significance of a statistical situation can be appreciated much more easily from a glance at a chart than from a study of columns of figures.

Business management to-day is becoming more and more appreciative of the material assistance that can be obtained from the pictorial presentation of facts, and the use of graphic charts in business has gone ahead rapidly

in the past few years. Any detailed discussion of the use and preparation of administrative control charts as distinct from budget charts is outside the province of this book. The reader who is interested in a simple explanation of the basic principles of graphic methods may be referred to *Business Charts*, by T. G. Rose. A more advanced treatment of the subject is provided by *Charts and Graphs* by K. G. Karsten, while there are, in addition, many valuable American textbooks on both the principles of charting technique and the application of these principles to the problems of business administration.

The great advantages of charts as an aid to budget control are that they enable the inter-relationship between significant features of the situation to be appreciated and that they direct attention in an almost automatic fashion to any features in the situation calling for administrative action. Better to illustrate these two points, it may be advisable to give a few examples of budget charts that have actually been used in the successful administration of budget control. These particular charts have been designed more especially for the general type of manufacturing company, so that some slight modification may be necessary to make them suitable to particular firms. They will, however, be found quite suitable as they stand in most cases.

Sales, Orders on Hand, and Shipments.

In a firm manufacturing goods against special orders, there must obviously be a time lag between sales (representing orders received) and shipments (representing the completion of all work on these orders). This implies that there must at all times be a certain amount of orders on hand representing the uncompleted portion of work on orders from customers. These orders on hand represent, as it were, a reservoir of work ahead of the manufacturer, and it is desirable that they should not fall below a certain figure. On the other hand, it is equally undesirable that

orders should be allowed to accumulate unduly, as this situation implies non-competitive delivery quotations.

Orders on hand result from the relationship between sales and shipments. Reverting to the reservoir idea, sales can be considered as a supply pipe and shipments as a discharge pipe. This relationship can be applied to any individual period through the formula—

Orders on hand at the end of the period equal
 Orders on hand at the beginning, plus
 Sales, minus
 Shipments.

The accompanying illustration (Fig. 18) shows how this relationship can be studied graphically together with the comparison of both sales and shipments against the budget estimates.

Interpreting the Chart.

The vertical line *A-B* on the chart represents orders on hand at the beginning of the budget period. The slope *A-C* represents the sales budget and the slope *B-D* represents the shipments budget. The vertical distance between these two slopes at any point represents the budgeted orders on hand at that date. *CD*, for instance, represents the anticipated orders on hand at the end of the budget period. Expressed in other words, the chart shows that orders on hand at the beginning of the period were £240,000, new orders are anticipated to amount to £860,000, which, with the orders on hand give a total amount of work of £1,100,000. Shipments against this total are budgeted to amount to £820,000 leaving £280,000 orders on hand at the end of the period to be carried forward to the following year.

Actual results are inserted accumulatively on the chart from month to month to show the realization against the budget. In the illustration, actual sales have been made in excess of the budget, but shipments have been below

the quota, so that orders on hand at the end of April are higher than anticipated.

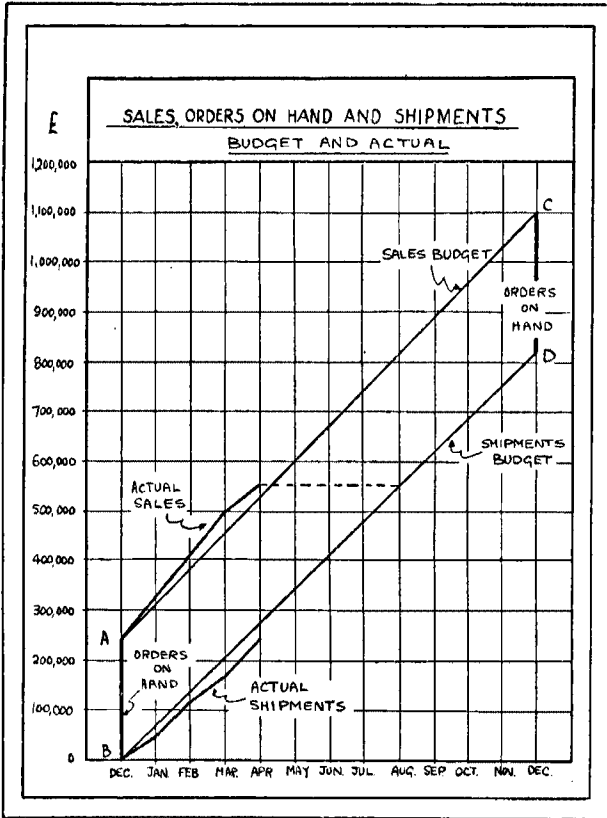


FIG. 18

Another significant feature shown by the chart is that the new orders, with orders on hand, represent sufficient business at the end of April to cover the shipments budget up to the end of August. This is a very important aspect

of the situation, but, in practice, too much reliance should not be placed on this one overall ratio. The situation may be such, for instance, that there is enough business on one line to cover the shipments budget up to the middle of November, while on another line there may be virtually no work on hand at all. With a view to discovering such situations as this, it is frequently advisable to maintain separate charts showing sales, orders on hand, and shipments for each of the main lines handled. If this practice is followed, the management can see at a glance how the overall portion is developing and can readily ascertain where the reason lies for any discrepancy between the programme and actual performance so that the necessary corrective action can be instituted.

Stocks, Deliveries, and Production.

In the case of the stock-order industry, the relationship of orders on hand, sales, and shipments is not usually of so much significance as the relationship of stocks on hand, deliveries, and production.

The relationship between these three factors is arithmetically very much the same as that already discussed. Stocks represent the reservoir which is fed by production and exhausted by deliveries. Too high a figure for stocks on hand implies that too much money is tied up in investments with consequent high handling charges. On the other hand, it is unsafe to allow stocks to fall below a certain limit.

It will be seen from Fig. 19 that the relationship of stocks, production, and deliveries can conveniently be charted to show comparison against the budget, together with the significance of the inter-relationship between the various aspects. In the illustration, production has not kept pace with the budget, while deliveries (representing orders from customers) have been made in excess of the programme. As a result, stocks on hand are lower than anticipated, and are, in fact, only sufficient to cover

the budget delivery programme two months ahead. In view of the fact that actual deliveries have been made

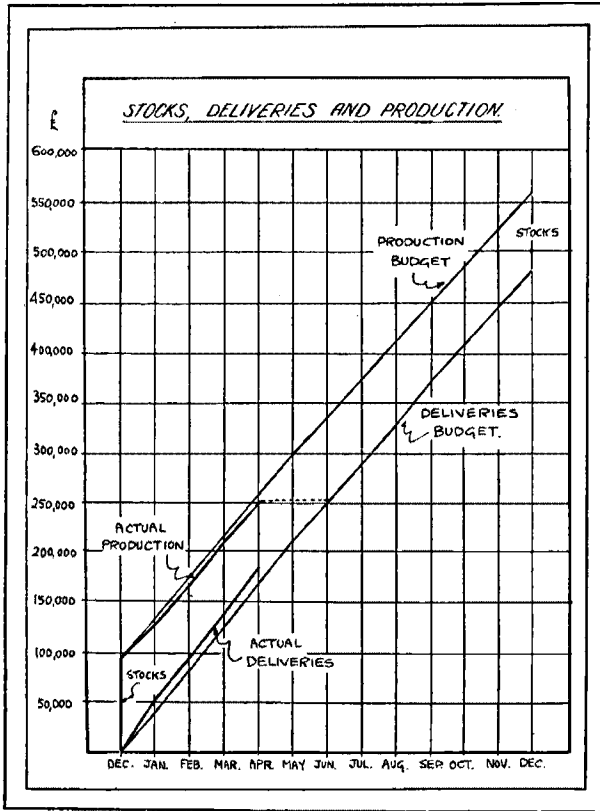


FIG. 19

in excess of the programme, such a situation would call for immediate corrective action. The direction of such action would be clearly illustrated by similar supplementary charts showing the stock, production,

and deliveries situation of each of the principal lines handled:

The Z Chart.

A very convenient graphic form for the comparison of actual results against the budget estimates is the Z chart. A chart of this type is illustrated in Fig. 20 where it is used to show monthly and accumulative sales in comparison with the budget quota. A line is also included to show the general tendency of the results, and the chart gets its name from the fact that these three lines commonly form a letter Z. The chart will probably be self-explanatory except for the trend line. This curve represents the moving annual total of the sales. That is to say, any point on the line represents the total of the previous twelve months' results. The moving annual total for July, for instance, represents the total from August of the previous year to July. The figure for August would be the total from September of the previous year to August, and so on. It will be appreciated that the computation of the August figure involves adding to the July moving annual total the monthly figure for August this year, and subtracting last year's August monthly total. This means that the movement of the moving annual total shows a comparison of the current month this year with the same month last year. If the curve declines in March this year, for instance, it means that sales were lower that month than in the same month the previous year. Correspondingly, an improvement in the moving annual total line signifies that the particular monthly result was better than that of the previous year.

The Z chart can be used to compare expenses, gross profits and net profits against the budget estimates. It can also be used to illustrate many other aspects of the budget situation, but care should be taken not to produce charts regardless of their practical value.

All of the charts that are prepared in connection with

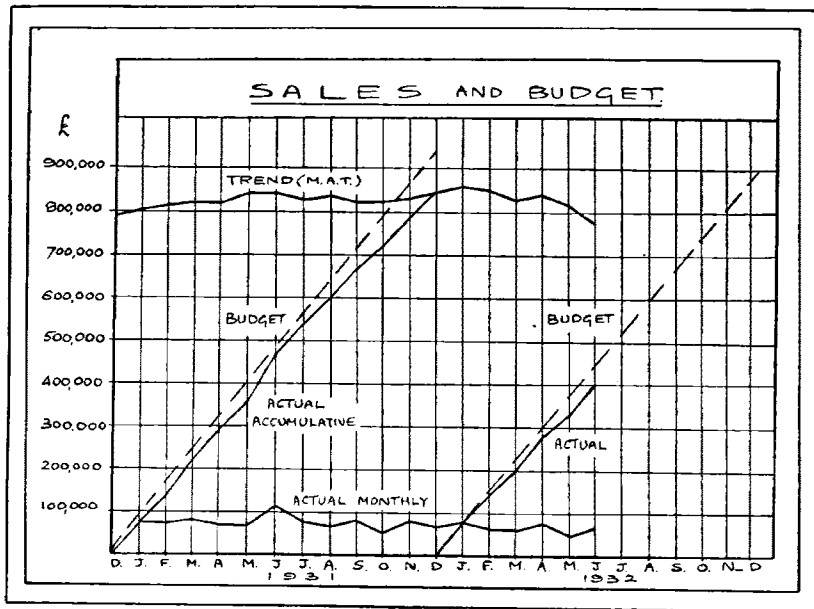


FIG. 20. THE Z CHART

the administration of the budget should have a definite purpose, and if they do not meet this purpose, their use should be discontinued.

Budget Revision.

There is a dual object to be served in the comparison of actual results against the budget estimate. On the one hand, it must be used as a basis for plans to ensure that the original budget is met. On the other hand, it should serve as a pointer to the necessity for revision of the budget should such a step be desirable. It is difficult to draw a hard-and-fast distinction between the two. Broadly speaking, the budget should represent a goal that is capable of achievement, and if by any reason the objective is put out of reach, then the estimate should be revised. If, for instance, by virtue of a change in market conditions, the sales estimate becomes impossible of achievement, then the entire budget should be revised to reflect the changed condition. If, however, the budget estimate represents a goal that is capable of achievement, though only with difficulty, the budget should not be revised. Instead, efforts should be strained towards meeting the original budget. The essential point is to avoid futile effort, and it is on this basis that any proposed budget revisions should be adopted.

CHAPTER VIII

FORWARD PLANNING

NEED for long-period forecasts—American Telephone and Telegraph Company's policy—The A.T.T. Co.'s Five-year Plan—Long-term forecasts—The business cycle—Weaknesses of industry—Causes of the business cycle—Controlling the cycle—Management and the business cycle—Management policies in depression—Extend facilities during depression—Management policies in recovery—Management policies and the boom—Restrict extensions under boom conditions—Management policies in the crisis—Business forecasting—The Harvard business forecasts—The London and Cambridge Economic Service—Regulating operations—The American General Electric Company's Plan—Purchasing profits—Trade associations—The facts of industry—Advantages of industrial information—Introducing new lines—Steps in market research—Commercial considerations—Summary

UP to the present, the discussion of budget control has been confined to the development of a system for the co-ordination and control of activities on the basis of a forecast of the immediate future. The period that can be covered efficiently with such a system varies among individual industries, but it is limited by the extent to which a really accurate forecast of future conditions is possible. The factors governing the length of the budget have already been examined at length in Chapter I.

Need for Long-period Forecasts.

Generally speaking, accurate and detailed budget forecasts cannot be prepared to cover a period of more than twelve months. There are, however, many aspects of business management that require a forecast extending further into the future than this. In a rapidly growing business, for instance, a knowledge of sales prospects several years ahead is vitally necessary if a sound policy is to be instituted to guide plant and equipment extensions. This same need is encountered in industries whose peculiar conditions imply a regular and large annual increase in fixed assets. In such cases as these, a long-period

forecast is needed in addition to the budget for the planning of business operations. This forecast need not be prepared in such detail as the budget forecast, and the period which it can cover is not limited by the same restrictions.

American Telephone and Telegraph Company's Policy.

The American Telephone and Telegraph Company falls under the classification of companies where large annual increases in capital investment are implied by the nature of the business, amounting in this instance to more than £50,000,000 a year. The methods actually followed by this firm in planning its extension programme ahead may, perhaps, be cited with advantage as an illustration of the way in which long-term planning can be adopted in practice. In this connection, an interesting summary of the A.T.T. Company's budgeting and forecasting policy was given by Mr. A. G. H. Dent in the January, 1930, issue of *World Power*, from which the following extracts are taken—

The A.T. and T. Company must be in a position to plan its installations and their sites well ahead to satisfy the needs of the public. This branch of forecasting involves the separate study of local areas. Each city or urban district is treated statistically, estimating total population at periods ranging from ten to twenty-five years. Apart from the growth of population, the factors are considered which have affected this growth in the past, such as the birth-rate and the absorption of population from other districts, e.g. an industrial town absorbing agricultural inhabitants.

The local study goes into considerable detail, first splitting up a city's population into business and residential, an important distinction in grouping from the viewpoint of future traffic demands and future revenue. These primary groups are subdivided showing estimated future classifications of business firms, the potential heavy traffic, high tariff subscribers. Manufacturing companies, wholesale firms, retail firms, agencies—the probable future numbers of all types are forecasted. Similarly, the residential population is classified

in accordance with probable rentals of houses and apartments, since the telephone requirements of a given family is found to be connected with the rental paid for a dwelling or residence occupied.

From these data it is apparent that a comprehensive survey of the operating area of the Company is always available and always being modified to meet changing conditions.

The A.T.T. Company's Five-year Plan.

The budgeting system consists of a continual Five Year Plan, unifying the forecasts of each different department. Firstly, a general policy programme is outlined by the administration, then the statistician determines probable future economic and financial conditions, the commercial group calculates community growth and distribution, the traffic group estimates the demands on personnel and equipment, the engineering and plant group estimates the demand on plant and facilities from traffic calculations, and the accounting group forecasts future revenue, expenditure, and requirements.

These estimates are co-ordinated for the administration, who then study the whole budget plan from the viewpoint of policy and past experience. They must be assured that the plan will provide adequate return on investment needed; they must consider the raising of additional capital and its cost, the trend of general business conditions, and other aspects of the complete scheme.

The regular system conducted of studying conditions and their trends enables those controlling the Company to organize in advance for probable needs. Raw materials and supplies can be bought in bulk at low-price periods, knowing future demand, new capital issues can be made at the most favourable times, and new personnel can be taken on and trained to meet the exigencies of future operations.

Long-term Forecasts.

This same policy of forecasting ahead over a period of, say, five years, with full details for the first year and basic data only for the remaining years, is also followed by several important manufacturing companies, in both this country and the United States, to ensure that the plant and equipment extension programme is in line with future sales prospects, and is interlocked with a programme

for financing these extensions. In certain instances, however, regular forecasts may with advantage be replaced by occasional long-period estimates. In any case, no decision for any major increase in manufacturing facilities should be made without a consideration of the future.

One large manufacturing company, faced with the need for increased manufacturing facilities, based its decision to build a new factory on a sales forecast covering a forward period of 20 years. The figures were based on the normal trend of the company's sales adjusted to take into account the results of a painstaking analysis of future market conditions. The study proved the justification for the proposed new factory, and by showing the probable trend of sales for certain of the major lines handled by the company, it also provided valuable information that was utilized in the actual planning of the factory building and in the apportionment of space to the various types of equipment implied. Tied in with this study, there was a carefully calculated plan for financing the programme.

The Business Cycle.

Apart from the need for long-period forecasting to serve as a basis for plant-extension programmes, there is also a very real need for forward planning in industry to enable the business cycle to be negotiated successfully. The characteristic ebb-and-flow of business activity that is reflected in succeeding periods of depression, recovery, boom, and collapse is seen in virtually all companies, and it represents a problem that is by no means confined to any particular branch of industry.

The business cycle has been one of the most interesting and, at the same time, most elusive problems facing economists and industrialists during the past century. Ever since the time of the French Revolution, industrial activity has been reflected in alternate periods of prosperity and depression. A few years of good employment,

with active production and rising prices, are inevitably followed by a series of lean years with unemployment, restricted production, and declining prices. The turning point between the two periods is usually, though not always, marked by an acute financial crisis. Prosperity seems to sow the seeds of a crisis which results in depression. During the depression, ground for recovery is established, prosperity follows, and so through the cycle again.

The feature is not confined to any one country. If the annals of business conditions in individual countries are studied, they are found to reflect similar conditions. The fluctuations are, perhaps, more marked in one country than in another; the recurring periods of depression may be more frequent here than there, and a period of prosperity in one country may coincide with a period of depression in another; but the same characteristic cycle is always found.

The business cycle is a feature of industry in general; it is not a peculiarity of any particular country.

Weaknesses of Industry.

It is easy to perceive why there should be disturbances in the steady flow of business progress. The essential complexity and interdependence of modern industry imply an inherent liability to disorganization. If the manufacture of any simple commodity is traced back to the source of its prime materials, it is usually found that several distinct and highly specialized industries have contributed to its production. A break-down at any one point may involve serious disorganization all along the line. Perfect co-operation of all the units is necessary if disturbance is to be avoided, and perfect co-operation is virtually impossible where floods, earthquakes, and unfavourable climatic conditions must exert an uncontrollable influence in addition to the imperfections of human nature. It will be appreciated that the situation is further

aggravated by the fact that the producers of one industry represent the consumers of another, so that a depression in one industry, by reducing the purchasing power of its workers, may have a serious effect on many other industries not directly connected.

Another fundamental weakness involving a liability to disorganization is the possibility of imperfect estimation of demand. Under the modern industrial system, an infinite variety of goods is produced in anticipation of demand from an equally wide variety of sources. Productive equipment has to be installed and manufacturing processes put in hand months, and sometimes years, in advance of the actual sale of the resulting commodities. As has already been pointed out, the producer must base his operations on a forecast of the future, and not only is there the obvious danger of inefficient forecasting, but there are many chance developments likely to ruin the best-laid plans. A change in fashion, an increase in tariffs, a new invention—these and many other factors may fall like a bolt from the blue to upset the most carefully prepared forecast of the future. The importance of this aspect is accentuated by the fact that large-scale enterprise takes considerable time to get into working order, and, by the time the products are ready to be marketed, the justification for their manufacture may have disappeared.

Causes of the Business Cycle.

These are the fundamental weaknesses of modern industry that make the business cycle possible, but there is no complete uniformity of opinion as to the actual causes that operate through these peculiarities to bring about the characteristic ebb-and-flow of business activity. It is, however, generally admitted that these causal factors represent a combination of physical, psychological, and financial factors.

This theory argues that human nature as a whole is subject to alternate periods of depression and confidence.

Confidence, it is said, begets confidence. Prosperous conditions in one industry induce a flow of funds to industry in general, and new and possibly incompetent producers are attracted by prospective high profits. There follow an undue expansion of credit coupled with rising prices, and the institution of a bigger volume of production in anticipation of demand than is justified by the market conditions. Prices continue to rise until something happens to disturb the situation. Usually, this breaking point is provided by some physical development, a bad harvest for instance. A financial crisis follows—the failure of one large firm may be sufficient to start the ball rolling—and confidence gives way overnight to panic. Prices begin to fall. Producers seek to unload their stocks and thus force prices down still further. Once started, the depression continues to gain ground until ultimately the inefficient producers are forced into liquidation, accumulated stocks are disposed of, and the ground prepared for the recovery of confidence. The movement then continues forward again through the characteristic cycle.

Many other theories have been advanced as to the way in which these physical, psychological, and financial factors operate, and economists are by no means in accord as to their relative importance. If there is any difference of opinion with regard to diagnosis, however, there is uniform consent that violent swings of alternate depression and booming trade are harmful, and it is agreed that their elimination or mitigation would be an advantage to the community as a whole.

Controlling the Cycle.

The injurious effects of booms and slumps in business are, perhaps, too obvious to call for comment. Uncertain and violent fluctuations cannot help having a harmful effect on industry and on national well-being, and these ill-effects run right through the social, financial, commercial, and industrial fields.

The problem is: Can these characteristic fluctuations be eliminated, can their violence be reduced, and what steps are available to enable the phenomenon to be negotiated with the minimum of loss and inconvenience?

It is doubtful whether business fluctuations will ever be entirely eliminated. The causal factors probably lie too deeply rooted. It is not too certain either that the entire elimination of ebb-and-flow in business activity would be desirable if it were possible. But there can be no doubt that the severity of the disturbances characteristic of recent history involves a serious waste, and that real and practical advantages would result from any plan of action calculated to reduce the violence of the disturbances. In passing, it may be mentioned that the discussion of national action aimed at reducing the suffering caused by cyclical unemployment is regarded as beyond the province of this book. Unemployment insurance and advance planning of public works have a prominent place in the technique of plans for negotiating the business cycle, but they represent an aspect of the problem which is only of indirect interest to the business man.

Management and the Business Cycle.

In so far as the business cycle arises from an imperfect estimation of future demand, its partial elimination obviously depends to a considerable extent on the discovery of some method for ensuring a closer balance between supply and demand. The concerted action of business men in planning their activities on the basis of a consideration of future conditions would undoubtedly have a valuable effect in reducing the intensity of the movement.

The uniform adoption of the principles of budget control would thus be a significant step towards the solution of this difficulty. But something more than budget control and something more than a forecast of the future are necessary if the business cycle is to be negotiated

successfully and its violence reduced. The forecasts must be backed up by efficient management policies. In short, management must establish a basic plan of action for negotiating the various phases of the business cycle. A policy that is wise in a period of depression, for instance, may not be at all suitable for adoption in a period of business recovery.

It may be advisable to indicate the general direction that management policies should follow in the various phases of the business cycle. For the sake of convenience, the business cycle may be considered as including four distinct periods—

1. A period of depression.
2. A period of recovery.
3. A boom period.
4. A period of collapse.

In considering the lines of policy suggested for the four periods, however, the reader must appreciate that they form one comprehensive programme rather than four separate plans. The extent to which the constructive policy suggested for the slump period can be put into practice, for instance, is conditioned by the degree of conservatism adopted in financial administration during the boom period. In fact, the entire problem of successfully negotiating the business cycle turns on the adoption of the right policy in the boom period.

Management Policies in Depression.

Generally speaking, the period of depression in business activity should be devoted to improvements in productive equipment, in production technique, and in management methods. It should be considered as a period for reconstruction and readjustment. The methods of management should be overhauled to ensure that they guarantee maximum efficiency. Possible improvements to production methods should be explored with a view to cost reduction.

It will be appreciated that changes in methods can be

introduced most conveniently in a period of depression, since, with a reduced volume of business, there is less likelihood of disturbance. Improvements to plant lay-out can be made with the object of avoiding unnecessary handling and ensuring the maximum utilization of available space. Time and motion studies can be put in hand to find the best way of performing each operation and to establish sound standards of performance that can serve as the basis for a reliable system of payment by results. A machine-hour rate system for standard costs can be installed to give more reliable information on costs, care being taken, of course, to base the rates on normal activity and not on the reduced volume of business prevailing during the period of depression. Budget control can be instituted to secure closer co-ordination of activities and reduction of expense. Improvements to the production-control and stock-control systems can be adopted to avoid waste. Improved methods of scheduling and production planning can be explored with a view to ensuring smoother operations and reductions in stock investment. The question of manufacturing quantities can also be investigated to determine economic figures that will enable the maximum benefits of mass production to be secured consistent with investment charges on stocks.

Extend Facilities During Depression.

A period of depression is the best time to put in hand any necessary extensions to plant facilities required to enable the normal volume of anticipated business to be handled efficiently. Prices are low, and competition for the reduced volume of business implies that advantageous terms can be obtained from suppliers. The general repair of plant and equipment can also be taken in hand, particularly where it is possible in this way to retain workers who would otherwise have to be discharged with the necessity for taking on and training new staff when

business ultimately recovers. This extension and repair programme would, of course, be based on studies of the long-term growth of the business prepared along the lines already indicated.

It will be pointed out later that new lines and improvements to existing products discovered during periods of prosperity may with profit be held in reserve for introduction during the period of depression. In this way, it is frequently possible to reduce materially the violence of the effects of fluctuations in general business on the sales results of the individual company.

Management Policies in Recovery.

During the period of recovery in business, every effort should be made to secure the maximum advantage from the plans and policies instituted in the period of depression. Selling prices should be adjusted in accordance with market conditions, and the economies effected by improvements made along the lines already discussed should be employed to ensure that a fair share of business is received in a perhaps highly competitive market.

As soon as recovery is really under way, a more bold manufacturing policy may be adopted in the direction of production for stock. Forward contracts may be placed for raw materials at prices that should compare favourably with current market quotations at the time it is necessary to take actual deliveries. It will be obvious in this connection that an accurate forecast of future changes in the course of business activity is needed, to ensure the complete success of a policy of anticipating a revival in trade by increasing production and making purchase commitments. This problem will be taken up in more detail at a subsequent stage in the discussion. For the time being, it may be noted that if there is any doubt as to the anticipated recovery in business, a cautious policy should be followed until reliable evidence points more definitely to the direction of the movement.

Management Policies and the Boom.

The successful conduct of business during the boom period is the acid test of management. The extent to which the individual company will suffer during the subsequent collapse and depression will depend almost entirely upon the way in which its affairs are handled during the boom period.

It is inevitable that a boom must be followed by a collapse. If more business men would appreciate this fundamental feature of business activity and plan their progress accordingly, a good deal of distress could be avoided. Moreover, the boom itself would not get so out of hand, and the implied crisis would thus be less acute.

The extent and severity of the period of depression that follows a boom in business depend in a large measure on the extent to which production facilities have been established in excess of the normal requirements of the market, and on the extent to which stocks of raw materials have been accumulated at high prices. This is the basic feature that should guide sane management in a boom.

It may not be possible to foretell exactly when the break will come, but the probability of a crisis can generally be foreseen many months in advance. As soon as this stage is reached, the management should pursue a very cautious policy with the object of keeping resources in a liquid condition and avoiding optimistic commitments. Purchases of raw materials should be made on a hand-to-mouth basis in line with actual requirements for production schedules. Speculative purchases likely to result in big stocks on hand, made at high prices should be avoided. Care should also be taken in deciding the extent to which advance manufacture in anticipation of orders is justifiable. Hire purchase and instalment selling should not be pushed so vigorously as to involve tying up a big proportion of working capital.

A cautious dividend policy should be followed. A fair

proportion of the profits earned should be retained in the business with the object of maintaining a stable dividend policy throughout the business cycle. Reserves should also be established to provide funds for expansion and repairs during the period of depression that will follow the boom. In this connection it will be pointed out later that speculative profits resulting from purchases of raw materials on a rising market, and profits arising from abnormal productive activity, should be kept separate and distinct from the profits that represent the results of normal competitive activity.

Restrict Extensions Under Boom Conditions.

Particular care should be taken not to put in hand any programmes of extensions of plant and equipment facilities during boom periods. Prices are high, and human psychology frequently implies that any such extensions decided upon at this period are based on boom demand rather than on normal demand. Incidentally, this argument applies with equal force to any proposals for mergers with other companies and to increases in facilities through the acquisition of competitive businesses. At the time of writing, there are many large concerns who find themselves in difficulties through the purchase of competitive businesses at boom prices not justified by normal earnings.

During the prosperous period of trade activity, funds can be spared more easily for market and product research aimed at discovering profitable new lines, improvements to existing products, and new uses for these lines, than is the case during depression. It is a wise policy to reserve these innovations for introduction during the periods of depression and recovery. During prosperity, improved-product appeal and new lines are not usually needed to maintain sales volume. All necessary advance arrangements can be made, however, for their immediate introduction when sales fall off, so that the effect of the

depression is reduced. Many instances could be quoted to show that this policy does, in actual practice, have a very beneficial influence in the direction of more stable sales figures from year to year. Supplementary to this policy, reserves can be established to finance additional research work in periods of depression where financial conditions would otherwise necessitate serious restriction of these activities.

Management Policies in the Crisis.

There is very little constructive work to be done by business management during a crisis representing the turning point between boom and depression. This period of the business cycle is usually very short, and, if the necessary precautionary steps have been taken during the boom period, management can afford to sit back and hold tight without the necessity for feverish disposal of accumulated stocks and a panic-stricken readjustment of manufacturing schedules. The development will have been foreseen and the necessary steps taken in advance.

Business Forecasting.

It will be appreciated that the efficient planning of industrial activity to the business cycle implies a necessity for reliable forecasts of the future tendency of business conditions. No system has yet been developed to give an automatic guide, but methods are available whereby sure and reliable warning can be obtained of impending basic changes in business conditions.

A detailed discussion of the technique of business forecasting is beyond the province of this book. The reader who is interested in the subject may be referred to *Business Forecasting*, by Mr. W. Wallace, or to the many American textbooks dealing with the problem. It may be advisable, however, to give a brief outline of the various systems that are in use for forecasting major changes in general business activity.

Broadly speaking, there are two distinctly different methods of approach to the subject. On the one hand, the problem may be tackled along the lines of a careful analysis of the present situation to serve as the basis for a logical forecast of the future. The second method seeks to find a parallel in the past to the present situation and argues that similar consequences will follow.

Both these methods have their weaknesses, but it has been proved in practice that the second system yields more reliable results than the first.

The great disadvantage of the first method is that, in so far as there is no general agreement as to the exact causes of the business cycle, it is not possible to argue logically that the peculiarities of a particular situation will result in certain definite developments. It is true that, through the exercise of experienced personal judgment, reliable forecasts are often made by this method. But the system is handicapped from the start, by a lack of necessary detailed information on many of the aspects that have a vital bearing on the future course of trade. In particular, more data on the nature and size of stocks are needed.

The Harvard Business Forecasts.

The historical method of forecasting future business developments in the light of what happened in the past has been employed with a reasonable degree of success by many forecasting services—notably by the Harvard Committee on Economic Research. This American body has made painstaking statistical studies of business history, and has established a technique that does, in fact, give warning of basic changes in business.

The committee was not concerned with the radical causes of the business cycle, but sought rather to find groups of statistical series that would reflect current business conditions, and then to find some other group whose movements would regularly precede those of the

other groups. As a result of its studies, three statistical series were established, one representing the trend of speculation, another the trend of business activity, and a third the trend of the money market.

It was found that the fundamental changes in the direction of the speculation curve regularly preceded with an interval of 4-6 months those of the business curve, which were, in turn, followed in 3-6 months' time by changes in the money curve. It was also found that the movements of the curves had particular significance when they were in opposite directions at a particular time. The studies of past results showed, for instance, that if, at any one period, the speculation curve started to move definitely downwards at the same time that the money curve was trending upwards, a decline in the business curve almost invariably followed at an interval of 4-6 months. It was proved that these and similar characteristics were sufficiently regular to enable reliable forecasts to be made from the direction of the three curves and their relative positions. These forecasts were backed up by a knowledge of general economic and business conditions.

The London and Cambridge Economic Service.

In this country, the London and Cambridge Economic Service has followed fundamentally the same methods as those of the Harvard Committee, and, although handicapped by relatively inadequate statistical information, has achieved a good measure of practical success in forecasting major changes in business activity.

A considerable amount of research has also been carried out by private companies in this country and in the United States in connection with this historical method of business forecasting. The general method of approach has been towards finding some composite index of general business activity, the movements of which have preceded and been parallel to those of the results of the

particular company. In this way, a reliable forecast ahead is made possible to the extent of the period by which the general business curve precedes the company's curve. This period has been extended by the development of systems for forecasting the movements of the business curve, usually involving a study of the curve in relation to its long-period trend and a balancing of the volume over and below the trend line, the idea being that over long periods the areas between the actual curve and its trend tend to balance out.

Regulating Operations.

It will be appreciated from the above that it is definitely possible for the business man to obtain reliable indications of impending changes in business activity, from recovery to boom and from boom to collapse. Business can, therefore, be conducted practically on a basis of planning to the business cycle along the lines already indicated. The necessary readjustment of plans and policies, however, involves a certain amount of skill, and, in many instances, a more automatic procedure may be desirable, particularly so in cases where a company may be operating several separate factories and placing a high degree of individual responsibility on the major executive. In such a case, plans can be drawn up to guide the general policies to be followed by the executives during the periods of good and slack trade.

The American General Electric Company has recently put into operation such a system in connection with its unemployment insurance scheme. True, the fundamental object of the A.G.E.C. plan is to provide steady employment for the maximum number of workpeople rather than to control the full effects of the business cycle. The plan is also designed to meet American conditions, and is thus, perhaps, out of line with British requirements in certain directions. It is felt, however, that these regulations should be of interest to business executives in this

country as indicating the general lines that could be followed by plans to control business according to the cycle.

The American General Electric Company's Plan.

Under this American company's regulations, when business is increasing, the local executives are instructed to—

1. Increase working force by adding employees as slowly as possible.
2. Increase the number in especially busy departments by transfers from other departments.
3. Resort to overtime in particular departments generally, before increasing the working force.
4. Postpone plant renewal and maintenance work as much as possible, employing the men on regular production.

When work begins to fall off, the instructions are—

1. Cease hiring at once.
2. Cut out all possible overtime and bring departments down to the normal week.
3. Transfer people from slack to busier departments.
4. Stimulate the sales department to secure co-operation from customers and get business for future delivery.
5. Build standard apparatus for stock up to *X* months' shipment, based on average of last three years' sales, adjusted to expectation of next two years. (*X* varies.)
6. See that stocks at all factory and district warehouses are brought up to this maximum.
7. Use men on maintenance and repair work, bringing the plant and equipment up to a high standard.
8. Cut the normal week as generally and gradually as possible by departments (down to 50 per cent of the normal week).
9. Proceed with construction of increased plant facilities previously planned, using own men as far as possible.
10. Drop new employees with less than 1 year of service—single people with no dependents and who are most

easily spared first—always with not less than 1 week's notice.

II. In accordance with the custom established for some time, employees should be told whether it is a temporary lay off due to lack of work or a permanent lay off, and in every instance of a permanent lay off, the usual compensation, if any, should be paid, depending upon character of work, age, and length of service.

Arrangements have only recently been made for the adoption of these policies, and their success has yet to be proved. The measures are, however, based on a careful consideration of the problem on the part of all of the principal executives of the company, and they seem well designed to assist appreciably in the stabilization of the activities of the concern. The only point that may call for comment is the advisability of building for stock as soon as business starts to decline. This may be a practical policy if confined to standard items, but it is a policy that should be adopted only after careful consideration to ensure that an unduly high proportion of working capital will not be tied up in this way on a declining market.

Purchasing Profits.

In the discussion of managerial policies to be adopted during the boom period, it was suggested that speculative profits should be kept distinct from normal trading profits. The extent to which a manufacturing company may benefit from purchases of raw materials made on a rising market, and, conversely, suffer from purchases made on a declining market, will be apparent. Too frequently, however, these speculative profits are included in the overall picture without specific mention and confuse the significance of reported profit figures.

It is suggested that industry would benefit from the adoption of a policy of separating purchasing profits from profits on manufacture. The principle of the system

would be that of charging raw materials used on jobs at the current market price (or at standard prices), and debiting or crediting the difference between this price and the price actually paid to a separate profit and loss account. This object is commonly achieved in practice through a materials adjustment account. If, for instance, the stock of a certain raw material had been purchased at £40 per ton, and one ton was used on a particular order when the market price stood at £50, the transaction would be put through as follows—

1. The cost record would be charged £50.
2. The material adjustment account would be credited with the same sum.
3. Inventory would be credited with £40 (the actual cost of the material used).
4. The material adjustment account would be debited with the same sum.

In this way a separate profit and loss account is obtained for the purchase and transfer of raw material, and it is suggested that any credit balance should not be distributed with other profits, but should be regarded as a reserve for dividend equalization purposes.

Reference has already been made to the machine-hour rate system of costing, whereby overhead expense is charged to output in proportion to the extent to which manufacturing facilities are actually employed compared with normal activity. It will be appreciated that with such a system in operation, when the factory is operating at a higher degree of activity than that on which the loading rates were based, more overhead expense will be charged to output than is actually incurred. In other words, a shop surplus will be made in active periods. Conversely, there will be a shop deficit in times of slack trade when actual activity is lower than the standard rate. These "activity" profits should be regarded in much the same way as speculative profits and employed as a dividend equalization reserve.

Trade Associations.

The individual business firm working on the basis of long-term planning to the business cycle cannot perhaps expect to achieve much in the direction of stabilizing industry. With a far-sighted trade organization representing most of the members of an industry, however, much more can be done towards controlling the business cycle as distinct from reducing its harmful effect on the particular company.

At the present day, most of the trade organizations in existence in this country operate towards the preservation of price levels with the object of avoiding injurious competition. In the "Survey of Industries" reports prepared by the Balfour Committee on Industry and Trade, attention is drawn to several trade associations who also devote part of their activities to the collection and distribution of information of interest to the trade. The Society of Motor Manufacturers and Traders, the National Federation of Iron and Steel Manufacturers and the Cable Makers' Association may be cited as examples.

It is felt that these and similar trade organizations could, with advantage, extend their activities in the direction of collecting basic information to guide managerial policies in the individual companies in the industries they represent.

The Facts of Industry.

In particular, it is felt that information should be collected and distributed to the member firms in each trade association showing—

1. The productive capacity of the industry.
2. Actual production.
3. Stocks of finished goods on hand.
4. Raw-material stocks.
5. Prices paid for raw materials.
6. Orders received from particular territories.
7. Unfilled orders on hand.

8. Costs.
9. Management ratios.

This type of information is almost completely lacking at present, but it is felt that effective control of business fluctuations is impossible unless industry has at its command a complete picture of its vital statistics. The collection and distribution of this information without divulging details of individual firms should present no insurmountable difficulties. Mr. E. T. Elbourne, A.M.I.Mech.E., in an address on "Trade Association Statistics," read before the Royal Statistical Society, 17th May, 1927, suggested that the collection of information could be carried out under a system of coding statistical returns by a code index known only to the officers of the organization collecting the returns. His suggested system for carrying out the principle was—

1. That the allocation of index codes should be through some entirely neutral and disinterested person of high probity—to be nominated by, say, the President and Vice-President of the organization interested. The procedure could be resolved into the simplest of formalities.
2. That individual members should each apply for two or more index codes. The purpose of this would be to make it possible for any member to divulge his returns where the totals would otherwise, in his opinion, disclose his identity.
3. That, as a precaution against identification by post-mark, returns should be posted by members in stamped, addressed, and sealed envelopes under cover to the London offices of their bankers, who would be asked to put the envelopes in the post.
4. That to guard against any miscarriage in the post, the returns should, in themselves, be coded as to the meaning of the various figures; thus column 1 might stand for lb. weight, and column 2 for £ sterling. Distinctive colours might be used for different returns; thus,

a blue form might signify to the initiated an Output Return, and a pink form a Sales Return.

Members would need to make up their original returns on decoded forms and copy on to a coded form. The organization officials would, of course, have the key to this coding.

5. That, in the case of large organizations, the use of coded returns should be taken advantage of for utilizing the services of a central tabulating service to collate the returns on behalf of the organization, without requiring the significance of the figures to be disclosed. Under such circumstances, with all the tabulation done outside, only the chief officer of the organization need be in a position to interpret the meaning of the various totals.

6. That it should be decided, as has been done in the U.S.A. to advantage, that only those members who furnish returns within the prescribed time should be supplied with the summaries. This could be done by distributing the summaries in sealed envelopes bearing the code index number, through London bank head offices as suggested in (3). To do this, it would be necessary for each member to notify his bank, in confidence, as to his code indices, so that the summaries could be posted on as received by the bank from the trade organization. Each bank head office would have to notify the organization as to which code indices they were interested to receive.

It is felt that some such system could be adopted with success by all of the trade organizations at present in existence. Where there is no trade organization serving a particular industry, it is suggested that the Board of Trade might itself collect and publish the necessary information. This view was taken by a special committee of business men who investigated the case for a greater degree of publicity in the facts of industry. The committee held with Mr. Hoover that "if industry is to march with reasonable profits instead of undergoing fits of famine and feasts, if employment is to be held constant

and not subjected to vast waves of hardship, there must be adequate statistical service." To this end, the committee stressed the need for information of a substantially similar type to that specified above, and proposed—

That the Board of Trade should be given statutory powers to inaugurate a scheme of publicity on the lines suggested, and that the Board should itself collect and publish the information if it can find no other body to do the work. Where, however, in any industry there is some adequate and representative body which is able and willing to implement the scheme, the Board of Trade should permit it to do so and should delegate to that body its own powers of compelling the disclosure of the facts required.

Advantages of Industrial Information.

The practical advantages to the individual company implied by a knowledge of the full facts of the industry will be apparent. Figures of idle capacity and unsold stocks would exert a beneficial influence on efforts to stimulate demand, and would indicate the need for a corrective for any unwarranted increases in plant capacity or in stocks on the part of the individual producer. Information on competitive costs would also prove of great value to the individual firm as a check on waste and inefficiency, while management ratios similar to those discussed in Chapter VI assume a new significance if they are compared with the actual results achieved in the industry as a whole, rather than against hypothetical standards.

Trade associations can also be of great service in assisting the interchange of credit information and in establishing standards of production. Increased co-operation along these lines cannot help facilitating the development of opportunities for stabilizing business.

Introducing New Lines.

The introduction of new lines at the proper time offers a practical solution to the problem of securing more stable sales. It is a step that must, however, be taken with caution if unfortunate results are to be avoided.

Increased capital expenditure on plant and equipment may be necessary. An expensive advertising campaign will undoubtedly be called for. Considerable stocks must be established in anticipation of demand, and frequently the decision to adopt the new line may involve an investment of tens of thousands of pounds before any actual selling effort is made. In the circumstances, it must be admitted that a certain expenditure on preliminary research may be more than justified if it tends to reduce unfortunate decisions.

Generally speaking, there is no lack of suggestions for new lines. Inventors and patent agents are continually submitting new propositions, and many large firms even go to the expense of a special research department exclusively engaged in the development of improvements and innovations. The question of introducing new lines is essentially a problem of selection, but this by no means reduces its difficulty. Out of the multitude of suggestions, perhaps 5 per cent represent money-making propositions, and the figure is frequently lower than this. How, then, are the few profitable prospects to be selected, and how are expensive false judgments to be avoided?

The answer to this problem lies in the proper use of the principles of market research as a supplement to managerial experience.

Steps in Market Research.

The first step in a market research study for a new product should be an investigation into the patent aspect. There are two sides to this problem. On the one hand, the novelty should be such that the company can safeguard its rights by patents; while, on the other hand, the company must make sure that the proposition does not represent an infringement of a patent already filed. The larger firms may have departments attached to their organizations specifically for this work. For the smaller concern there are numbers of reputable patent agents

who are willing to investigate such matters for a modest fee.

Having satisfied oneself on the patent situation, the next step is a consideration of the extent and nature of the potential market for the new line. This is the essence of a market-research study, and it is a problem to which the maximum of care and consideration must be given. The various factors affecting demand have been discussed at length in Chapter II (page 38-40), and need not therefore be repeated here. This technique should be adopted to obtain estimates of probable sales at various selling prices, the phase of the business cycle at which the new line is to be introduced being borne in mind.

The next step is to examine the manufacturing aspects of the situation with a view to deciding what costs and expenses would be involved.

Unit cost will, of course, depend on the volume of business, and will represent material and direct labour costs, plus the usual loading for factory and general expense. On top of this, however, must be added a proportion of the cost of development of the new article, including the preparation of necessary drawings and special tools, the cost of the market study and any cash payments to the originator of the new idea. The company would be wise to figure on recovering this expense from sales within two years at the most, and the item should definitely be included in costs together with any royalty payments.

Careful consideration must also be given to loadings in estimating the costs for an entirely new line of manufacture. The article may, for instance, involve in itself the acquisition of new plant, and, if so, this should definitely be reflected in cost. Even such a standard item as labour cost demands careful consideration with a view to ascertaining whether the article can be made with the usual grade of labour employed in the factory, so that any necessary allowances can be made for increased costs involved by higher-grade labour. The possibility of finer

manufacturing limits involving a bigger proportion of re-jects and perhaps more expensive supervision is a further consideration that should not be ignored.

Commercial Considerations.

When all these factors have been taken into account, it should be possible to establish reliable factory cost figures which, on comparison with the sales figures already determined, will indicate what gross profit margin is available at each suggested selling price. The next step is to decide how far this margin will be reduced by selling, advertising, and general commercial expense.

This involves a decision as to the basis on which the company proposes to sell the new line, whether direct to the public or through wholesale or retail agents. An estimate must also be made of the cost of the initial advertising campaign that is to be launched to popularize the line, so that this expense can be covered together with the cost of any other publicity work. Consideration must finally be given to any out-of-pocket expenses that are likely to be incurred through repair or service guarantees, so that, finally, a really reliable figure is obtained as to the true net profit that the company can expect to make by the introduction of the new line. This should represent the deciding figure in any decision to take up a new line, but care must also be taken to ensure that the company can finance the new project. Apart from a further possible expenditure on new plant, the introduction of a new project will involve increased investment of working capital in stocks of raw material, in finished goods, and in outstanding accounts. It is important that the company should be able to carry this additional investment, and that the estimated net profit on the new business should be sufficient to cover the usual charges on the new capital.

There may be a tendency to assume that this multi-variety of considerations involves an expense that must

make such an investigation out of the question for the small company. True, it may not always be economic or desirable to investigate the situation so thoroughly, but it should never be forgotten that the introduction of a new line often involves a large increase in investment, and possibly a heavy loss of money. It is, in consequence, a step that is not to be undertaken lightly, and the money spent in sounding the water before taking the plunge is money well spent.

The burden of expense would not fall so heavy if, as has been suggested, the necessary research work were carried out in the periods of prosperous trade and all the necessary steps taken in advance for the immediate introduction of the new line when declining sales call for some such fillip.

Summary.

In summary, the effective long-term planning of business involves—

1. A forecast of the future covering a period sufficiently long to enable logical plant extension and finance policies to be established in line with the fundamental requirements of the business.
2. An appreciation of the nature and effects of the business cycle and the development of a management technique to suit the peculiarities of the various phases of the cycle.
3. The development of means for forecasting future general business conditions.
4. Extensive research work to discover new lines and modifications to existing lines that can be employed towards stabilizing sales.
5. The institution of a system for separating speculative and "activity" profits from manufacturing and selling profits, so that a practical dividend equalization policy can be pursued.

CHAPTER IX

CONCLUSION

OUTLINE of budget practice—Budgets for wholesale and retail stores—
Other applications—International interest—Practical advantages

BUDGET control of industry implies the statement of plans, the co-ordination of these plans into a well-balanced programme, and the constant watching of actual operations to ensure that they are kept in line with the predetermined plans. In this way, limits are set on expenditure, standards of performance are established, and forward thinking is made an essential part of business management. Care must be taken, however, not to fall into the error of regarding the budget as an end in itself. It is a means to an end. It is not a method of business management, but an aid to clear thinking, and its fundamental object is to enable considered intention to be substituted for opportunism in management.

According to Mr. Henry Bruere, a prominent American supporter of the advantages of budget control, "the danger that confronts the budget in business is that technicians will seize upon it and, by enshrouding it in mystery, discourage practical business men from testing its merits. The process of budget making may be simple or complex, according to the type of business involved. But the objective of the budget is a simple objective, and has merit only so long as it is not overlaid with a web of procedure. It is not a philosophy or method of business management, but an aid, only, to clear business thinking and decisive action."

Outline of Budget Practice.

In the preceding discussion, budget control has been considered from the viewpoint of its most comprehensive

application to a highly developed, large-scale manufacturing enterprise. It is not always necessary or advisable for budget control to be carried to these lengths. The idea should be to fit the budget plan to the needs of the individual company rather than to adjust the operations of the company towards some preconceived technique. If the fundamental principles of budget control in its widest form have been grasped thoroughly, it should be a relatively simple matter in practice to select the significant details for application to particular cases. To this end, it may be advisable to separate the fundamental steps in budget control from the associated detailed discussion as to their practical application. Such a summary of budget procedure shows that the foundations of budget control for the normal type of medium-sized manufacturing company would be as follows—

I. A general review would be made of business prospects and market conditions for the period under review, involving an investigation into the probable trend of business conditions, and an analysis of the position of any individual industries in which the particular company was interested. This would enable the management to decide the broad lines of policy that should be pursued, and would be of particular assistance in the following directions—

(a) It would indicate the necessity for any adjustment of selling prices.

(b) It would show the desirability of introducing any new lines that had previously been developed and held in reserve with the idea of enabling sales volume to be maintained in slack periods.

(c) It would show whether there was any need for increased efforts towards finding new uses for existing products in outside fields.

(d) It would guide the management in deciding what policy to adopt in regard to purchases of raw materials— if, for instance, a decline in general prices was anticipated,

stocks would be kept at a minimum by hand-to-mouth buying.

(e) It would be an indication as to the extent to which production should be completed in anticipation of demand.

(f) It would assist the company in planning its operations with the least loss from cyclical business conditions by indicating the general direction of managerial policy as discussed in Chapter VIII.

2. Figures would be established to show the productive capacity of the works for the period under review, the volume of profits regarded as desirable, and the degree to which funds were available or obtainable to finance extensions in activity. These figures would be used as a background for the adjustments mentioned in the subsequent paragraphs.

3. A forecast would be made of the volume of sales that normally could be expected in the light of the conditions established in (1). This would be the starting point for a more detailed decision of future policy as follows—

(a) A tentative estimate would be made of the volume of gross profits implied by the anticipated sales, of the necessary volume of production required to meet the sales estimate, and of all of the expenses to be incurred in running the business during the period.

(b) The estimated profit would be compared with the desired total, estimated production would be compared with production capacity, and finance requirements measured against available funds, to indicate the necessity for any changes in the sales estimate.

(c) The possibility of effecting changes in the direction of securing more profits, obtaining a more even manufacturing load, and keeping the business within the bounds of finance practicalities, would be investigated, and a decision would be reached as to the plans that were to be adopted to secure these results.

4. The plans and policies adopted as a result of the

above would be expressed in concrete form in the shape of a sales budget, production budget, purchasing budget, expense budget, and finance budget, care being taken to ensure that the necessary adjustments were made to the preliminary estimates to take into account the interdependence of activities, and perhaps wide significance of plans and policies aimed fundamentally at a single aspect of the situation.

5. The responsible executives of the company would be advised of the budgets that had been adopted covering their activities and of the proposed plans and policies that were to be adopted towards the desired end. These budgets would represent, in fact, working programmes for the period under review.

6. Arrangements would be made for the regular comparison of actual results against the budget estimates to indicate—

(a) Whether or not the agreed plans were, in fact, being put into operation.

(b) The measure of success with which these plans were being realized.

(c) The development of any basic changes in fundamental conditions implying the necessity for recasting management policy and, therefore, redrafting the budget.

In short, budget control implies a "look-ahead" in industry, a decision as to the best course to be followed and the methods by which that course is to be maintained, and constant surveillance to see that this course is actually maintained, unless and until developments occur to make a change desirable.

Although the previous discussion has been confined to the application of budget control in manufacturing industry, it must not be thought that the advantages of the system are confined to manufacturing companies. It can be employed to assist in the control of any concern where there is outlay and receipt of funds.

Budgets for Wholesale and Retail Stores.

The technique to be adopted in the application of budget control to wholesale and retail stores is substantially the same as that involved in manufacturing industry so far as the sales, expenses, and finance aspects are concerned. The only basic difference is that the purchasing budget fills the role played by the production budget, and, instead of co-ordinating sales and production, the problem is one of co-ordinating sales and purchases.

The proper co-ordination of sales and purchases is of vital importance in this type of industry, with the implied necessity for a rapid turnover of stocks. A certain amount of stock must be kept on hand for display purposes, and further stocks must be carried to allow for the physical impossibility of planning deliveries daily to tie in with sales. The programme, however, should be so planned as to keep these stocks at the lowest possible level. The old maxim of "small profits and quick returns" is sound business sense.

The institution of budget control in wholesale and retail trade is often handicapped by the style factor. This is a difficulty that can be overcome in practice by keeping the budget period sufficiently short to enable reasonably reliable forecasts to be made. In addition, it is often possible to overcome the difficulty in a measure by greater standardization of products to eliminate redundant and unprofitable slow-moving lines. Efforts at forecasting future demand can also be simplified in many instances by sending samples to representative customers with the object of obtaining their opinion of sales prospects.

Other Applications.

In the application of budget control to public-utility companies such as, for instance, railway companies, electricity-supply companies and water-supply companies, the financial aspect assumes prime significance. In particular, detailed budgets are needed to enable effective

control to be maintained over operating and maintenance expense, and, if the company is expanding, much more attention must be given to the plant and equipment budget than is usually the case in manufacturing industry.

Reference has already been made (Chapter VIII) to the method by which the American Telephone and Telegraph Company plans its operations with an eye to the future, through detailed studies of the probable growth of the market and through the operation of a five-year budget programme. This technique can be endorsed for general application in the public-utility field, and the detailed budget covering a short period should always be backed up with a general picture covering several years ahead.

Banks and insurance companies can also be controlled on a budget basis, particularly in the direction of securing control over office expenses. True, no reliable general standards are available against which expense can be measured, but the institution of budget control in such a company would, it is felt, prove of considerable value in the elimination of waste and in the realization of more profitable operations.

The reader who is interested in a more detailed discussion of the application of budget control to particular industries may with advantage be referred to *Applied Budgeting*, by Mr. H. Bruere and Mr. A. Lazarus (McGraw Hill), in which budget procedures are suggested for eleven branches of industry. The book is essentially practical, and represents the experience of successful business men in the specific trades mentioned.

The industries covered and the budgeting procedure involved may with advantage be given in summarized form—

OIL COMPANY. A type of industry demanding a flexible system to cope with the mobility and constant expansion of fixed assets, and requiring a long-term look-ahead on broad lines rather than a detailed short-period programme. The

budget system described embraces earnings and expense, sales, operating programmes, interest requirements and capital extensions.

RAILWAY COMPANY. Demands a detailed budget system to ensure effective elimination of waste. Covers investment, maintenance programme, improvements and extensions, revenue, operating expenses, and cash requirements.

BANK. Demands a simple form of budget procedure. Covers operating costs and profits, income, and particularly office expenses.

NEWSPAPER AND MAGAZINE. Covers revenue, expense, and profit and loss.

CONTRACTING. A highly developed type of special order industry. Covers finance, overhead expenses, and costs.

METAL WORKING. Requires a complete budget system along the lines already indicated. Covers sales, production, expense, finance, profit and loss, and balance sheet.

DEPARTMENTAL STORE. Requires a system to control purchasing activities. Covers merchandise, purchasing, stocks, cash, expense, and advertising.

CANNING. A highly seasonal type of industry. Covers sales, production, and materials.

HOTEL. An industry with a single "perishable" service. Covers income, expense (in detail), and profit and loss.

ICE CREAM. A process industry with a perishable commodity and a seasonality problem. Covers sales, advertising, and income.

GARMENT COMPANY. A type of industry representing a combination of stock order and special order (i.e. ready-made and "to measure"). Covers sales, advertising, factory programme, purchases, expense, cash, and finance.

Although the discussion of the various systems is written primarily for the American business man, the forms and details are quite applicable to British industry. They represent not theory, but extracts from practice.

International Interest.

From being a peculiarity of American industry, budget control in business is rapidly being recognized throughout the world as an aid to the effective control of industrial operations. A significant illustration of the international interest in the subject is offered by the fact that over

200 delegates, representing 27 countries, attended the International Discussion Conference on Budgetary Control held at Geneva, Switzerland, on 10-12th July, 1930, under the auspices of the International Management Institute. The purpose of the Conference was to provide an opportunity for a technical discussion between practical and theoretical specialists, with the subsidiary object of propaganda for the principles and methods of budget control.

Six basic aspects of the subject were opened to discussion by leading specialists who submitted introductory statements dealing with the outstanding features of the problem as follows—

Section 1. Application of Budget Control within the Undertaking:

“The Budget as an Aid to the Determination of Policy,” by Mr. James O. McKinsey, U.S.A.

“The Budget as an Aid to the Control of Performance,” by Mr. C. G. Renold, Great Britain.

Section 2. Operating Problems—

“The Preparation of the Sales Budget,” by Mr. William Carswell, Canada.

“The Preparation of the Expense Budget,” by Dr. Edmond Landauer, Belgium.

Section 3. Financial Problems—

“Budgeting for Stock and Working Capital Requirements,” by Dr. Heinz Ludwig, Germany.

“Budgeting for Equipment and Fixed Capital Requirements,” by Herr Max H. Schmid, Germany.

Section 4. Psychological Problems—

“How to Overcome Opposition when Introducing a Budget Control System,” by Mr. Harold Hinton Coes, U.S.A.

“Common Mistakes and Misunderstandings in the Use of Budgets,” by Ing. Paul Real, Switzerland.

Section 5. Application of Budget Control Outside the Undertaking:

“The Management of Industrial Concerns and the Budget,” by Herr Heinz Pulvermann, Germany.

“Budget Principles and Procedures in their Broader Aspect,” by Mr. Louis F. Musil, U.S.A.

Section 6. General Problems—

“The State Budget as Compared with the Business Budget,” by Sir Henry Bunbury, K.C.B., Great Britain.

“National and International Economic Planning,” by M. Daniel Serruys, France.

The Conference brought to light quite clearly the importance of budget control for public and private administration, and recommendations were adopted that—

The International Management Institute should co-operate with the International Committee for Scientific Management and with the national committees and organizations in promoting the formation of research groups that will study the application of budget control in individual cases.

That the task of securing the exchange of information between these groups will be entrusted to the International Management Institute, and shall take such a form as may be expedient in the light of subsequent developments.

Towards this end, the Conference further recommended that—

Each national committee or other organization for rationalization shall create a sub-committee for the study of the question of budget control analogous to the sub-committees of the Reichskuratorium.

In different branches of industry there should be formed national and international groups for the study of the application of budget control.

The International Management Institute should be asked to secure *liaison* between the various groups and secure them all necessary technical assistance.

As a direct outcome of these resolutions, seven international groups have been formed to investigate the

application of the principles of budget control in the following seven classes of industries—

- Iron and steel.
- Mechanical engineering.
- Electrical engineering.
- Motor-car manufacture.
- Textiles.
- Public utilities.
- Food industries.

These groups are understood to be making valuable progress towards the desired objectives.

Practical Advantages.

Although budget control has not yet been adopted on a sufficiently wide basis in this country to enable a comprehensive summary to be given of the practical advantages that have been realized, there is sufficient evidence to indicate quite clearly that budget control is a logical development that can be expected to take a permanent place in the technique of business management in Great Britain. It is significant to note the wide range of industrial activity represented at the International Conference to which reference has already been made. Among the British firms and associates that participated were the British Thomson-Houston Company, the Gramophone Company, Cadbury's, Rowntree's, the International Standard Electric Company, Hans Renold, the United Steel Companies, Chivers, Morland & Impey, Beyer Peacock, and the Calico Printers' Association.

Broadly speaking, the practical advantages of the adoption of budget control lie in the direction of the elimination of waste, enhanced productive efficiency and greater security of employment. These advantages are secured through the co-ordination of sales, production and finance, the formulation of profitable sales and production programmes, the proper control of expenses, and the forward planning of finance.

In America, the adoption of budget control has been much more widespread than in this country, and a virtually unanimous verdict has been given there in favour of the system. Reference has already been made to the survey of budget control in manufacturing industry made by the National Industrial Conference of New York. The Board approached 294 representative American companies, and one of the questions asked was: "What benefit has your company obtained from budgetary control?" The replies to this question were summarized in the Board's report as follows—

1. Budgetary control provides a basis for—

- (a) Administrative control.
- (b) Direction of sales efforts.
- (c) Control and planning of production to cover seasonal variations with a minimum disturbance of operations and employment.
- (d) Control of inventories and consequent avoidance of excess inventories.
- (e) Price setting before product goes into production.
- (f) Determination of financial requirements, arranging of bank loans, releasing of capital, and reduction of loans.
- (g) Maintaining a satisfactory cash position.
- (h) Ascertaining which persons in the company are the best managers.
- (i) Control and reduction of expense.
- (j) Control of and reduction of costs.

2. Co-ordinates—

- (a) Finances.
- (b) Plans of the various departments.
- (c) Widespread activities of large companies.

3. Affords a broader prospective of operating policies.

4. Presents a standard practice towards which to strive.

Budgets are being recognized more and more as an effective method of expressing the forethought and planning essential

to the successful conduct of business. While many enterprises have not yet adopted the budget in form, none can dispense with the spirit that lies behind it. . . . Where the budget is used . . . that spirit is successfully embodied in a definite form, the adoption of which has smoothed the way for judicious conduct of business affairs.

It will be appreciated that this represents the opinion of practical business men as distinct from theorists and idealists. The report leaves no doubt as to the advantages of budget control in industry. There is no reason why similar advantages should not be realized by British industry from the application of budget control in this country.

APPENDIX

BUDGET MANUAL

It has been suggested that where an involved budget technique is implied by the peculiar needs of particular firms, a budget manual may with advantage be prepared to ensure a proper understanding of budget aims and effective co-ordination of activities.

Such a budget manual would cover the objects behind the introduction of the system, the practical arrangements for its installation, and the dates by which the various estimates are to be prepared, and would fix the responsibility for the preparation and administration of these estimates. In effect, it would represent a programme for the detailed application of the principles already discussed to the particular needs of the firm in question.

A graphic outline of budget procedure is given in the accompanying illustration (Fig. 21). The figure indicates quite clearly the extent to which the various estimates interlock, one forming the basis for the other, and so on. The production budget, for instance, cannot be prepared until the sales budget has been completed, while the financial analysis cannot be made until after the preparation of all of the various operating budgets. The principal object of the budget manual is to ensure that all the various estimates are prepared at the proper time, so that the procedure runs along evenly to the completion of the entire programme, sufficiently far in advance of the period covered to enable proposed plans and policies to be introduced effectively.

By reason of the wide differences in individual practice, it is felt that no practical purpose would be served by the inclusion of a detailed budget manual. It may, however,

be advisable to indicate the framework on which such a manual might be prepared—

1. Aims and objects.

2. Organization.

(a) Budget committee—members, duties, meetings.

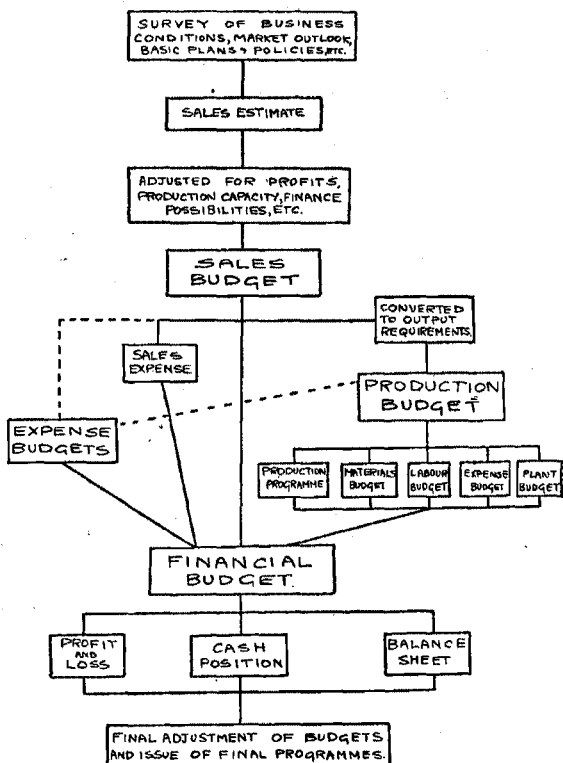


FIG. 21. OUTLINE OF BUDGET PROCEDURE

- (b) Budget officer—duties.
- (c) Responsibility for estimates and reports.
- 3. Sales budget.
Preparation—forms—date due—circulation of copies.
- 4. Production budget.
Preparation—forms—date due—circulation of copies.
- 5. Expense budgets.
Preparation—forms—date due—circulation of copies.
- 6. Financial budgets.
Preparation—forms—date due—circulation of copies.

INDEX

- ACCOUNTS** receivable, 132
 "Acid test" ratio, 154
 Administrative expense, 116
 Advertising expense, 111
 — programme, 113
 American General Electric Co., 199
 — Telephone and Telegraph Co., 184
 Assembly diagrams, 92
 Assets, forecast of, 144
 Auxiliary expenses, 114
- BALANCE** of stores records, 67, 85
 — sheet, 141
 — —, analysis of, 148
 — —, estimating, 144
 — —, ratios, 154
 — —, significance, 144
 Balfour Committee, 203
 Banks, budgets for, 217
 Billings, 133
 Bonus system of payment, 110
 Book-keeping and budgets, 165
 Boom, policy in, 194
 Budget Committee, 163
 — manual, 223
 — officer, 10, 161
 — —, duties, 163
 — —, qualifications, 162
 Budgetary control—
 advantages, 8, 220
 co-ordination, 5
 definition, 18
 difficulties, 12, 159
 features, 2, 10
 manual, 223
 necessity, 8
 objects, 2, 4, 9, 18, 131
 operation, 17
 outline, 13, 212
 periods, 11
 preparation for, 9, 11
 procedure, 211
 Business and State budgets, 3, 4
 — cycle, 13, 36, 186
 — —, causes, 188
 — —, controlling, 189
 — —, forecasting, 37, 196
 — —, origin, 187
- CANNING** company budgets, 217
 Cash balance, 137
 — disbursements, 136
 — position, 129
 — programme, 141
 — receipts, 131
 Charts, 174
 Chasers, 94
 Collection policy, 134
 — —, efficiency of, 153
 Contracting industry, 56
 — — budgets, 95, 217
 Co-ordination of activities, 5
 Cost of idleness, 75
 — reduction, 31, 68, 96, 126, 142
 — — and selling prices, 44
 Costs and overheads, 74
 — and profits, 122
 —, nature of, 45, 74, 97
 —, objects of, 74
 —, standard, 79
 Cross-over chart, 124
 Cyclical features, 34
- DELIVERY** periods, reducing, 90
 Demand, factors affecting, 38
 Departmental store, 217
 Depression, policy in, 191
 Differential costs, 51
 Distribution costs, 114
- ECONOMIC** orders, 85, 96
 — —, advantages of, 100
 — —, formula for, 99
 Economy, 126
 Elbourne, E. T., 204
 Employees, 69
 Equipment budget, 65
 Executive reports, 173
 Expense budgets, 107
 — control, 70, 169
 —, elements of, 102
 — standard, 115
 Expenses—
 administrative, 115
 advertising, 111
 allocation of, 105
 estimation of, 71
 manufacturing, 70

- Expenses—(contd.)
 quotas, 126
 selling, 108
 shipping and packing, 114
- FACTORY expense, 70, 115
 — lay-out, 82
 Facts of industry, 203
 Finance, long-term, 186
 Financial budget, 128
 — — —, objects, 128
 — — —, reports, 173
 — — —, summary of, 155
 — programme, 130
 — ratios, 149
 Fixed assets, economy in use of, 153
 Forecasting, 4
- GOVERNMENT budgets, 4
 —, U.S.A. budget, 1, 2
- HARVARD Committee on Economic Research, 197
 Hotel budgets, 217
- INTERNATIONAL Discussion Conference on Budgetary Control, 218
 — interest in budgeting, 217
 — Management Institute, 218
- LABOUR budget, 69
 — costs, 69
 —, regrading of, 126
 — standards, 70
 Liabilities, forecasting, 147
 Loans, 141
 London and Cambridge Economic Service, 198
 Long-term planning, 183, 210
 — sales studies, 186
- MACHINE-HOUR rate system, 76, 202
 Machine programmes, 93
 Management—
 desired attitude, 161
 functions, 142
 measuring, 141
 policies, 190
 standards, 143, 148
 Manual, budget, 223
 Manufacturing business, types of, 81
- Manufacturing expense and volume, 70
 — — — budget, 70, 108
 — — — reports, 171
 — — —, responsibility, 72
 — load, 57, 59
 Market research, 38, 89, 195, 207
 Mass production, 7
 Master budget, 156
 Materials budget, 66
 Mechanical handling, 100, 126
 Minimum-stock system, 68, 84
 Moving annual total, 36, 180
- NATIONAL Industrial Conference Board of New York, 159, 162, 221
 New lines, 195, 206
 — — —, considerations involved, 207, 209
 Newspaper budget, 217
- OIL company budget, 216
 Overcapacity profits, 75, 202
 Overhead expense, 76
- PACKING expense, 114
 Payment by results, 110, 127
 Periods for budgets, 11
 Planning board, 93
 — business operations, 186
 — for profits, 119, 125
 Plant budget, 65
 — — — control, 66
 — — — extensions, 192, 195
 — — — reports, 172
 Policyholders' Service Bureau, 77
 Preparedness, cost of, 76
 Price cutting, 51
 "Price-volume" study, 46
 Production and stocks, 83
 — control, 91
 — planning, 80
 — reports, 170
 — schedules, 92
 Profit and Loss Account, 117
 — points, 123
 — standards, 150
 Profits, a new approach to, 119
 Progress reports, 94
 Public-utility budgets, 215
 Purchasing—
 economy in, 68
 factors, 67
 profits, 201

- Purchasing—(*contd.*)
 reports, 172
 schedules, 67
- RAILWAY budgets, 217
- Records, 10, 23
- Recovery, policy in, 193
- Reports, 166
- Retail-shop budgets, 215
- Route sheets, 93
- SALES and shipments, 176
 — budget, 42
 ———, administration, 62
 ———, reports, 167
 ——— summary, 61
 ———, definition of, 21
 ——— estimate, 13, 20
 ———, factors affecting, 21
- Seasonal-industry budgets, 88
 — production, 86
 — stock control, 86
- Seasonality, 12, 26
 ———, determination of, 29
 ———, reducing effect of, 32
- Selling-expense budget, 108
 — prices, determination, 43
 — reports, 168
- Shipping expenses, 114
- Shop balance sheet, 72
 — output, calculation, 55
- Small company budgets, 8
- Special order industry, 56, 81, 89
 ——— budgets, 94
- Stabilizing business, 13, 32, 186
 — employment, 31, 69
 — industry, 189
 — production, 87
- Standard costs, 79
- State budgets, 4
- Stock control, 84
 ———, forecasting position of, 146
 ——— investment, 85
 ——— order industry, 55
 ———, budgets, 81
 ———, production plan-
 ning, 82
- Stocks and deliveries, 178
- Straight-line trend, 24
- Study of past results, 23
- Style factor, 95, 215
- TAYLOR planning board, 93
- Time study, 70, 126
- Trade associations, 203
 ———, statistics, 204
- Trends, 23
- Turnover standards, 151
- UNDER-CAPACITY losses, 79, 202
 ——— production, 58
- Unit cost and volume, 85, 96
- United States, budget control in,
 7, 159
- VOLUME and costs, 55, 75, 78, 120
 — and profits, 49
- WASTE, elimination of, 127
- Weaknesses of modern industry,
 187
- Welfare expense, 70
- Wholesale-stores budgets, 215
- Working capital, 6
 ——— ratio, 154
- World Power*, 184
- Z CHART, 180