. . . A factory in the suburbs of Bombay, engaged in manufacturing machine tools with Japanese automatic machines, came in for a surprise from one of its employees. The employee concerned had little schooling to his credit, but he had worked on machine tools for several years, and had an active mind. He made a practical suggestion to effect a small modification in the automatic machine which would increase production by 100 per cent. In the first instance, the company hesitated a little, but later on they wrote to the supplier of the machinery in Japan, asking them if they could implement the suggestion. The Japanese company congratulated the employee . . .

PRODUCTIVITY carries in this issue a special feature on Suggestion Schemes (pages 201 to 249). The contributors are Mr MS Datta, Deputy Director of the National Productivity Council, Mr JA Panakal of TISCO, and Prof. Udaychandra Naval. Details of the scheme proposed to be introduced at Hindustan Insecticides Ltd. are also given in another article.

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Photographs and other illustrations are welcome, but should be restricted to a minimum. For each one, the appropriate place of insertion in the text should be indicated.

Reviews of Books: Latest books on technology, economics, social sciences, and on all other subjects having a bearing on productivity will be reviewed in the Journal. Books should be addressed to the Editor, 156 Golf Links, New Delhi-3.

Vol. VII, No. 2, Monsoon 1966 Editor: DH Butani

PRODUCTIVITY

NATIONAL PRODUCTIVITY COUNCIL JOURNAL

PRODUCTIVITY IN DEPTH

FOR THE LAST SEVERAL years, the National Productivity Council has been in intimate touch with Industry to help it raise its productivity; and, as recorded in the researches published in the past issues of this Journal, *we have been able to achieve a three per cent compound rate of increase in industrial productivity.* The credit for this achievement goes, of course, entirely to Industry, both in the public and private sectors, to their managements and, not the least, to the Labour associated with them in the processes of production. NPC can only claim to have worked as a catalytic agent through our presence in training programmes, through productivity publications, etc.

A decade ago, Productivity was an unknown quantity in the socio-economic equation. Now, hardly any company chairman or Cabinet Minister makes an important speech without some direct reference to productivity as the measure of performance in the line in which he commands social resources. In the corporate sector, produ-

ctivity has become the established yardstick in decisions involving expenditure of resources; and there are important company chairmen now who quote the gospel of productivity more than the professional practitioners of productivity.

Not many months ago, the Managing Director of Union Carbide devoted his entire annual speech to a Productivity Reorientation of Management: "The year 1966 is 'India Productivity Year' and today, therefore, I propose to enlarge upon the inter-relationship which exists between productivity, managers, and managerial standards of conduct."

And in the course of his speech, Mr JWL Russell went into the depths of productivity: "... *For the Rupee will not automatically invest itself to the best advantage of the enterprise and the community.* Machines, plants and laboratories will not produce optimum combination of goods and services to meet the country's needs, unless they are directed by capable managers."

Mr Russell's emphasis is naturally on management; and an *obiter dictum* from Socrates, quoted by him in the course of his speech, is really remarkable in its implications: "Do not despise men skilled in managing. The conduct of private affairs differs from that of public affairs only in magnitude; in other respects, they are similar. Neither of them are managed without men, and those who know how to employ men, conduct either private or public affairs judiciously; those who do not know will err in the management of both."

Clearly, what we require is *Management in Depth*, and that, in turn, means *Productivity in Depth*, for the two are in reality identical. That the wind of change is moving in the direction is evidenced by the fact that the Prime Minister herself inaugurated a Seminar on Public Sector enterprises, and made it clear, beyond doubt, that Government intended to *measure their achievements by the yardstick of productivity alone.*

In order to achieve Productivity in Depth, the Planning Commission has set up a whole division concerned with management, which recently organised a high-level Seminar on Productivity. It is clear from the deliberations of this Seminar that the *Government's major concern at the moment is to drive productivity concepts into the very structure of industry, in some very considerable depth.*

The very first issue posed at the Planning Commission's Management Conference was the analysis of "attitudes towards cost reduction, profit and productivity (utilisation and employment of resources)... Cost reduction is not possible without a deep cost-consciousness and time-consciousness..."

The Management tasks to achieve the targets of the Fourth Plan were outlined as

(a) reducing costs in public and private enterprises and export industries;

(b) increasing productivity through promotion and application of scientific research and development; and

(c) increasing export earnings through raising productivity.

... India is the only country where organised labour of all shades of political opinion has expressed its full preparedness to participate in the productivity movement. At the Seminar on Sharing the Gains of Productivity, all labour representatives expressed their readiness to cooperate in projects for measuring and increasing productivity.

"NPC, however, does not propose to rest on its oars, but to move forward towards an actual accomplishment of a massive increase in industrial productivity.

"Indian industry has begun to look ahead. In its own small way, NPC has played a part in the formation of forward-looking attitudes in Indian industry; but more, and more important work lies ahead...

from PRODUCTIVITY
Vol. II No. 3

Surely this is the area of the National Productivity Council, and our very *forte.* We have worked in the field for eight long years; and for the last three years, we have organised a number of productivity surveys in public and private sector enterprises, supplemented by Implementation Service. In fact the whole scheme is integrated into what is called the PSIS: Productivity Survey and Implementation Service. We are thus equipped, wherever and whenever called upon, for achieving—rather helping any organisation to achieve—Productivity in Depth, so vital now to the viability of Indian Industry in the context of Devaluation.

ST MERANI

Development Commissioner
Small-scale Industries

Utilisation of Laboratory Research

UTILISATION of research depends, first of all, upon the type of research (including the origin of it). Where the research originates in a problem which has been posed by some one in particular (an individual or an industry), the results are eagerly awaited and their utilisation should be easy to secure. It is for this reason that increasingly emphasis is being laid on sponsored research or problem-solving research. But where research has been done on one's own, the problem becomes somewhat difficult. If the doer is in tune with his environment, the research results are likely to be related to an existing situation or demand, and, therefore, their implementation should be within reach. We need not, however, discuss the third type in which the researcher is far far ahead of his time.

Implementation depends upon stage at which the results of research put on the market. If this is done at a point where industry can take on (for instance, after the pilot project stage), acceptance would be easier. On the other hand, if theoretical conclusions of research are left to be given practical industrial shape by some one else and at a subsequent stage, the utilisation will inevitably become delayed. It is for this reason that emphasis is being laid increasingly on research results being offered at the stage where take off is possible.

The third element in this sequence is the matter of form and detail in which research findings are offered. Here again if these are offered in a suitable form ready for market use, and in language and detail that would be expected, the chances of rapid utilisation are the brightest.

But to stop at this stage would not be satisfactory. In the conditions in which we live here we must make effective arrangements for the marketing of research. Leaving it to be achieved through publication of material will not be enough. Organising it through the usual kind of extension services will succeed so far but no more. The word of mouth approach is good, but most mouths that speak have other interests. In any case the persistence that is necessary in promoting implementation of research results has to be organised on the basis of sound marketing techniques. Each item to be sold has its special problem, and the tools must take this into account. In the case of research, one of the tools may well be that the researcher should participate actively, as if on joint venture basis, all through the processes of acceptance, implementation, production, and reward. This way it is not only abstract knowledge that is being

(Continued on page 325)

A DASGUPTA

Professor & Head of the Dept. of Business Management Delhi University

Nature & Scope of

Executive Development Programmes

There is a wide variety of executive development programmes and the agencies organizing them in India. In this article, Professor Dasgupta has analysed the training needs of the various levels of management, defined the purposes of various types of programmes and organizing agencies, and also described the various methods of management training.

MANY of the experiences, skills and attitudes of managers which help them to perform their functions successfully can be transmitted to other managers as techniques and guiding principles for qualitative improvement in work so that they do not have to spend a long period of time learning through a process of trial and error or from the chance impact of experience. Thus, F.W. Taylor, Henri Fayol, Oliver Sheldon, Henry Dennison, Mooney and Reiley, Chestard I. Barnard, L. Urwick, Lawrence Appley, Peter Drucker and many others have made substantial contribution to management practices. While practising the acquired techniques and skills, each succeeding generation of managers can bring new ideas or can challenge the older practices in their effort to improve them. In addition, many research findings in different branches of the social sciences such as Industrial and Social Psychology, Economics, Sociology and Political Science have increased the knowledge and understanding of executives in a manner that can improve their managerial effectiveness. The constant flow of techniques and the results of research as well as their practicability in application amply prove that management is teachable, and that this learning is as important to existing executives as it is to new entrants

in an organisation in helping them to assimilate quickly the details of any kind of work whatsoever.

Pre-requisites for Development

An executive may have weak as well as strong points in respect of his abilities and attitudes, which, if properly identified and evaluated, can be improved and strengthened through a process of development, known as "executive development". This differs from executive placement which is concerned with placing an executive in a position that suits his existing abilities and attitudes. Both "executive placement" and "executive development" aim at ensuring at any given time, an adequate supply of executives with the required qualities. Any process for improving the effectiveness of an executive through education and training is executive development, and its success will depend on the selection of executives, organisation atmosphere, definition of objectives, and the methods of development.

Before executive development is undertaken, an organisation should know its present and future requirements of executives for different levels and activities, the potential of the existing executives and the number of fresh requirements that may be necessary. The number of managerial personnel is determined, no doubt, by the size of an organisation, but the nature of the product is equally important. If the product is competitive in an expanding market, more managerial personnel will be required. Industries producing consumers' goods in a competitive market employ a larger percentage of managerial personnel than do industries producing materials for other industries. A company must analyse each executive position from the viewpoint of its activities in order to assess correctly the kind of managers which it requires and will require. Each position demands certain skills, certain personal characteristics, certain kinds of knowledge and experience, all of which vary according to the level and the area to which a position belongs. Every executive position is a mixture of many activities such as decision-making, leading, managing and application of professional skills. At the top level, the job of an executive is mainly entrepreneural in character and involves decision-making about aims and purposes, actions for the continuity of business, assessing the impact of environmental forces, leadership, innovation and adaptation. Middle line managers and supervisors are concerned mainly with managing, that is, obtaining, directing and utilising human and material resources. Middle functional managers and functional specialists require many professional skills and they have not much to do with managing. A company must know which activities of managers in each level need improvement, and who are likely to improve through a process of executive development.

The training of those selected and recruited as trainees is planned in a different way as they are not executives and will not become such until they complete their training which may last one to two years.

Appraisal of Performance

Executive Development is essentially post-experience in character and aims at improving the present performance of an executive or at making him able to handle greater responsibilities, all in the context of the requirements of a managerial position. As a general rule, those executives who have already demonstrated some capacity for undertaking responsibilities and who are being considered for greater responsibilities, can derive maximum benefit from the development. Men who are too remote from positions of responsibility or who are about to retire in a few years' time should not be considered for executive development; but men who have reached the height of their promotional possibilities, may still be considered for

further development if their responsibilities so demand.

An executive's performance must be appraised in order to place and develop him. The methods used in Indian firms for this are not always without abuse. The desiderata are economy in costs and maintenance of quality in terms of standards established for the purpose; but other factors like loyalty towards one's superiors and the manner in which one leads one's people and keeps contact with others in the organisation are also considered. When judging physical performance, factors beyond the control of an executive, though they may have a profound impact on his performance, are ignored. In addition, his competence at developing high morale and in maintaining good relations with others in the organisation, in fostering good public relations and in developing his subordinates is considered only in the context of his actual performance, partly because this can be measured while the other factors though important for efficiency cannot be measured. The common practice is to list for every employee certain characteristics, and to get the views of his immediate superior officer in regard to each characteristic. This results in an employee who is anxious to get ahead in the organisation going all out to show his personal loyalty to his superior officer even at the cost of destroying the morale of his own subordinates. By and large, appraisals of executive performance, being based on the personal opinions of superiors, are unreliable and often unjustifiably denigrate the efforts of an executive, in comparison to characteristics which are not clearly defined and identified.

It is time for the top management in India to concentrate on finding better methods of evaluation of executive talents. American experience and research in locating promotable executives can be of great value to Indian management in solving this difficult problem.

If a proper evaluation method is followed, an organisation will be able to identify executives who are outstanding, satisfactory or poor. The outstanding ones must be developed for higher responsible positions immediately or in the near future. Satisfactory executives can also be helped to improve their standard of performance in their present positions so that at a later stage with further development they may be considered for promotion. 'Poor' executives need training if they are to remain in the same position, but this is not executive development.

Top Management Attitudes

A sound organisation structure in which executives have a clear understanding of their duties and responsibilities as well as of their interrelationships is an indispensable pre-requisite for efficient executive development. The top management in an organisation must also create the necessary climate so that all employees feel that there are opportunities for their growth. There must be scope for an executive to extend his range of responsibilities by acquiring fresh knowledge and experience. In the absence of this climate, efforts towards development will be like throwing seeds on fallow ground. Above all, an organisation must back an executive by tolerating a certain percentage of his mistakes in new responsibilities. Freedom to make mistakes will make an executive more alert and give him a sense of belonging. In the family business, which still dominates the Indian economy, a section of managers complain—though not justifiably always—that they cannot strive for self-development, that they lack personal freedom and that what is wanted of them is subservience. One extreme view is that sooner or later professional managers will cease to be attracted to the private sector and will prefer the public sector where the relation will at least be that of boss-subordinate and not master-servant. Many family businesses in India have been successful and efficient for a very long time, and their top positions are held not by family members

but by professional managers, many of whom have risen from the ranks. It is not the type of ownership, but the attitude of the top management, which makes the organisational atmosphere congenial or uncongenial for employees. The attitude of top management should foster in an employee an urge for growth and should provide opportunities for growth. The failure of executive in one area does not mean that he cannot succeed in other areas. This realisation by top management will motivate executives to learn new and better methods.

On-the-job Development

The process of development, whether on-the-job or outside, can be determined only after what is expected of an executive has been ascertained. If immediate realities in business are most important, then on-the-job training is appropriate. There are some common methods for developing the knowledge, skills and habits of an executive within an organisation through programmes on-the-job like job-rotation, coaching and new assignments. Job-rotation can help an executive to acquire new ways of thinking, and fresh attitudes towards change. It can develop his capacity for getting along with his colleagues, and enable him to shoulder new responsibility when he has to. However, it is difficult to arrange a series of jobs which will develop an executive, as those jobs may not be effective enough to improve efficiency. Furthermore, frequent transfers affect the job itself, as well as the professional competence of the executive. Many firms, therefore, use job-rotation only in the early career of an executive, or give assignments in the same job to discover his strength and weaknesses.

Coaching is a process by which an executive can transfer his insight and experience to his subordinate so that the latter can develop faster. The usual device is delegation. This is used at every management level and its success as a training method depends on the proper selection of the executives, and also on the delegator, who must know what to delegate and what not to delegate. Sometimes, executives are put on committees as members or observers to learn how business operates, by listening to discussions by senior members. In most industrial organisations today, the tendency is for specialists to be given managerial responsibilities in areas other than their own speciality. In their early career, the need or desire for such a change-over does not arise, but after some time, the specialists themselves press for greater responsibilities. Such a change-over, however, does not guarantee success unless the specialist's perception and assumptions also change. To train an executive for an area about which he knows little or nothing is a problem because a person who remains long in the same job becomes mentally rigid. He needs reorientation in order to accept new assignments with optimism, new colleagues with friendliness, new habits with agreeableness, and new situations with courage.

Social & Economic Forces

On-the-job training is primarily concerned with developing in an executive a *repertoire* of skills and habits consistent with the existing practices of an organisation, and with orienting him to its immediate problems. Business is dynamic and tomorrow's problems may differ from today's because social and economic forces and technological environments are constantly changing. The ability of an executive to see, to analyse and to decide problems will depend on his knowledge and understanding of the forces both inside and outside the organisation. This ability cannot be developed by an immediate problem-oriented training programme. Training and education to develop perspective and breadth of vision should, therefore, be so designed that knowledge, information and discussion will be the principal features. The *raison d'etre* of an off-the-job programme is to assist an executive to improve his ability "to meet the wide range

of problems which he faces today or will face tomorrow. It is, however, important to note that training on-the-job and off-the-job programmes are complementary for executive development.

Survival & Profitability

Whatever cannot be taught on-the-job should be taught through off-the-job programme. The formulation of objectives for such a programme may appear to be a simple task. The problem, however, is that both training on-the-job and programme outside-the-job must be arranged according to the objectives of an enterprise. Every enterprise undoubtedly is anxious to utilise all available resources—finance, materials and men—in the most efficient and economical manner, for ensuring survival and profitability. The objectives, then, are efficient and

Cost of Playing the Name Game

"Corporations in the USA", says *Business Week*, "are changing their names at a frantic pace.

"Name-change analysts say that companies most often change names when they've outgrown them; and a good year for name-changing is most often a good business year. In 1965, of the companies listed in Standard & Poor's Directory, 155 made a change in name—probably a record for switches of corporate titles.

"One of the simplest ways to change a name is to chop it down to its initials. Thus, International Resistance Co. is now IRC, Inc., and AVM Corp. has taken the place of Automatic Voting Machines. A popular way to obscure an outgrown product is just to drop it from the corporate title. Di Giorgio Fruit Corp. is now Di Giorgio Corp; 'Glass' no longer appears in the Owens-Illinois name; and PepsiCo, Inc., contracted the Cola in its old name when it merged with Frito-Lay, Inc.

"Changes in title may be minute, but the cost of making the change often soars into hundreds of thousands of dollars. The cost of making IRC legal was $39,700. This included new plates for forms and letterheads, soliciting and printing proxies, patent and trade mark changes, public notices, and legal fees."

economic utilisation of resources, survival and profitability. No executive should be confused about his role in helping to achieve the first objective. The other two objectives —survival and profitability—are not always properly appreciated by an executive. *Survival is much more than mere existence: it means continuity and expansion for rendering services to the society.* Profitability concerns not only the owners who invest money for profit, but also customers who want their money's worth, employees who demand job satisfaction and a share in the prosperity of the enterprise, and society which expects employment opportunities and other benefits. The emphasis on the social responsibilities of business and the acceptance of "service" as an ideal are the two goals which Indian management should bear in mind in our socialistic pattern of society. Society is becoming less tolerant towards the profit motive unless it is for the good of society. An executive, therefore, should have the skills to utilise human and material resources, and the knowledge to understand the changing nature of the expectations and demands of all those involved in the activities of an enterprise. He should know what decision should be taken in order to fit them into the mosaic of objectives of the enterprise. Whatever the area of his functions—finance, production, marketing, distribution or industrial relations, and whatever his managerial level—top, middle or supervisory, *an executive must possess the ability to plan, to decide and manage in keeping with the awakening values of society,* without, however, violating the laws of economics.* His primary duties are to have an explicit interest in the public good, to perform his functions as efficiently as possible, and to earn profit without which the question of providing services to the community does not arise. He must not be tempted, however, into making quick profits and must always take the long-term view. He has another responsibility: to *anticipate all situations*—inside and outside the organisation, which may affect the growth and development of the enterprise and to decide correctly. The Indian management today would not have been so severely criticised, were the managers conscious of the implications of their responsibilities in the context of social values. Yet, curiously, by conviction and attitude, Indian management is apt to take risks for progress and it firmly believes in public welfare.

An executive development programme should, therefore, emphasise knowledge and understanding of environment, and the development of analytical ability for decision-making, so that an executive can effectively help his organisation to be dynamic and progressive.

Objectives of a Programme

The objectives of an executive development programme can be stated as follows:

(a) To understand the forces of environment and their implications on the organisation and thus to broaden one's outlook;

(b) To understand the responsibilities of efficient management;

(c) To understand the demands and expectations of those involved in the activities of the organisation;

(d) To develop the ability to understand and analyse problems and to make decisions;

(e) To develop ability to manage.

Since the responsibilities of an executive are related to the immediate functional area, a single programme cannot fulfil the requirements of executives from different levels. The common practice, therefore, is to design a programme for each level—top, middle and supervisory.

*"The objective of management must be to pursue the promoter's objectives efficiently and at minimum cost. In doing so, it must not only observe the ground rules established by legislation but those recognised in society." See Report of Seminar on Problems of Private and Public Industrial Undertaking (Aug. 6-8, 1963) organised by the Federation of Indian Chambers of Commerce and Industry, Delhi.

Two Types

The objectives of the top level management are more or less the same in all organisations. But it is difficult to have the same objectives for the middle management with different line and functional responsibilities. From the practical point of view, it is best to have two distinct types of programmes: one for line executives and the other for functional executives and specialists with a common core of objectives. Line executives whose primary objective is to get work done by people, should mainly place emphasis on leadership, human motivation, and other relevant factors the understanding of which will enable them to resolve management problems. Engineers and technologists should also get opportunities to improve their specialised knowledge and competence, and at the same time to *develop their general ability to manage.* Another method is to focus attention only on problems in specialised areas such as production, sales, engineering or accounting so that executives can gain more knowledge of the management process through their own specialities.

Thus, viewed from the level-wise managerial personnel, the objectives may be categorised very broadly as follows:

(a) Top Management

(i) The improvement of thought processes and of analytical ability in order to see and examine problems and take decisions in the best interests of the company;

(ii) Broadening of the outlook of the executive in regard to his role, position and responsibilities in the organisation and outside;

(iii) Thinking through problems which may confront the organisation now or in the future;

(iv) To understand economic, technical and institutional forces in order to solve business problems;

(v) To have knowledge about problems of human relations.

(b) Middle-Line Management

(i) To establish a clear picture of executive functions and responsibilities;

(ii) To bring about an awareness of the broad aspects of management problems, and an acquaintance with, and appreciation of, inter-departmental relations;

(iii) To develop the ability to analyse problems and to take appropriate action;

(iv) To develop familiarity with the managerial uses of financial accounting, psychology, business, law and economic statistics;

(v) To inculcate knowledge of human motivation and human relationships;

(vi) To develop responsible leadership.

(c) Middle Functional Executives and Specialists

(i) To increase knowledge about business functions and operations in specified fields like marketing, production, finance, personnel;

(ii) To increase proficiency in management techniques (work study, inventory control, operations research, quality control etc.);

(iii) To stimulate creative thinking in order to improve methods and procedures;

(iv) To understand the functions performed within a company;

(v) To understand human relations problems;

(vi) To develop the ability to analyse problems in one's area of functioning.

Each programme has general and specific objectives. For the top management, the objectives are mostly general and aim at developing the ability to understand and to decide. A few functional areas like personnel, marketing and finance are also included. A programme for middle executives may be of two types—one with many specific areas such as work study, inventory

control, operations research, quality control, production planning and control, marketing, in addition to a few general areas for developing intellectual abilities; and the other with the general objective of broadening the outlook and improving the ability to make decisions along with some knowledge of specialised fields.

Course Content

The contents of a programme differs from organisation to organisation, but every programme should attempt to focus interrelated disciplines. As for top management programmes, the usual contents for achieving general objectives should include Administrative Practices, Human Relations, Relationships with the Government and Society, and Business Policy. The emphasis on Relationship with the Government in a programme is not unexpected, because Government controls have made it imperative that every executive understands their implications. For the middle management level, studies for general objectives should cover Management Practices, Economic Aspects of Management, Industrial Relations, Costing, Accounting and Statistical Methods.

Areas such as Sociology and Psychology are not always covered in all programmes, although the development of many theories in management would have been impossible without them. Both have special significance today, as they help one to understand the change-compelling forces in a society where each individual is a member whose behaviour in a working group is largely influenced by the attitudes of others. Nowhere else are these subjects of greater importance than in a developing economy with its process of industrialisation and urbanization, its search for outside knowledge and the need for expert know-how, and the growing determination of people for upper level careers. Equally important is the study of biographies of great men not only in politics, but also in industry. These can constantly inspire executives.

Structurally, it is difficult to make a programme comprehensive enough to include all appropriate areas of management interest.

A determining factor in the number of subjects to be included is the duration of the programme itself. If the duration is long, there may be as many as fourteen subjects, and where the duration is short, the course may be divided into three or four areas such as Administrative Structures, Internal Relations, External Relations and Specialist Functions, leaving it to the teachers of each area to include or exclude topics according to the composition of the participants or availability of experts.

Duration

A short-period executive development programme may last from one-week to three months and would be for executives who cannot afford to be away from their work for a longer time, but have the maturity and experience to understand new ideas and thoughts about management more promptly.

A short course is usually residential unless it is meant only for local managers, in which case, it is part-time or non-residential.

Longer executive programmes which last two to three years on a part-time basis, are arranged generally for middle executives. A reason for keeping a course long in duration is the desire to develop the "whole-man" —his intellect, his attitudes. It is part-time because few organisations can release middle executives for any full-time programme.

A serious defect of a programme is that its duration depends not so much on what can be achieved by way of objectives but on how much time an executive would normally be able to spare. A short course lasting only one or two weeks is nothing but a seminar (may be called workshop) which executives attend to ensure that they are uptodate in a period of rapid change. The duration should depend not only on the

participants' *background*, but also on the aims of a course. *A fortiori*, the duration can scarcely be appropriate for all objectives. Obviously, there are some difficulties when deciding the duration of a course—the availability of teachers, accommodation, and release of executives from their organisations.

A short course avoids these difficulties by keeping the programme tight, by including as many related topics as possible and by making available the services of visiting lecturers and specialists in addition to internal teachers.

A long-period course, on the other hand, has a comprehensive educational value, has a permanent staff to handle the wide range of topics, and employs visiting staff from specialised fields.

Both the courses rely on techniques of teaching.

Teaching Methods

A programme should achieve its objectives through various teaching methods which will, in as short a time as possible, permit the maximum transmission of information and the development of the ability

to make decisions. The more common methods are straight lectures, case studies, syndicate methods, a combination of lectures and class discussions and projects.

To transmit specific information, lectures are given on different subjects, either simultaneously or for a stipulated period of time, on the completion of which the next subject is taken up. The programme continues till all the subjects are covered. The main defect of the lecture method is that it gives little opportunity for participation in discussions. The methods which encourage participation in discussions in an organised way and the exchange of ideas on any realistic problem or situation may be called "broad methods" and include case studies and the incident process.

Participant Behaviour

A case is an actual situation from business and is studied in order to develop analytical ability, to encourage objectivity, to examine different solutions and form decision-making habits. A case may be short or long, depending on whether principles are to be related to practice or whether several possible solutions are to be examined. The first one is directive and centres around specific questions, while the second is non-directive and requires a great deal of pre-class preparation. The "Harvard method" is non-directive, and a participant must find out for himself any additional facts he wants before making decisions. A participant is expected to act as a businessman, weigh the different considerations, both short-term and long-term, which have a bearing on the problem, and to make a decision.

A variation on the "Harvard method" is the "incident method" where an incident is presented as a case in a few sentences. Participants may ask for further information and must come to a definite decision. A case study will reveal how even a group of people with similar backgrounds can differ in behaviour. It discourages snap decisions about people and situations, shows that *there can be more than one correct answer*, destroys generalisations, increases the ability to discuss and helps to think in a practical setting.

For class discussions, role-playing is a method which can very effectively bring about a realistic involvement of a participant in a case which relates to business policy, administration, human relations, personnel management, and salesmanship. *Role-playing bridges the gap between thinking and action*, by permitting a participant to carry out an action which enables him to be sensitive to the feelings of others and to discover his own attitudes. The purpose of training is achieved by placing the same participant "in varied situations and under many conditions."* Business games are used mostly in marketing cases where decisions have to be made under pressure and with limited information.

Absolute reliance on any single method is undesirable, for different management disciplines require different techniques of teaching.

A method appropriate in a particular area of management discipline, may not be so effective in other areas, and yet many programmes are associated with one particular method like the case-study, syndicates or discussions. Lectures followed by a discussion will give more information than a discussion where the participants have little knowledge. If a group is very large, it should be divided into "syndicates" which discuss specific problems. This will give each member a chance to participate in discussion. Each syndicate may be presided over by a participant: it should prepare a report for discussion in a "full session" where the members of all the syndicates are present. If the participants lack experience and maturity, the syndicate method will not be appropriate. The use of films, individual and group projects and

*For fuller information about techniques of role-playing, see Maier, Solem, Maier, Supervisory and Executive Development—A Manual for Role-Playing, John Wiley & Sons, Inc. 1957.

seminar methods are other techniques of training.

In their ebullience, many organising agencies have introduced case studies drawn from non-Indian experience. Unless cases represent Indian conditions, the discussions are bound to be speculative and will "give participants the feeling that they are taking part in some sort of a shadow play."

Teaching Members

The success of any teaching method will depend on the competence of the teachers. In most executive development programmes, the tendency is to appoint senior business executives with some background in their specialized areas. More important than the knowledge of a teacher is his ability to teach. Teaching is an art and it requires a considerable experience to sustain the participants' interest, as well as to impart knowledge. Lectures are often teacher-centred, that is, more attention is paid to tell how much a teacher knows than to what the participants expect. This makes a lecture uninteresting; and when there are many participants it becomes dull and boring. *All senior executives or specialists are not necessarily good transmitters of knowledge.* Experience shows that an executive who knows how to handle colleagues or to get around the objections of his subordinates to his own viewpoint feels uneasy in an unfamiliar group and will hesitate to speak effectively or will feel embarrassed when questioned.

A lecture should be followed by questions from participants, and answers from the speaker, who should be understanding and patient: attributes not readily found in many specialists and executives who come as occasional teachers. While teachers should have a specialised background, they should also be good speakers. *Teaching by lecture is a rare quality, and must be kept at a minimum* in any executive development programme unless the expert can communicate his knowledge and experience in a manner which fosters understanding and interest.

The limitations of the lecture-method have forced executive development programmes to lean heavily on case-methods and discussions, as if they could be conducted comparatively easily. In fact, all broad methods of training call for considerable experience of the methods and techniques of discussion from their users.

An advantage of having full-time teachers for the entire period of a programme is that they are selected on the basis of their competence and familiarity with modern techniques of instruction. Full-time teachers can be in constant touch with the participants in a programme. This does not do away with the services of visiting specialists who may have to be brought in for a wide range of topics. Too many visiting members, however, will disturb the unity of purpose and the continuity of thinking.

Programmes-Organising Agencies

From the organisation point of view, executive development programmes can be divided into four groups:

(a) In-company programme

(b) Programmes offered by management associations, productivity councils, and management consultants

(c) University programmes

(d) Programmes of independent institutions.

Although the proliferation of programmes other than those conducted by companies has quickened in recent years, it has also created a problem, the seriousness of which has not yet been fully realised by many firms and their executives. No two programmes are the same in all respects despite similar objectives, and each differs from others because of the agency which organises it. In-company programmes emphasise company philosophy and practices

Productivity in British Science

Tremendous achievements have been made in the field of science in the United Kingdom. Speaking on the subject, Sir Maurice Dean, Permanent Secretary, Ministry of Technology, said that since 1901, when Nobel Prizes were first awarded, only four countries had achieved double figures—the USA with 39 prizes, Germany 35 prizes, Great Britain 30 prizes, and France 14 prizes.

Addressing the Institution of Production Engineers, London, Sir Maurice added: "Remembering that the population of the United States is nearly four times as great as ours, this is a stupendous achievement on the part of British science....

"Countries, like people, have to count their blessings—we should count ours. Scientific ability is certainly among them. Many people consider we have been more successful in achieving original ideas than in exploiting them, and there is certainly much to support this view. Other countries often achieve a marriage of original thought with a degree of development and exploitation which sometimes escapes us here."

in developing the objectives; the management associations and the productivity councils are obsessed with current problems and frame programmes which are problem-oriented; universities are concerned with established disciplines and seek to develop an educational foundation and give weight to the learning processes; and the independent institutions aim at keeping programmes realistic through sharing experiences.

Since many firms are not *au fait* with these distinctive features of different agencies, the choice of a programme does not always result in the best interest of a participant and of his organisation. In selecting a programme, therefore, a firm should not only consider the agency but also what will satisfy a participant according to his inclinations and requirements. It is highly desirable that the sponsoring firm should consult its nominee before sending him to a programme. Unfortunately, however, few executives can exercise any choice in the selection of a programme.* The experience of many firms indicates that this is true, at least to a very large extent, of firms when they embark on executive development through outside agency for the first time.

In recent years there has been a growing inclination among firms to regard the status of an agency in terms of its association with foreign experts, big firms and the Government. Although there is no direct denigration of others' efforts, an agency which enjoys such status gives wide publicity about its programme, comparable with commercial advertisement of products, to win public support. In view of the fact that most of the programmes have been recently introduced, their evaluation at the present moment may not give any fruitful results. However, it will be most unfortunate

*This is a problem even in the U.S.A. where it has been estimated that in any one year "5 to 20 per cent of executives are in the wrong programmes" (**Vide** Allison V. MacCulloughs' report in 1958).

if the programmes fail to contribute to rapid managerial growth which India needs so badly for her economic progress. The executive development policy should not be allowed to be drifted from agencies without relating it to the total effort.

The organising agencies, too, have not done much towards mutual coordination. Often an addition of an agency in a particular group or an addition of a programme in an existing group is viewed with misgivings by others. *In a developing economy like India, there is room for all kinds of agencies and programmes*, but their efforts should be complementary to avoid duplication and misunderstanding if human waste is to be minimised.

Broadly speaking, the areas of different organising agencies for executive development programmes may be stated as follows:

Organising Agencies	Areas of Management	Distinct Features
In-Company	First training of supervisors and junior executives	Efforts tend to be indoctrinating
Management Associations, Productivity Councils	Executives at middle level	Special skills and techniques
Universities	Executives at middle level	Learning process and educational foundation
Independent Institutions	Senior and top executives	Cross fertilisation of ideas

It means that an executive should have his first training in a company programme, if possible, and, thereafter through two other agencies reach the programme of an independent institution. Within these broad divisions, an agency can arrange programmes of other areas in collaboration with different agencies to get the best out of each.

ORION ULREY

Department of Agricultural Economics
Michigan State University

The Cooperative

An Agency for Rural Development

The author who has been a researcher, teacher and participator in cooperatives since the 'twenties, is of the opinion that the Dairy Cooperative at Anand is symptomatic of a revolution in India's rural economy, at least potentially. It is a revolution in the rural economy. There is a different atmosphere in the area covered. The breed of buffalo has been improved; farmers and families are more sturdy, self-reliant and prosperous; milk and milk products are beginning to find their true place in the human diet; and the genuine cooperative has proven its worth and has come to stay. The village cooperatives have become the focus and initiator of various schemes of modernization and improvement. In this article, the author analyses the various reasons for success of the dairy production and cooperative marketing scheme at Anand, and the related development activities in the Kaira district.

THE ANAND Dairy Cooperative owes its success to the following factors:

1. Leadership and management which have been motivated, and are of high integrity and of superior ability. Engineers and dairy technologists have played important roles in developing the plants, products and services of the Cooperative Union. Motivated leaders have convinced the farmers that they should participate.

The aggressive and balanced programme of top management, in developing products and markets as well as in improving farm production, probably has been a major factor in the continuous growth and success of the Union.

The writer believes that there are a multitude of young men in India and elsewhere who could create comparable institutions and patterns of rural development if provided the encouragement and assistance, if given responsibility and adequate freedom to make decisions, and under democratic procedures which are basic to cooperative institutions.

2. Industrious villagers who own and

operate farms on land with considerable production potential.

3. Development around a product—milk, which provides a daily income, for which there is a high potential demand in available markets, and for which the villagers had some production experience and know-how. Consequently, the majority of the villagers could participate readily in the service of the cooperatives.

Milk is delivered twice a day to the village cooperatives. Producers are paid twice daily. The local receiving stations serve as centres also for the initiation of new services and of ideas involving change. Repetition of constructive ideas is an effective force to speed up change towards more of the modern.

4. The expansion of the programme has been continuous. The management and also the village leaders have been encouraged to think ahead about new activities which would increase income and living standards, and also further improve the relations among villagers. Citizens everywhere apparently like to participate and be a part of growing and successful ventures.

Additional Services

The Cooperative Union has initiated additional economic services as needs were developed and recognized, and as funds and personnel were available.

5. Important roles played by the village societies in social welfare and general development of villages: using a part of the net returns (overcharges) to assist schools, libraries, health centres, youth activities, and to improve water supply and roads—which activities serve to win loyalty and support of other villagers.

6. Outside assistance from the State and Government of India, and from international and foreign development agencies, and without curbing the motivation and initiative of management in the planning and operations of the cooperative scheme. The system evolved seems to have been an excellent example of sound working relations of governmental agencies and private enterprise for rural development. The governmental agencies assisted with finance, consultation and encouragement. The cooperative leaders provided management under conditions which centred responsibility and permitted freedom for planning and making the multitude of decisions necessary for creating a modern dairy industry.

Research Projects

Possible research projects and areas for investigation include:

1. The motivation and attitudes of the employees and of the villagers towards the programme and activities of the dairy cooperatives, including differences among members and employees in the old and new village societies. Special attention might be given to the motivation and attitudes of top management of the Union. The scheme seems to offer an excellent possibility for a case study of the human factors in rural development. The Social Psychologist especially should be able to make several significant studies of the operations of the Cooperative Union.

2. Analysis of the methods and costs of the activities of the Union: in development of farm production, milk products and markets; and in changing attitudes and habits of villagers. The Agricultural Economist and the Social Psychologist might make worthwhile contributions by an analysis of these phases of change.

3. Methods and costs to obtain acceptance, and the speed of adoption of new practices by dairy farmers, in villages with and without the local dairy societies. The Communication Specialist, concerned with the diffusion of ideas, might find

procedures which could be readily applied elsewhere.

4. Financing of the development and growth of the cooperatives, both by the Cooperative Union and the village societies, including the sources of capital and especially the use of savings and returns from the business with members.

Information might be obtained on a basic question: what development activities and costs are necessary before the various phases of such a venture can be financed by members. The economist is concerned about the costs of development.

5. Comparison of the services and activities of the community development blocks in areas where the village dairy cooperatives are functioning with nearby blocks where there are no dairy cooperatives: on the several phases of rural development over a period of time. An investigator of community development, or a social scientist might make such a study.

6. Organization, services, costs and methods of development of the sales system evolved for the distribution of manufactured dairy products by the Union.

7. The net returns to the Union for the various manufactured products. This would require an analysis of manufacturing and selling costs as well as the wholesale prices received. Again, the economist.

8. Relations of the dairy and other cooperatives in the Kaira District with government and other agencies; types of services and assistance; and effects on speed and quality of rural development. The specialists on cooperatives and government might find some principles of value for development.

9. Models of alternative schemes for the intensive development of rural cooperatives in the region, such as:

i) Additional commodities and functions under the Cooperative Union

ii) Additional cooperatives for other commodities and services under the same management

iii) Additional cooperatives for other commodities and services, with councils to coordinate the activities.

iv) Horizontal integration of district dairy cooperatives. The analysis would cover such items as systems of management, relations of cooperatives, costs, personnel necessary, strengths and weaknesses, and suitability to environment.

The broadly trained social scientist would be able to analyse the advantages and limitations of each of these alternatives.

10. Comparison of alternative schemes for development of the dairy industry in India. The study could cover such items as government, cooperative and private profit business; management, freedom of decisions, costs, services, speed of operations, and attitudes of citizens.

Motivation & Incentives

11. The economic and non-economic motivation and incentives which have evolved in the total scheme for the dairymen and other villagers, for the employees of the cooperatives, and for outside officers associated with the development of the dairy cooperatives.

12. The evaluation system and procedures which have evolved in the administration and operations of the dairy cooperatives, and an analysis of procedures which might be employed to determine why changes do or do not happen.

The above projects and areas of research indicate the scope of the possible services of research and evaluation by trained social scientists from several

disciplines. The writer believes that the experiences of the cooperatives in the Kaira District should be more adequately studied. Perhaps one of the social science research institutes of India could give this scheme major attention.

Significant Ideas

The ideas below may have been considered and not furthered for various reasons. However, they seem significant to the writer.

1. Research on forage crops on such problems and factors as comparative yields in nutrition; palatability and place in farm programmes; returns in comparison with cereals and other crops, and in relation to supply of water available; costs of various yields in terms of nutrition and costs of storage; and use of silos and other types of storages.

The future output of milk from Indian farms may be closely related to the available supplies, quality and costs of forage crops. The dairy animals will be competing with humans for grains and legumes. The supplies of such products available for animal feeds, consequently, may be limited as compared with countries with lower population densities.

The writer believes that under conditions existing in some areas in the tropics the returns from forage crops and milk may exceed the returns from cereals and cash crops in terms of money to the villagers and in total nutrition; and that the yield potential of some forage crops may be very high where there is an adequate supply of water for irrigation throughout the year. For example, the yield of *para* grass at the Aarey Milk Colony was reported to average around 115 tons per acre.

The investigation on forage crops involves basic studies by research stations and applied research on farms of villagers. Perhaps the Cooperative Union can play a leading role in organizing a programme of practical research on forage crops, perhaps in collaboration with the nearby Institute of Agriculture and other governmental agencies.

2. Agricultural Economist with the Cooperative Union to analyse the business operations, to conduct studies of farming or cooperate with outside agencies on same, to initiate studies on the economics of consolidation of holdings in the villages, to conduct market research, and to analyse other economic information needed by management and the board of directors. Farm management data on individual farms are necessary to provide information for farm planning, and perhaps in the future for consolidation of holdings and for various other types of group activities.

Studies are needed on the economics of a more even production of milk during the year, and the possible methods for obtaining such an objective, if feasible. The Cooperative Union seems to have sufficient volume and variety of activities fully to utilise an able economist productively.

3. India has aped western countries by starting to develop a processing and distribution system to provide whole fresh milk to consumers. Such a system requires heavy investments in processing, marketing, refrigeration equipment and other facilities; and is costly for the transportation of a product such as milk which is from 83 to 89 per cent water. In India, a system for processing and distributing dried skim milk and dried whole milk might be much less expensive, and might provide these essential dairy products at a minimum cost. The Indians have boiled the milk, which carmelises the flavour, for generations, and consequently are familiar with a flavour comparable to that of dried milk. Why did India introduce the costly whole fresh milk distribution system? Why didn't she move to promote the less costly system of manufacturing and distributing

of dried whole milk? Studies are needed to determine the costs, merits and limitations of the fresh milk and dried milk distribution systems.

Milk Sweets

4. A variety of delicious milk sweets have been prepared by the local merchants and families of India for generations. Why shouldn't the dairy cooperatives, at factories in rural areas, produce high quality, standardised and storable milk sweets which can be branded and sold on a national basis?

5. Investigation of the possibilities of a federation of district cooperative dairy unions for control of quality and standardisation of product: for sharing the costs of product development, marketing and advertising, and of various types of research and training; for strengthening the influence of cooperatives in marketing and the economy; and for exchanging know-how on all phases of production, processing, marketing and public relations activities.

6. The use of accounting terms such as "profit", and "net earning" do not seem wise in case of cooperatives which do business only with members and operate entirely as non-profit businesses. The residue, after expenditures are subtracted from sales, belongs to members. The cooperatives must retain a part of this overcharge because of fluctuations in volume and costs and for expansion of facilities and services. The terms "overcharge" and "retains" seem to be more appropriate for non-profit operation of cooperatives.

Profits, of course, may be made by cooperatives on the business of non-members. The cooperative, consequently, may be both a profit and a non-profit organization. The laws of the state may determine the proportion of the total business which a registered cooperative may have with non-members.

7. The overcharges on member business and the profits on non-member business may be retained in the cooperatives. Such retains, if placed in undivided surplus or reserves, do not belong to the individual members except if the society is discontinued. Such retains may be allocated to members, and to non-members, on the books of the society or be distributed by various types of equity certificates. Non-members may become members by using the overcharge on their business to pay for a membership or share of stock.

8. The application of income-tax to cooperatives might be directly related to the use of overcharges on the business with members and non-members. The following suggestions are offered:

i) Any overcharges returned on a patronage basis to members or non-members during the year or for a specified short time thereafter: no tax.

ii) Any overcharges retained in the business and allocated to members, on a patronage basis, on the books or by distribution of equity certificates: no tax to cooperative, but included in the taxable income of the members.

iii) Any overcharges retained in the business but not allocated to members: a medium tax.

iv) Any profits from non-members' business which is distributed to members, or placed in undivided surplus or reserves: a full tax.

v) Any profit from non-members' business which is given to charity: no tax.

The income-tax adopted might be directly related to the above fundamentals. However, the final tax plan adopted will depend also upon the fiscal needs of the government, the pressures, and the policy

of the government on the role of business cooperatives in the economy.

9. *The role of women in the cooperatives and the villages*: The women have cared for the buffaloes, delivered the milk to the collection stations, and have received the cash payments. They have been reached by various extension activities of the Cooperative Union. Apparently they have not been elected to boards of directors, nor served on committees of the village societies.

Undoubtedly the Cooperative Union and the locals will take a lead in providing more services to, and opportunities for, the potentially creative role of women in the modernization of village life—in the future.

Actually, the scheme and progress made by the Cooperative Union and its affiliates in the Kaira District of Gujarat State have met the approval of the villagers, newsmen, cooperators, rural development specialists, public administrators and state officials. Reproduction of the pattern is under way in other districts of India. The village dairymen have increased their farm output and net farm income. They have a dairy marketing system which serves them and which they are coming to realize is their own. They are looking forward to additional services by their cooperatives. Their attitudes have been changing towards optimism about their future.

The cooperatives and their members have made but limited progress on some tough problems. The growth in population is more rapid than the increase in local jobs. The proportion of villagers inadequately employed is increasing. Urban job opportunities in India will not absorb much of the surplus village labour in the forseeable future. The scattered holdings of the 3-acre farm units are very inefficient, in terms of labour, land lost, for planning, and for the use of larger equipment.

One of the real merits of the cooperative and development scheme under way is that the democratic system unfolding stimulates further action on the part of both the village leaders and the top management of the Cooperative Union. The system has built within it a large amount of motivation and also of integrity. Exploitation, or taking advantage of others, is very difficult under the pattern developed. The non-prize incentives—recognition, satisfactions about accomplishments, desire to work with and serve others—have become very important in the total scheme. The growth of the Cooperative Union, the affiliated village cooperatives, the local governments (Raj Panchayats) and the Community Development programme in the blocks apparently have reached a significant "take-off stage": a stage where the villagers will insist that their leaders assist them in finding better answers to other tough problems that face village life.

The writer believes the pattern of cooperative, educational and rural development evolving in the Kaira District is both sound and dynamic, and is worth studying by persons concerned with modernization of village life. The Cooperative Union has played the dominant role in the pattern of rural development.

Fertiliser Efficiency

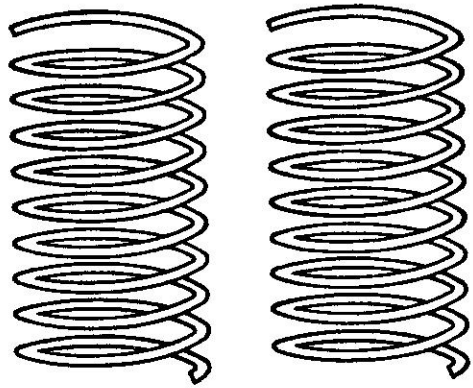
Maximisation of national food production, and an attractive return to the farmer, can be ensured with the knowledge of the fertiliser response curve, and of prices of fertiliser and agricultural produce, according to Mr. VG Panse, Senior Specialist (Agriculture), Planning Commission. In a paper appearing in FERTILISER NEWS (June 1966), he says:

"Plant nutrient elements are available in the form of various fertilisers. It has been shown through extensive trials that for nitrogenous fertilisers, response at any level of application is about the same, with certain exceptions like urea being superior on rice in certain Southern districts. A similar situation holds with phosphatic fertilisers. Recommendations on the use of a particular fertiliser should, therefore, take into account not only its cost, but also the cost of transport and storage of the nutrient it contains. Mixed and complex fertilisers should be recommended only in those areas and on those crops which respond to two or more nutrients at least additively. Their application everywhere is not economically attractive to the farmer.

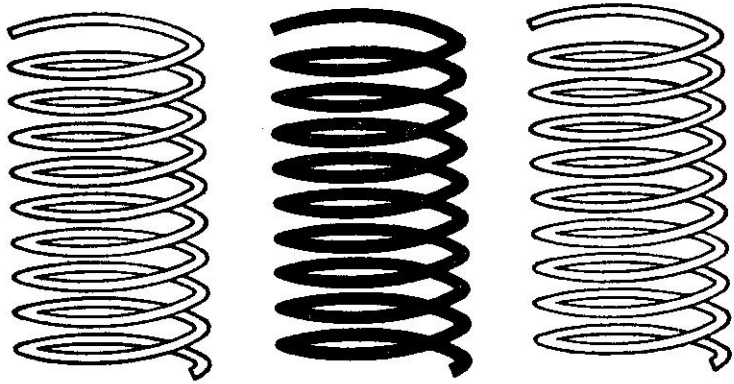
"Fertiliser efficiency, that is response per unit of nutrient in the fertiliser, is rather low in India, and it is important to raise it. This can be done by recommending adoption of agronomic practices which create favourable conditions for a greater response of the crop to fertiliser application. Important among these are moisture supply, crop varieties, and crop protection against pests and diseases.

"Irrigated crops have been shown to give a much greater response per unit of nitrogen and phosphorus than unirrigated crops. Indian crop varieties are not specially responsive to fertilisers, and breeding of new varieties for this purpose is urgent.

"With fertiliser use, diseases and pests tend to increase, and measures for plant protection should be regarded as being complementary to fertiliser use. It is important to evaluate the contribution of various agronomic factors to fertiliser efficiency and their economics through a comprehensive programme of experiments."



WHICH ONE STANDS OUT ?



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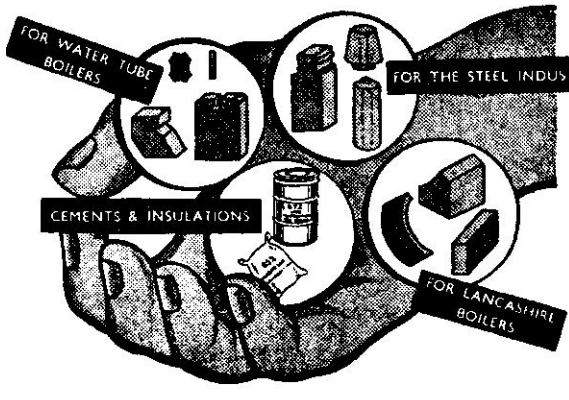

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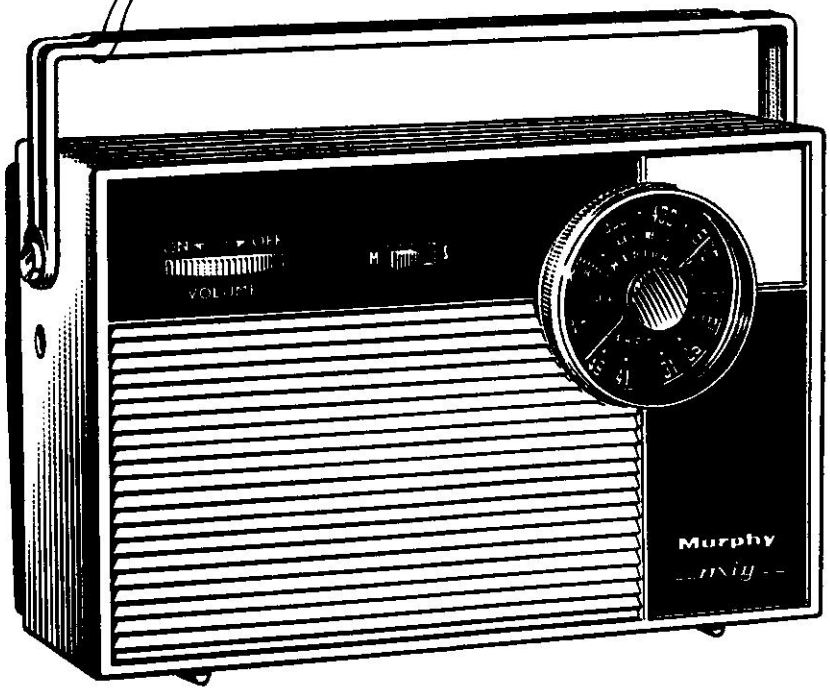

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Import Substitution

—a recent underlining of a basic Metal Box philosophy

Metal Box set out many years ago to develop new and indigenous packaging materials...at a time when most of it had to be imported. As a result of planned and sustained development efforts, imaginative design and research work, only a little over 16% of the Company's packaging materials requirement is imported today.

The position today :

1. Working closely with domestic tinplate manufacturers, Metal Box develop tinplate suitable for specialised packaging.

2. Metal Box research personnel, working closely with manufacturers of paints, inks, lacquers, coatings, varnishes and bonding materials, have discovered and developed indigenous raw materials for packaging. This has helped replace many items previously imported.

3. Metal Box are now manufacturing can closing and can reforming machines as well as bottle-sealing machinery used by the packing industries. All these were previously imported.

4. For the radio, automotive, electrical and ordnance industries Metal Box manufacture precision components...achieve an annual saving of Rs. 135 lakhs in foreign exchange.

Directions for the future :

1. In view of the present emergency, Metal Box are urgently developing the use of blackplate—or untinned plate as a temporary substitute for tinplate. So that imports of pure tin are minimised.

And, as part of a long term plan, Metal Box are working towards reducing the proportion of pure tin used in tinplate for packaging.

2. Metal Box are striving to replace tinplate in areas where the metal still has to be imported, through research tests and field trials...utilising their own know-how and that of their overseas associates.

3. Another objective being pursued by Metal Box Research and Technical Development is finding effective substitutes for materials that contain imported pure tin. Example: solder.

4. While a reduction in imports of pure tin and tinplate comprises the major area for import substitution, Metal Box's efforts are directed just as urgently towards development of new packaging methods and machinery which will help conserve foreign exchange.

Developing domestic raw materials and equipment has always been a basic Metal Box philosophy. Considerable progress has already been made. Yet further self-reliance will require redoubled efforts.

To further this process raw materials must be made available in adequate quantities, at a reasonable price. And imports of a few essential items and the know-how to manufacture others must continue. So that Metal Box—and indeed, the packaging industry as a whole—can work actively towards progressively greater self-reliance.

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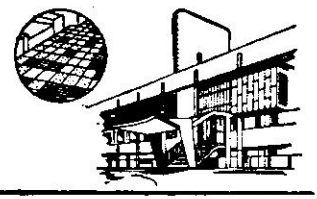

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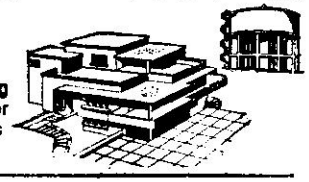

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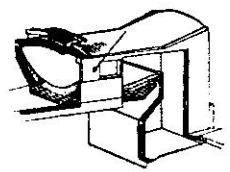

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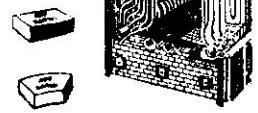

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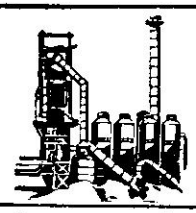

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MS DATTA

Deputy Director
National Productivity Council

Suggestion Schemes in Industries of E. India

The importance of the suggestion system as a means of getting new ideas is recognised by most companies. It is a tool of management for securing profitable ideas from employees, and improving industrial relations. It is designed to encourage employees to submit suggestions, to provide for methodical receipt and investigation of suggestions, and to reward the winning suggesters. The author has examined in this paper a number of suggestion schemes in the industries of the Eastern Region. It is primarily based on his findings in relation to nine schemes in 1961, 14 schemes in 1962, and 15 schemes in 1963. His research shows great potentialities, and it would be worthwhile to attempt a wider application.

WHEN I started a study of the Suggestion Schemes of Eastern India, the question posed to me by practically every manager was: "What can I get out of it?" It is thus obvious that industrial managers look upon Suggestion Schemes as a possible money-saving technique.

Even thus viewed, suggestion schemes can well justify themselves. Out of the 15 schemes studied in 1963, seven were considered by the managements themselves as money savers. One of the industrial concerns had in a period of 19 years, as a result of suggestion schemes, saved nearly Rs. 10 lakhs, while paying out only a little over Rs. 1 lakh by way of awards. Other companies saved smaller amounts: one Rs. 79 thousand, another Rs. 23 thousand and a third, a little over Rs. 22 thousand. Another company, though it paid out a little over Rs. 21,000 in awards and incurred an expenditure of Rs. 7,000 for the administration of the suggestion scheme,

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nevertheless, considered it 'a sound economic proposition'.

The following table shows employees' response to suggestion schemes:

	1961 (9 schemes)	1962 (14 schemes)	1963 (15 schemes)
Suggestions received per 100 employees	3.90	3.50	2.60
Suggestions accepted per 100 employees	0.64	0.42	0.30
Percentage of suggestions accepted	20.9	14.03	19.23

Good Beginning

The number of suggestions received per 100 employees may appear small, but in the socio-economic context it appears to be a good beginning; so too, the number of suggestions accepted. Considering the degree of literacy in our country and the level of technical knowledge, the beginning both in respect of suggestions offered as also suggestions accepted should be considered promising. In fact the percentage of suggestions accepted appears fairly large, for even in the United States the top 12 companies having suggestion schemes are not reputed for a very much higher acceptance rate. It is about 26 per cent in the USA and about 29 per cent in the UK.

If we shift the focus to the best suggestion schemes in operation, the outlook, in fact, becomes somewhat brighter: whereas the average number of suggestions received per 100 employees was less than 3 in the 15 schemes analysed during 1963, in the best scheme the number rose to 9 suggestions received per 100 employees. Among the schemes covered in 1962 the best, in fact, showed a still higher figure, over 12 suggestions received per 100 employees.

Regading rewards actually given, the figure appears extremely encouraging. Considering the low level of incomes and wages in this country, an average reward of over Rs. 140 in 1963 in the schemes covered by the survey appears fairly satisfactory. It is interesting to find that the comparative figure for UK was only Rs. 26 and for the USA Rs. 223. The higher individual rewards offered are still more significant: Rs. 2,000 in 1961, Rs. 3,400 in 1962 and Rs. 1,750 in 1963.

Analysing the employees' response in some depth, the following table throws a good light on the degree of success achieved by suggestion schemes operated in Eastern India in recent years.

Comparative Response of Employees

Number of suggestions per 100 employees	1961	1962	1963
Nil	3(33.3%)	5(35.7%)	4(26.7%)
Less than 3	4(44.4%)	6(42.8%)	7(46.7%)
Between 3 & 4	—	—	—
Between 6 & 12	2(22.2%)	3(21.5%)	2(12.3%)
Total number of Schemes	9	14	15

The Industrial Welfare Society in the UK treats as failures all schemes that receive in a year less than five suggestions per 100 employees. Judged by this standard, nearly 78 per cent of schemes in Eastern India operated in 1961 and 1962, and nearly 87 per cent in 1963 should be classified as unsuccessful. Schemes that received no response in 1961 remained dead in 1962, and with one exception, did not gain ground in 1963.

It is, however, not only the suggestions received, but also the suggestions accepted and above all the quality of accepted suggestions that can lead to a correct evaluation of suggestion schemes. In fact there are some considerable difficulties in the evaluation of suggestion schemes against tangible economic objectives. Some of the schemes have non-economic or intangible objectives. One scheme, included in the survey, was introduced to reduce minor accidents. In another, the scheme was not started with the intention of 'making money', but 'to make the worker interested in his job, machines and tools so that he starts thinking about them in a constructive way'. A third scheme was introduced 'to give employees an opportunity to think that they can influence the working of the company'. When the schemes have non-economic or intangible objectives of this nature, a fair comparison of suggestion schemes in different organisations becomes rather difficult.

Evaluation

In fact in the socio-economic context of Indian industrialisation it is advisable to evaluate generally the broad causes of success or failure rather than to determine mathematically the precise success of any particular suggestion scheme. As it is, we found that in Eastern India there was only one 'nearly successful scheme', so that the author began looking outside, and in Bombay a successful scheme was identified. In the Bombay scheme 42 suggestions were received per 100 employees in 1963 and a little over 2 accepted. The company paid out Rs. 7,500 as reward. According to the management, the scheme's success was due to the following factors:

1. Top management was sincerely interested in seeing that employees contribute ideas towards improvement of efficiency in the organisation. Personal letters were written to all employees. Further, a tape-recorded message from the General Manager was played at major stations in the country at the commencement of the 1963 campaign.
2. Adequate publicity was given through the company's house organ.
3. Middle management and supervisors were keen to see that as many of the employees as possible participated in the special campaign.
4. Special prizes were announced for outstanding suggestions accepted during the campaign.
5. Many employees have inherent enthusiasm to contribute ideas for improving efficiency of the organisation.

The analysis of the success of Suggestion Schemes may be carried forward through the recorded experience of the executive who was closely associated for nearly 5 years with the working of the only 'nearly successful scheme' in Eastern India. He has been subsequently associated with the administration of another scheme in the Eastern Region and this scheme too has achieved a certain measure of success. The executive concerned with the scheme makes the following suggestions:

1. Define the aim of a suggestion scheme. Make the aim specific. Communicate it to all managers and supervisors, preferably with illustrations.
2. Record the working procedure of the scheme clearly and in detail.
3. Give adequate publicity of the scheme's advantages to the suggesters.
4. Provide technical assistance to suggesters for development of ideas into presentable suggestions. There should be a 'unit' within an organisation to assist suggesters in developing new ideas.
5. Acknowledge all suggestions.
6. Communicate decisions on suggestions.
7. Include employees' representatives on the suggestions committee.

The following three 'don'ts' are also recommended by the same executive:

1. Determination of the usefulness of a suggestion may not be left entirely to the head of the department where the

suggestion is to be tried. Some departmental heads could be biased.

2. Do not delay in taking decisions on suggestions. Delay kills initiative.

3. Do not reply to the suggester in discouraging language.

We may now summarise the consensus on the factors essential for the success of Suggestion Schemes:

1. Top management should show their continued interest in and support for the scheme.

2. Middle and junior management should sincerely desire to make the scheme a success.

3. Workers' representative(s) should participate in the administration of the scheme.

4. The nature of operation in the organisation should be such as would offer scope for earning awards.

5. The aim of the scheme and its procedural details, such as the method of determining financial and other awards, the kind of assistance that the employees should get in developing presentable suggestions out of new ideas, and the arrangement for screening and handling of suggestions, should be worked out on paper before introducing a scheme.

6. The members of the suggestions committee should be those, who are known to be fair and honest, and their decisions over a period should strengthen employees' confidence in the fairness of the committee's judgement.

7. Financial awards for accepted suggestions should be adequate and supplemented by other ways of recognition.

8. Publicity for the scheme, accepted suggestions, awards and for the winners of awards should be powerful, imaginative and continuous.

The British experience supports the suggestions recorded above. According to the Industrial Welfare Society (UK) the essentials for the success of a suggestion scheme are: (1) Management's support and enthusiasm (2) A forward-looking policy on human relations (3) Efficient and fair administration of the scheme, and (4) Adequate publicity.

Reasons for Failure

Of the six clearly unsuccessful schemes in Eastern India, the managements themselves felt that the failure was due to the following factors:

1. Publicity was inadequate.

2. Executives and supervisors showed little interest and did not extend the necessary support.

3. Employer-employee relations were generally poor.

4. Financial rewards were inadequate.

5. Details of the scheme were not worked out and there was delay in handling suggestions.

6. Facilities were not extended to employees to work out ideas on paper.

7. Employees were not educated. Employees' economic worries left them with no peace of mind for creative thinking. They were new to jobs in industries.

8. There was not much scope for suggestions due to the nature of operations.

Analysing these factors in some depth, we may record it practically in the language used by the management.

> "... Sufficient publicity was not given regarding the functioning of the scheme to enable employees to know how to make an acceptable suggestion... We have not done enough to publicise and popularise the scheme.. Everybody might be knowing that there is a suggestion scheme, but at certain intervals they have to be reminded of the scheme and it has to be hammered into their minds. The scheme will then linger in their thoughts for two or three months, to die down gradually. So, when it is dying, again something new should be done to revive interest..."

It is obvious that the negative attitude of many executives and supervisors can be

very harmful to a suggestion scheme. This is reflected again in the language heard directly from people in the higher echelons of management:

"... When the scheme was introduced, all senior members of the management (except myself) felt doubly sure that there would not be any suggestion... This is one man's show...

'The recognition of workers' proposals for improvements is really an acknowledgement of managerial inefficiency: this is how the manager's mind works... Managers treat the scheme as a joke ... too often instead of helping the employees, supervisors and even heads of departments put all kinds of obstructions.

"Of course, there is also the other side of the picture; and a number of managements are favourably inclined towards suggestion schemes... Department heads feel proud that some of their men are getting rewards ... If the scheme is discontinued, it will be noticed by the top management ... Ours is a progressive

Suggestion Behaviour Differs from Plant to Plant

According to Mr Einar Hardin, of the Michigan State University, the widespread use of suggestion plans and the available literature on the subject show both that the potential value of employee suggestions is well recognised, and that the success of such plans is not automatic.

Writing in PERSONNEL PSYCHOLOGY, he says: "Some of the factors affecting the functioning of suggestion plans are doubtless plant-wide and can, therefore, best be studied by cross-sectional and longitudinal comparisons of entire plants. Studies using largely this approach have been published by Dickinson (1932) and Holmes (1952).

"Suggestion behaviour differs not only from plant to plant, however, but also among employees eligible to participate in a common scheme within a single plant. It is often found that a minority of eligible employees account for a majority of the suggestions submitted and awards received in a plant, and that some persons make suggestions and receive awards very frequently. The large interpersonal differences in suggestion behaviour probably result not only from differential exposure to inefficient working methods and conditions and from random incidence of ideas, but also from differential ability and motivation to create and present improvement ideas appropriate to the situation."

> company, we have to go ahead. People are now talking of employees' participation in management. This being the trend, we cannot discontinue a scheme that trains employees to think creatively..."

These naturally are comments from the administrators of the schemes that achieved a 'certain measure of success', and they appear so different in spirit from the comments of the administrators of the schemes that failed.

Need for Cooperation

A suggestions scheme cannot work unless employees cooperate; and this cooperation cannot be forthcoming in an atmosphere of suspicion and misunderstanding, as can be seen from the following typical comments:

> "In the works committee, the relationship between workers and management is not harmonious. Each blames the other. They do the same thing at the meeting of the suggestions committee... Here anything new is suspected. Workers do not accept management's good intentions... Employees apprehend that suggestions may lead to retrenchment or reduction of employment opportunities."

These comments came from the administrators associated with unsuccessful schemes. We were told by some of the administrators that their schemes failed, because the 'financial rewards given were too small to act as incentive'. This is a point to be considered while working out details.

Merit certificates and other ways of showing recognition can usefully supplement financial rewards, but they do not appear to the majority of the administrators as substitutes for adequate cash payments.

Working Out of Details

It is not proper to announce a suggestions scheme and place boxes without working out details; yet some managements make exactly this kind of mistake as can be seen from the following comment of an administrator:

> "The company never worked out details of the scheme before introducing it. They announced the suggestion scheme and placed boxes..."

While considering details of a scheme, careful thought need to be given before excluding any category of employees from its scope. One administrator felt that 'his scheme could have secured better results, if supervisors were not excluded from the scheme'. He thought that the 'supervisors are the people who can suggest'.

One has also to consider the necessity of quick disposal of accepted suggestions and their speedy implementation. Absence of either of the two arrangements can cause trouble as can be seen from the following comments.

> "...The time lag between the receipt of suggestion and taking decision on its quality is too long, and this is unsatisfactory."

> "...It always calls for a little extra effort to implement a new technique. The extra effort is unlikely to be forthcoming when the task of administration of the technique is left to an overworked executive. We have no full-time officer for suggestions scheme. The existing officers are overworked. Suggestions scheme is one more routine for them..."

Facilities to Employees

A point repeatedly emphasised by experienced administrators was 'the need to provide assistance from a specialised unit to those employees, who might have pointed out towards a direction we have not thought of earlier, but who do not have technical competence to develop the ideas further.' ... 'Employees, specially daily-rated workers, need help to bring out their ideas logically and systematically, and sometimes drawings are needed to explain ideas. Management extended no facility to meet the need.' ... 'Workers may have ideas, but they may not be able to work them out.

We have not given them any assistance to overcome this difficulty . . .'

In some of the undertakings, employer-employee relations were stated to be good, but even then the employees did not come forward with suggestions. A few of the managements in this category thought that the poor response to schemes may have something to do with illiteracy of employees, worries in their minds due to a large number of personal problems, or their newness to jobs and life in industry. Some of the typical comments are:

> "Our workers are illiterate. New workers we take are literate. As we have more and more literate employees on actual operations, the number of suggestions should increase . . .
>
> "We are dealing with the first generation of industrial workers . . . People's standard of living is low and daily worries are too many to give them peace of mind for any constructive thinking. A large majority of educated and intelligent workers have been moved to new jobs during the last two or three years. They have to settle down on jobs . . ."

Nature of Operations

A suggestions scheme administrator in the process industry, who felt that he could not do much to improve the working of his scheme, came to the conclusion that in an industry, where operations are mechanically controlled and the procedures and practices have been standardised as a result of formal study and experience, there was not much scope for offering useful suggestions. He thought that the nature of operations in an industry had a bearing on the number of useful suggestions. His views were supported by the administrator of the successful scheme and the managements of two more schemes in the process industry that achieved a limited measure of success. They all feel that the scope for suggestions is less in undertakings where operations are standardised, mechanised, complex and centrally controlled.

In a business organisation there should be good reasons for introducing a new technique. A suggestions scheme, or any other new technique, has to be introduced for the solution of an existing or anticipated problem. Unfortunately, managements do not always follow this simple dictum as can be seen from the comments of the suggestions scheme administrators:

> "I saw the scheme's usefulness in a company in a foreign country, and so I introduced it here on my own initiative. There may be something to gain but nothing to lose."
>
> "Our scheme was introduced, because our General Manager wanted it. Scope for suggestions is very limited due to the nature of operations. There is no real need for the scheme."
>
> "Our Managing Director asked us to introduce it. He is progressive. We have faith in his judgement, and so we introduced the scheme. Now we find that none of the senior managers can give any time to it."

In each of the above cases it was the inspiration of a single individual. None of the three schemes was thought of as a solution to existing or anticipated problems. The schemes were introduced for inadequate reasons without establishing their relationship with the problems of the undertakings. On the other hand, those managements who introduced the schemes, when they discovered that useful ideas from the shop floor were not reaching the top managements, had a specific communication problem for the solution of which a new technique was employed.

It is necessary to identify clearly the problems for the solution of which a suggestions scheme has to be introduced. The necessity arises out of two requirements. First, it is sheer waste to introduce a new scheme if there is no problem to solve with its help. Secondly, the detailed procedure for the administration of a scheme is dependent on the nature of the problem. For example, in an organisation where executives and supervisors feel

happy to pass on to the top management their subordinates' ideas, the administrative procedure will be so laid down as to demonstrate complete reliance on executives and supervisors in receiving and evaluating suggestions. On the other hand, in undertakings where members of the middle management consider suggestions from the shop floor as a reflection on their competence, the administrative procedure may be so worked out as not to put complete reliance on their judgement in determining the value of suggestions.

Main Objective

Nine out of fifteen managements, which introduced suggestion schemes, did so in order 'to encourage employees to think creatively', and for 3 others, this was one of the reasons for installing the new technique. The way the other managements felt about it is illustrated by the following comments, which they offered:

> "... We did not want workers to find that things are being forced on them. We really wanted our workers to feel that they can have some say in the administration. Suggestions scheme was one way of achieving this objective. Before introducing the scheme all methods and working conditions were thoroughly examined and standardised. We did not expect employees to suggest obvious improvements. We wanted them to do creative thinking.
>
> "We wanted to improve productivity. We believe that a man who spends eight hours a day on one particular job should know better how to improve productivity on that job. We wanted each employee to think of improvements of his job. We wanted to make use of employees' intimate knowledge of operations.
>
> "Our intention was to spot out employees with brains and then to open up for them further avenues for progress."

It is obvious from the comments that these managements knew why a scheme had to be introduced.

When the need for a technique has been established, the next task is to determine and communicate the scheme's objectives. The objectives should be clear and precise, so that everyone responsible for the scheme's administration understands what exactly the scheme is supposed to achieve.

As managements for the most part were not clear as to their objectives, we supplied the managements with a list of eleven objectives. They were requested to point out the objectives applicable to their schemes. They were further asked to name objectives excluded from the list. The Table printed below summarises the objectives of the fifteen schemes under analysis.

Description of Objectives	Number of schemes that accepted the objective
Reduction in cost	13
Spotting out employees who can think creatively	12
Improving working conditions	11
Making work place safer	11
Improving communication with workers and supervisors	8
Building up company's reputation as a progressive employer	8
Giving employees a sense of participation in management	7
Overcoming employees' resistance to change	6
Import substitution	6
Improving relations with customers	3
Solving civic problems	1

Role of Managers & Supervisors

Successful administration of a scheme calls for active cooperation of middle management and supervisors, because of their direct and intimate contact with workers; hence the policies for administering a suggestions scheme should aim at securing maximum possible cooperation from these groups.

Sincere and continuous communication is necessary for the removal of misgivings.

A suggestion from a subordinate is a tribute to supervisor's leadership quality and not a reflection on his competence. It may, however, be necessary to give employees the option to submit suggestions in boxes or through their supervisors. Some employees prefer to drop their suggestions in boxes for many reasons including natural shyness and fear of being identified as the man whose ideas have been rejected.

Policy Decision

What role should be given to managers and supervisors in the administration of a scheme is an important policy decision. One way is to give them a very active role, and to work out a procedure that demonstrates top management's full confidence in the impartiality of managers and supervisors. Another way is to force a scheme on managers and supervisors and to work out a procedure that will bypass them, as far as possible, in the day-to-day administration of a suggestions scheme. As a policy decision, the choice of either way is bound to make a big difference for the scheme's success. Under certain circumstances, the second approach may be preferred, but then the limitations of the approach, in terms of results, should be clearly recognised.

An analysis of the different roles managers played in the administration of the fifteen schemes surveyed by us in 1963 showed that in four of them the managers just did nothing. In one case, only circulars were re-circulated. In another solitary case the manager was good enough to listen with patience, but was not prepared to do anything more. In all, in 7 out of 15 cases the manager played more or less a passive or indifferent role. In the remaining cases, the manager played a somewhat active role, receiving suggestions, evaluating them etc. In two cases, the manager helped in implementing suggestions.

Of the seven schemes which received little support from the managers, six failed completely and one achieved a 'certain measure of success.' By contrast, of the eight schemes that assigned an active role to the managers, one was 'clearly successful', six achieved a 'certain measure of success' and one failed completely.

As regards supervisors, the replies received show that in eleven undertakings, supervisors did little to administer the schemes. However, in four organisations 'they encouraged workers to come out with suggestions'. Whereas managers were actively associated in the management of eight schemes, supervisors played the same role only in four schemes. In other words, some of the managements, who thought it necessary to assign managers an active role, considered it proper to ignore the supervisors, despite their direct touch with workers.

Industrial engineers and research officers are primarily employed to introduce improvements in an organisation and, therefore, they should have a special interest in suggestion schemes. Out of the fifteen undertakings included in the survey, fourteen employed either an industrial engineer or a research officer. Unfortunately nine of the organisations made no use of them in the administration of suggestion schemes. In three units, industrial engineers were used in analysing and evaluating suggestions. Only in two undertakings, the schemes were administered by industrial engineers.

Reward Schemes

Eight schemes offered rewards to managers for their suggestions, while ten operated a similar procedure for their supervisors. Of the schemes which offered such rewards, three had separate suggestion schemes for managers and supervisors. The management of a successful scheme rewarded senior managers for their suggestions 'outside the scope of the main scheme'. It was observed that at some places supervisors and managers were very touchy of being included in the same scheme with workers.

When it came to giving recognition to a manager or supervisor for his subordinates'

suggestions, we found that two managements took into account suggestions received and accepted from subordinates in giving salary increase and promotion to managers and supervisors. It was, of course, only one of the considerations for salary increase and promotion. A third management offered to give special rewards to managers and supervisors for suggestions accepted from their subordinates. The special rewards excluded consideration for promotion or salary increase. Eleven managements did not give rewards to managers and supervisors for suggestions from their subordinates.

One way for securing employees' cooperation is to associate their representatives with administration of the scheme. The survey collected data on this aspect and the extent of employee representatives' participation in the administration of the scheme. In ten out of 15 schemes surveyed in 1963, the employees' representatives did nothing whatever. In one case, the Works Committee Secretary used the suggestion committee as a platform for finding faults with management. In one case, the trade union was not even associated with the scheme. In two schemes, however, the nominees of trade unions were members of the suggestion committee. In two more cases, workers were directly represented.

Trade Unions' Attitude

In the working of a suggestion scheme the trade unions' attitude is an important determinant; hence an attempt was made to ascertain from some of the representatives of trade unions their reactions to suggestion schemes. A trade union leader, when requested to give his views on suggestion schemes in general, said:

> "Employees have intimate knowledge of jobs. They know the ways of reducing the number of operations. They might not come forward with their suggestions for fear of lay-off. This situation can be improved only if employers guarantee that there would not be any lay-off as a result of improved operation."

This trade union leader is one of the nearly five thousand employees in a company where a suggestion scheme was introduced, unsuccessfully of course.

Another representative of a trade union, who works in a large company where the employees' response to the suggestion scheme was poor, explained the scheme's failure in the following words:

> "Suggestions for improvements are efforts towards rationalisation that reduce requirements of labour. We employees know it and, therefore, we are not too keen to come forward with suggestions which ultimately reduce the scope for employment."

Another representative of the same union, who is also a company employee, explained the failure of the scheme in a different way:

> "In assembly line operations, the jobs are so segmented that employees do not have complete knowledge of the total job. They know only their part and do not have access to information outside their sphere of work. Therefore, it is very difficult for them to make suggestions. Supervisors have access to information in a broad field. They can and do suggest. When they give good suggestions they get 'ad hoc' rewards, promotion or transfer to a better section."

The three trade unionists, quoted above, had a very brief (first-hand) experience of suggestion schemes which died before they had a start.

Another trade unionist, who has intimate knowledge of the working of an active suggestions scheme for five years as an employee and as a trade union leader, made the following observation in explaining inadequate response to the scheme:

> "It is difficult for employees to suggest. They do not have access to information outside their sphere of work. Then, sometimes they get an idea, but they are not given facilities or resources to try out an alternative method to develop a suggestion. **In some cases, their suggestions are**

rejected as impracticable only to be resurrected again, as though a new suggestion made in the name of a favourite, after two or three years. As a result, employees lose confidence. We have now such a case pending for discussion with the management."

A trade union representative on a suggestion committee, when asked to comment on the small number of suggestions received in a very large undertaking, said:

> "According to our rules, improvements first carried out and then reported are not considered as suggestions for reward. Many small ideas come to employees'

Study of Foreman's Role in Suggestion Plans

Mr SJ Seimer, who has made a thorough study of suggestion plans in the American industry and the role of the foreman, has described the differences between the views of executives, foremen, and rank-and-file employees on the purposes of the suggestion plan; the ways in which the foremen facilitated or obstructed the operation of the plan to achieve their own objectives; and the foremen's complaints against the plan. An important observation on the problem of installing a suggestion plan was that "the unilateral action by general management... in designing, organising, and modifying the suggestion plan... seemed to precipitate a reaction of disunity, misunderstanding, and resistance to the suggestion plan rather than the wholehearted acceptance and cooperation which was desirable."

Mr LN Laseau, Director of Employee Relations Research, General Motors Corporation, has reported that the quality of leadership in the department, and "the resulting attitude of the worker, had a considerable effect on the number of suggestions, the proportion of participants among eligible employees, and the quality of suggestions. The departments with the poorest showing invariably were under foremen who considered the suggestion plan a criticism of their own ability. The departments at the top of the list were headed by foremen who put emphasis on the individual worker and on the importance of making him feel a part of the department effort."

Stagner, Flebbe, and Wood (1952) found that work groups with many award winners did not differ in mean satisfaction score from those having few winners. According to Mr Einar Hardin, this finding "appears to invalidate the view, sometimes voiced, that suggestion plans tend to disrupt the work group."

minds and they apply them on the job without putting the ideas as suggestions before applying. This is one of the reasons for the relatively small number of formal suggestions in our company. Further, the percentage of annual savings given as rewards need revision as they are not adequate and attractive enough in today's conditions...."

Administrative Difficulties

Speaking on administrative difficulties, viewed by him as a representative of the union on the suggestions committee, the same trade unionist continued:

'Sometimes we have seen that a departmental head declares a suggestion impracticable simply because the suggester is one he does not like. We accept anonymous suggestions in suggestion boxes to overcome this difficulty. Departmental officers oppose suggestions on various pretexts; we have, therefore, to get comments on suggestions from other technical people besides the departmental officers. We know instances when suggestions were turned down as impracticable when they came from some employees, but these were implemented after, say two years, with minor modifications, as suggestions from departmental officers. We caught some cases and the company was compelled to give rewards. When things like this happen, employees lose confidence in the scheme."

A closer examination of the views of trade union leaders leads to two conclusions. First, genuine fear exists in the minds of some trade union leaders that suggestion schemes reduce the scope for employment. As no scheme can work properly if employees and their representatives entertain such a fear, managements must explain and demonstrate that such a fear is unfounded. Secondly, those representatives of trade unions, who closely observed the working of an active suggestions scheme for a number of years did not see any inherent clash between employees' interests and the objectives of the suggestions schemes. They thought that poor response to schemes was due to administrative failures.

The first task in working out the details of a suggestion scheme is to define what a suggestion is. A study of the definitions given in the published rules of ten schemes in the survey reveals that suggestions may be grouped under three categories:

1. Tangible suggestions which effect savings.
2. Tangible suggestions that do not, necessarily, effect savings. Improvements in safety, working conditions, housekeeping, etc., come under this category.
3. Intangible suggestions such as better relations with employees and customers.

The three groups could be further divided into ideas for improvement of (a) one's own job; (b) other employees' jobs in one's own department; and (c) jobs in other departments. In organisations where the scope for suggestions is limited to one's own job, employees on different jobs may be encouraged to submit joint suggestions.

In defining a suggestion, it is important to say what is not a suggestion. Grievances, complaints and requests for better terms of service are excluded from the scope of a suggestion scheme. In some schemes, suggestions on projects just completed are not accepted.

In a booklet on **Suggestions Plan,** published by a company in the petroleum industry, the topics for suggestions have been listed under the title "What Ideas Pay?" Under the heading "Suggestions that do not pay", the company has also pointed out the topics which are outside the scope of the scheme. The following extracts are taken from the booklet as an illustration:

WHAT IDEAS PAY?

Usually the suggestions are of the following type

- Ease of operation
- Good housekeeping
- Improve existing method or substitute something new

Your suggestion should be aimed at

- Improving process yields
- Improving work flow or sequence
- Improving methods of materials handling and equipment repairs
- Full use of existing equipment
- Improving safety
- Saving in utilities, chemicals, fuels, operating time etc.

This certainly is not an exhaustive list of rewardable suggestions. The area is too vast to define. Do not mix them with non-rewardable suggestions.

SUGGESTIONS THAT DO NOT PAY

Suggestions which

- Correct an obvious error such as improper meter ranges, location of valves, bleeders, drains, sample points, lights or instruments, routing of lines or incomplete insulation of hot lines.
- Recommend installation of routine signs
- Pertaining to Company policy, organization changes
- Fixing chains on valves
- Installation of fire extinguishers
- Connecting vents and drains to sewer
- Providing separate electrical switches
- Providing road reflectors

are not rewardable under the E.S.P.

"Suggestions on new installations will not be entertained until it has been in operation for one year."

Another booklet on Suggestion Scheme, published by a company in the heavy engineering industry, lists topics for suggestions.

TOPICS FOR SUGGESTIONS

'Suggestions relating to any phase of the company's activities would be welcomed so long as they are useful and practicable. The following topics, while by no means a complete list, give an idea of the nature of topics on which suggestions are wanted:

(i) MATERIALS:

1. Ways of saving materials
2. Substitution of materials used at present by materials which are better, cheaper or more readily obtainable.
3. Improvements where the material is not of the most economical size, shape, finish or condition.

(ii) HANDLING OF MATERIALS:

1. Reduction in the number of times material is handled.
2. Shortening of the distance to be moved.
3. Ways of eliminating or shortening delays in the delivery of materials to operators.
4. Ideas for mechanical or semi-mechanical internal transport of material.

(iii) MACHINES AND EQUIPMENT:

1. Ideas for improving the care of machines and components, and for reducing wear on them.
2. Ideas for new tools or machines for jobs previously done by hand.
3. Improvements in the location of equipment.
4. Combination of two or more machines into one.
5. Ideas on the best shapes of handles, etc., to make them more convenient for the user.
6. Positioning of machine controls.
7. Care of loose tools.

(iv) SAVING OF TIME:

1. Reducing time spent in moving materials from place to place.
2. Reducing or eliminating delays in getting materials.

(v) PROCEDURES:

1. Reduction without loss of efficiency or of necessary records in the amount of paperwork.
2. Simplification of routing, i.e. points of contact between one department and another.
3. Ideas for simplifying paper work and routine operation.

(vi) OPERATIONS:

1. Elimination of an unnecessary or wasteful operation.
2. Can the work on any operation be done better in multiple?
3. The separation of one operation into two or more shorter and quicker ones, or the combination of shorter operations into one more efficient operation or the changing of their sequence for improving output.
4. Ideas for shortening the movements of the operator's arms and hands.
5. Ideas for eliminating wasteful movement altogether.
6. Reduction of fatigue by a change in methods and machinery.
7. Ideas on simplifying operations.

(vii) WORKING CONDITIONS:

1. Ideas for accident prevention.
2. Modification of the length and break-up of working period for greater efficiency and economy.
3. Improvements in seating, bench heights and other factors involving reach.
4. Reduction of fatigue and physical strain by change in working conditions.

(viii) INDUSTRIAL RELATIONS AND WELFARE:

1. Ideas for improving goodwill and co-operation between departments and individuals.
2. Ideas which make employees happier at their work.
3. Possibilities of improvement in training methods.

(ix) SAVINGS:

1. Possibilities of saving money.
2. Possibilities of saving lighting, fuel and power.
3. Savings effected through greater cleanliness and tidiness."

In the same booklet, the areas of business excluded from the scope of the scheme are described as under:

"Care should be taken that suggestions do not become mere requests for additional facilities or benefits, nor should suggestions pertain to routine maintenance functions such as necessary repair work.

"It must be clearly understood that complaints and grievances are not suggestions, and the suggestions scheme is not the proper forum to ventilate them. Any complaints and grievances received through the suggestions box will be ignored."

A third booklet on Suggestions Scheme, published by a company in the steel industry, describes the areas of business excluded from, and included in, the scope of a scheme:

"In considering acceptable ideas, the scheme draws a definite line of distinction between a suggestion and a complaint. The latter betrays a negative attitude while the former shows a positive and constructive approach. Matters falling within the sphere of union relations or collective bargaining (such as wages, allowances, bonuses, hours of work, and leave) as also those within the normal duties of the persons concerned, requests for additional benefits and grievances are some of the items excluded from the purview of the Suggestions Box Committee. Similarly, a proposal, which merely draws attention to a problem, but offers no solution, is not considered for a reward. What comes under the category of an acceptable suggestion, under the rules framed for operating the scheme, is a definite proposal leading to the establishment of new or improved practices, products or facilities favourable to:

(i) reduction of cost, waste and spoilage; proper maintenance and prevention of hazards to health or possibilities of accidents, etc;

(ii) increase in utility, quality, yield or output of products;

(iii) conservation of materials, energy, power or time on processes or utilising them for better purpose;

(iv) improving the product or its design;

(v) advertising and sale of products, new sources of revenue or new products;

(vi) solution of civic problems, and those relating to traffic, hygiene and cleanliness in the plant and town; and

(vii) economy in stationery, etc."

From the foregoing, it will be evident that it is not enough to define a suggestion, but it is also necessary to indicate definitely the topics which are included in and excluded from the scope of a scheme. A list of topics, as the schemes of the three companies illustrate, helps employees to identify areas in which they could think of developing suggestions. Further, such a list helps in removing from employees' minds the impression that suggestions invariably reduce scope for employment.

Eligibility to Suggest

In deciding eligibility, one has to consider whether supervisors and executives could submit suggestions for reward. The management of a scheme pointed out that the response to their scheme was inadequate due to the exclusion of supervisors from the scheme. They felt that supervisors were the people who were in a position to develop useful suggestions. Some other managements felt that it was the normal duty of supervisors and executives to suggest improvements and they should not be given rewards for discharging normal duties.

In one case, the management stated that supervisors resented being included in the same scheme, together with workers. Another management did not think it wise to treat supervisors and workers alike. They wanted their supervisors to maintain a separate entity in as many respects as possible. They felt that it was better to introduce a separate scheme for supervisors. Of the fifteen schemes studied, four excluded all supervisors and executives from the schemes, while six excluded only the senior supervisors and executives. Two schemes treated all employees as eligible for rewards; of them one gave as rewards only letters of appreciation to employees of the rank of Assistant Foreman and above. The eligibility rules of the remaining three companies are quoted below:

COMPANY — X:

> "All employees are eligible to receive rewards. However, employees in the executive or sale/technical/supervisory classifications are ineligible for rewards for suggestions relating to their functions, but they are eligible for rewards for suggestions not so related. Engineers, chemists or other technologists engaged in research or development work are not eligible for rewards relating to their ordinary functions."

COMPANY — Y:

> "The scheme is open to all classes of employees... excluding (i) assistant departmental heads and above; (ii) those who fall within the category of research workers; (iii) employees of the Industrial Engineering department; and (iv) those who are in a privileged position of having at their disposal information available as a result of special investigation and studies. Restriction also applies to those who have been specially assigned to a job pertaining to the suggestion, even if such persons are eligible by virtue of their designation."

COMPANY — Z:

> "All employees are eligible to make any number of suggestions... Executives, heads of departments, superintendents and research workers should send their suggestions to the General Manager through their divisional or departmental head. Suggestions from these senior employees will be considered separately outside the scope of this scheme."

A study of rules of the three schemes shows that even when all employees in an

undertaking are considered eligible for rewards, it may be necessary to treat supervisors, executives and the personnel engaged in research and development as ineligible for rewards, in respect of suggestions which they are ordinarily expected to give by virtue of their position in the organisation. These categories of employees could be given opportunities to earn rewards suggesting improvements in those areas of business, which are outside the scope of their normal functioning. The underlying principle appears to be that a person should put in more efforts than is normally expected of him in order to earn rewards.

In one undertaking casual employees and those employed, temporarily, on construction were excluded from the scheme. **None of the fifteen schemes gave rewards to customers for suggesting improvements,** although we were told by the administrator of a scheme in the transport industry (excluded from the survey) that the users of their services could be rewarded for suggestions.

Presentation of Suggestions

In laying down the procedure for presentation of suggestions by employees the following three important problems should be taken into consideration:

1. How suggestions should be submitted?
2. Can a suggester remain anonymous?
3. Can he be given assistance in writing down the suggestion on paper in a presentable form?

Out of fifteen schemes surveyed, twelve insist that suggestions must not be submitted to supervisors or managers; one scheme stipulates that it must be given to the supervisor or manager; two schemes leave it to employees to decide where to submit suggestion. The exact procedure that one should adopt for submission of suggestions would naturally depend on organisational climate. In undertakings where supervisors are likely to feel happy to see employees under them earning rewards, there is no justification for encouraging employees to submit suggestions in boxes ignoring the normal channel of communication. A satisfying way of solving the problem is to place suggestion boxes and to give option to employees to submit suggestions in boxes, through supervisors or secretary of the suggestions box committee.

In one of the fifteen undertakings, employees can submit suggestions in boxes, to the Secretary of the 'Joint Council' or to the Training department. In this organisation, there are joint councils of management and workers' representatives. It is "open to employees to submit suggestions to their respective joint departmental councils. While many of the suggestions are thus directly handled, some are sent to the suggestion box committee . . ." The training department in the same organisation conducts T.W.I. programmes. Those, who attend the "job method" part of the T.W.I. programme are encouraged to submit suggestions in a form specially designed for the purpose. Such forms are received by the training department and forwarded to the Secretary of the suggestions committee for processing and disposal. These two ways of receiving suggestions show how companies can develop uncommon procedures for presentation of suggestions.

As regards the question whether a suggestion can remain anonymous, the replies may be tabulated as follows:

Procedure	Number of Schemes	Total
Suggester must remain anonymous	1	
Suggester has choice to remain anonymous	1	5
Suggester has choice to remain anonymous, and he can get help from management in putting idea on paper	3	

Procedure	Number of Schemes	Total
Suggester must disclose identity	6	
Suggester must disclose identity and he can get help from management in putting ideas on paper	4	10
Total		15

An employee may not like to disclose identity for fear of displeasing the superior, for fear that others may laugh at him if the suggestion is rejected, to avoid being labelled as a non-conformist or just due to shyness. These are all valid reasons for giving employees the choice to remain anonymous. Our investigation shows that, with two exceptions, the schemes that gave choice to suggesters to remain ananymous received more suggestions than those that asked the suggesters to disclose identity. The 'clearly successful scheme' of the present survey laid down the following procedure for submitting suggestions:

> "When an idea occurs to you which you think is worth passing on to the company as a suggestion, all you have to do is to describe your idea as clearly as possible on a suggestion form. You can obtain a suggestion form from the buckets of any of the suggestion boxes placed inside the Works or from the Secretary of the Suggestions Scheme Committee.
>
> "Use only one suggestion form for one suggestion. If you find that the space on a form is insufficient to describe your idea fully, attach additional sheets of ordinary paper to the form, but take care to write the number of your suggestion form on the top of each additional sheet.
>
> "If you find it difficult to put your idea in words, contact the Secretary of the Suggestions Scheme Committee. He will either help you himself to fill in the suggestion form or will depute some other suitable person to help you to do so.
>
> "You may sign the suggestion form if you like but it is not compulsory for you to sign it. Even if you have sought the help of the Secretary or his nominee in filling up the form and choose to remain anonymous, the Secretary and/or his nominee, who may have helped you, will keep your name strictly to themselves.
>
> "When your suggestion form has been filled in and is ready for submission, remove the stub of the form and keep it in a safe place. You will need it when a decision on your suggestion has been taken and announced on the Notice Board. If you have chosen to remain anonymous, this stub alone will establish your claim to receive the reward if your suggestion has been accepted.
>
> "Having filled in the form properly and removed the stub, either drop the suggestion form in one of the suggestion boxes or send it or hand it over to the Secretary, Suggestions Scheme Committee."

The management of the scheme gave choice to employees to remain anonymous. They further offered to help employees to work out ideas on paper. During the survey, we were told repeatedly by managements that employees may have useful ideas, but they may not be able to put the idea on paper in a presentable form. They thought that it was essential for the success of a scheme to offer assistance to employees in writing down ideas on paper.

Opening of Suggestion Boxes

Who will open the suggestion box? This is the first step to be decided in processing a suggestion. Our survey shows that in the case of fourteen schemes, the Secretary of the Suggestion Committee or a Personnel Officer is authorised to open the boxes. This practice appears satisfactory as both of them are likely to enjoy the confidence of employees.

The next step for consideration is, whether the Secretary should place all the suggestions before the committee for decision. In eleven schemes, all suggestions are placed before the committee, while in three, suggestions are screened before placing them for the committee's consideration. The initial screening in two undertakings

is done by a single officer, and in the third undertaking by a group of officers. Of the three undertakings which have arrangements for preliminary screening, the Secretary is empowered to reject or even revive suggestions, received and rejected earlier. However, he keeps the Committee informed of the action taken by him.

In the second company, a group of officers go through the suggestions to "weed out those that do not qualify as suggestions or such communications which should not have been placed in the box, e.g., complaints, grievances or requests of various kinds."

In the third undertaking 'minor suggestions' and those which the suggesters view as impracticable during preliminary discussions are disposed of by the Secretary.

Only one scheme out of the fifteen studied had no suggestion committee and suggestions received under the plan were evaluated with the help of departmental officers.

Authority of Suggestion Committee

In a large majority of the schemes, all suggestions are placed before a committee. This is a good practice for inspiring employees' confidence in the fairness of decisions. It is only when the number of unwanted communications becomes unmanageable for the committee, that one should think of preliminary screening of suggestions. When preliminary screening is essential, it is a good practice to assign the task to a group of officers with a directive that they keep the committee informed of the rejected suggestions.

Should a suggestion committee take final decisions by itself or should it be only an authority to recommend? This is another area for careful consideration. The survey shows that in ten schemes, the suggestion committee decides by itself, whereas in four schemes the committee's recommendations are sent to the senior-most manager who takes the final decision. In reality there is little to choose between the two practices, provided the manager, while retaining the right to decide finally, does not in practice reduce the authority of the committee and the members' interest in its working.

How is a suggestion Committee to be formed? Who should be its members? We found that all members of the fourteen suggestions committees, with the exception of workers' representatives, were nominated by the managements. The nominated members work as executives at the top and middle levels. Most of them have technical knowledge of operations in the undertaking. The Chairman of the Committee was invariably a top executive. Except in one scheme, the Secretaries were Personnel Managers, Industrial Engineers or senior assistants to top executives. Administration of the suggestions scheme was one of their many duties. The time devoted by them for the scheme varied from one to sixteen per cent of their daily working hours.

The majority of the Secretaries could not spare more than five per cent of their working time for the scheme. For one scheme, a full-time Secretary was appointed by the management. Thus in a large number of cases, the time devoted by Secretaries to the type of work is so little that it may well be a factor responsible for failure of most of the schemes.

The number of members on a committee, including the chairman and the secretary, varied from three to eleven. Membership of nine committees varied from four to six.

Workers' Representatives

To the question of workers' representatives on the suggestion committee, we have noticed that only in one scheme, the recognised trade union nominated workers' representatives. In another undertaking, where the trade union was not recognised, the workers' representatives

on the joint consultation committee nominated their representatives to the suggestion committee. There was no representative of workers on the remaining twelve committees.

The two managements, which included workers' representatives on the suggestion committee, were appreciative of the representatives' contribution. Views of some managements, who have not had actual experience of working with the workers' representatives on the suggestion committee, are as follows:

> "In the suggestion committee, the members may argue on the merits or demerits of a suggestion, but there is no question of bargaining. Presence of workers' representatives may bring in an element of bargaining in deciding the value of a suggestion.
>
> "The Union may show interest in individuals, but they will not show interest in the scheme."

Our survey shows that two committees met once a month, and two others every quarter. The duration of a meeting was one to two hours. No scheme laid down a maximum time-limit for a meeting. The frequency of committee meetings has to be decided, keeping in view the necessity to avoid delays in replying to suggesters.

Criteria for Evaluation

Some managements leave it completely to the committee to decide how to determine the value of a suggestion while others prefer to lay down criteria for evaluation. Of the fifteen schemes, two did not lay down criteria; two kept the criteria confidential, and eleven stated them in published rules. The following are some of the criteria for evaluating suggestions:

> "Ingenuity; initiative; effort involved; completeness of a proposal; saving in money, time, materials, foreign exchange; quality improvement; accident prevention; effect on material handling; cleanliness; work method; plant layout; morale; practicability under prevailing conditions; solution to a civic problem."

Every scheme used four to six criteria. Laying down of criteria can be helpful in maintaining uniformity of standard while taking decision by a committee, the composition of which may change. It is a good practice to state criteria in published rules to let employees know, in advance, how their suggestions will be judged.

Procedure for Recording

It will be erroneous for anyone to think that there is nothing to be done between taking suggestions out of boxes and placing them before a committee. There are a number of things to attend to in between the two steps as can be seen from the rules quoted from four schemes:

SCHEME A

> "The suggestion boxes will be cleared once every fortnight. The suggestions thus received, along with those directly sent to the Secretary will all be recorded in a diary. A list indicating the printed numbers of suggestion forms received will be placed on the Notice Board. This will be the only acknowledgement of receipt of your suggestion if you have sent it anonymously. If, however, you have signed your suggestion form, you will, in addition to the acknowledgement made in the Notice Board, receive a letter from the Secretary stating that your suggestion has been received.
>
> "The Secretary will go through all suggestions and weed out those that do not qualify as suggestions or are such communications which should not have been placed in the box, e.g. complaints, grievances and requests of various kinds. No action will be taken on these. Within four days of opening of the boxes, the Secretary will have every suggestion copied in a register and have sufficient number of typed copies of all suggestions made, to circulate them among the members of the Suggestions Scheme Committee. The copies so circulated would not show the name of the suggester even when given on the original suggestion form. This will ensure impartial consideration of your suggestion.
>
> "The Chairman of the Suggestion Scheme Committee, on receipt of copies of the suggestions submitted, may, in his discretion,

co-opt one or more members to assist the Committee in considering any particular suggestion. One of the co-opted members would ordinarily be the head of the department to which the suggestion relates. If he thinks fit, the Chairman may obtain expert opinion on a particular suggestion.

"The Committee will meet once every month and consider the suggestions circulated among its members."

SCHEME B

"A suggester can remain anonymous, if he wants to do so. As a safeguard against unwanted disclosure of identity, a suggester has the option of directing letters from the committee to his department or to his home address in the town. If any point in a particular suggestion requires clarification, the Secretary personally meets the man concerned and helps him in amending it suitably. Suggestions pertaining to a particular department are sent to the departmental head concerned for investigation and comments, without disclosing the suggester's identity. All these measures preclude the possibility of prejudicial treatment, and the interests of suggester are well protected...."

"After getting replies from the heads of departments about the utility of the suggestions, the Secretary, in most cases, personally visits the place, investigates the suggestion, discusses it with the suggester and, if necessary, with the departmental head also, and makes his independent report. Minor suggestions, and those which may be dropped as impracticable at the request of suggesters themselves, are disposed of by the Secretary who gives satisfactory replies to the people concerned.

"Other suggestions are carefully processed, and data pertaining to them are placed in the form of notes before the members of the Suggestions Box Committee for study and discussion."

SCHEME C

"The boxes are opened **once a week by the representative of Chief Welfare Officer** and all the suggestions are sent to the Deputy Chief Industrial Engineer who is the Secretary of the Suggestions Committee.

'The Secretary records the suggestions, sends acknowledgements and processes the suggestions through **Heads of Departments.**"

SCHEME D

"If a member of the Committee happens to be the author of the suggestion under consideration, he shall not be present in the meeting. The other members will have the authority to co-opt another suitable member to take part in the deliberations of the meeting."

In laying down a procedure of the kind quoted above, one has to keep in mind that the permanent members of the suggestions committee are not always the best persons to judge the usefulness of all suggestions. At times, it may be necessary to co-opt on the Committee a person who is competent to give opinion on a technical problem. When suggestions committee members are technically competent, the procedure should allow them sufficient time to go through all aspects of the suggestions, carefully, before coming to the meeting. Lastly, before a suggestion is accepted for implementation, the views of the head of the department where it has to be implemented, should be made available to the Suggestions Committee, together with (if necessary) the views of other competent persons. In the course of investigations, we received interesting comments on the advisability of securing views of departmental heads. An experienced administrator of a suggestions scheme was of the opinion that "the task of finding out if the suggestion is likely to be a good one should be given to a specialised agency such as industrial engineering, research and development department, instead of to the heads of department." He added that "unfortunately, too often, departmental heads, instead of helping, put all kinds of obstruction." This administrator was not the only one to express such strong views. Another senior member of the middle management, who has long experience of the administration of suggestion schemes, expressed similar opinion in the following words:

> "At times, suggestions have to be forced down the throat of a departmental head who may be, for various reasons, reluctant to introduce the change."

It is quite clear from these comments that departmental heads are not always keen to cooperate, and their views, at times, may be biased. Therefore, while the departmental head's opinions on suggestions should be sought and given weight, it may be wrong, at the same time, to be guided solely by their views. The views of other competent agencies, such as industrial engineering department, research department, could also be obtained and placed before the committee.

Nature of Rewards

Rewards given for accepted suggestions could be financial or non-financial. Non-financial rewards include letters of appreciation, merit certificates and trophies. Out of the fifteen schemes covered by the survey, eleven offered financial rewards only, while the remaining four relied on both financial and non-financial rewards.

The relative importance of the two methods was made out with a good deal of clarity by an experienced administrator of a scheme:

> "Mere thanks and appreciation will not carry far. They have their place, but they should be supplemented by tangible financial rewards."

The administrator was not the only one to speak in this way. Secretaries of

Participants' Characteristics in Employee Suggestion Plan

In an empirical study of the characteristics of participants in an employee suggestion plan, Einar Hardin, of the Michigan State University, has compared nonparticipants, unawarded suggesters, and award recipients in a medium-sized insurance company that had recently installed an employee suggestion plan as to personal characteristics, own attitudes, and attitudes of supervisors.

Participants were found to be more concentrated in the age group 25-44, have greater labour force attachment and work experience, and place higher value on order and regularity than did the non-participants. No support was found for the common notions that suggesters are prone to gripe and to be hurt by rejection of suggestions or, by contrast, to be "company men". Nervous, undogmatic, unauthoritarian and fairly well-satisfied supervisors tended to have more suggesters among their subordinates than did other supervisors. This provides some support for the assertions of much management literature that the supervisors can greatly affect the success of a suggestion plan.

four schemes, which relied heavily on non-financial rewards for attracting suggestions, were of the opinion that response to their schemes would have been better if, in addition to certificates and letters, suggesters were given financial rewards.

The managements of the fifteen schemes recognised that it was necessary to offer financial rewards for suggestions accepted from non-supervisory personnel, but some of them did not consider it desirable to give cash rewards to supervisors and executives. Four managements were of the opinion that supervisors and executives, by virtue of their position, were expected to suggest improvements and, therefore, it was not fair to offer them additional cash compensation for discharging normal duties. They felt that the better way of recognising the contributions from this group of employees was to send them letters of appreciation or merit certificates. The majority of the managements did not subscribe to this view. They offered cash rewards for suggestions from supervisors and executives.

In one undertaking, included in the survey, the management did not offer cash rewards to supervisors, who resented being treated in the same way as workers. Under a separate plan for supervisors, the management offered to give presents to supervisors for useful suggestions. Presents could be very valuable for a suggestion of great significance. One suggester was given a Fountain Pen set; and we were told that management could give such gifts as camera, radio or even a car for a suggestion of corresponding value.

During the survey we came across only one undertaking where the management offered to give cash rewards to the immediate supervisor for suggestions accepted from an employee working under him. The supervisor, under this plan, was entitled to receive one fifth of the award given to the suggester, subject to a minimum of Rs. 5 and a maximum of Rs. 1,000.

The management of the 'clearly successful scheme' gave a tea party once a year. Winners of awards and senior officers were invited to the party. A 'challenge cup' was presented on the occasion to the Division where awards earned per one thousand employees were the highest. Valuable gifts were given to winners of high awards, and token presents were made to all award winners. Good publicity was given to the event and the scheme in general through posters, hoardings, house journals and other media.

We enquired to find out if winners of awards received preferential treatment in matters of promotion, training and special increment. We found that only in four organisations suggestions received were taken into consideration for special increments, and in one organisation contributions through suggestions scheme were counted in selecting employees for higher training. Three managements kept their policy in this respect confidential. One management made its policy known to employees.

Determining Rewards

Two out of the fifteen managements published for employees' information their method of calculating financial rewards. Two other managements worked out a method, in detail, but they kept it confidential. In the remaining eleven schemes, it was mentioned in the published rules that "rewards would be decided by the management at its discretion."

The management of the 'clearly successful scheme', worked out the method of calculation, in great detail, but kept it confidential. The administrator of the scheme is of the opinion that when a method, worked out thoroughly, is applied, consistently over a period of years, and the rewards are related to savings, the employees develop faith in the method itself without knowing exactly what it is.

It was stated in published rules of a scheme that employees below the rank of chargeman would be paid cash rewards

which is a sum of money roughly equivalent to the corresponding expected savings in the standard basic wages for six months. The published rules of another 5 schemes are as follows:

> "Wherever a correct assessment of the savings effected by the adoption of a suggestion can be made, the reward recommended is a maximum of 12½% of the annual savings, subject to a maximum of Rs. 10,000, if the savings are of a lasting nature and likely to benefit the Company for a number of years. If, however, a particular suggestion results in the saving of a lump sum only, the reward is fixed at 12½% with a maximum of Rs. 5,000. In cases where direct savings cannot be estimated, the Committee uses its discretion in evaluating them by taking into account the importance of the ideas, their originality, facilities that they offer and the extent of their application. The minimum reward for any accepted suggestion is Rs. 25. The Committee also takes into account the status of the person, the facilities that he had by way of education, his day-to-day job, the place where he worked, the assistance he could get from other people directly or indirectly, and so on."

... A suggestion scheme, to be successful, must be well-conceived, planned, and administered, and this job is more than sending out a circular and placement of well-painted boxes.

A successful scheme in Bombay, referred to earlier, calculates cash rewards in the following manner:

Savings	% award in case of the one-time saving	% award in case of recurring saving
First Rs. 5000	—	—
Next Rs. 5000	—	—
Next Rs. 5000	—	—
Balance	—	—

The management further stated that "in the case of intangible savings, awards would depend upon the extent of usefulness of the benefit, ingenuity, initiative, efforts involved, completeness of proposals submitted and the value of the benefit of the suggestion."

The management of three schemes made a point that decisions on rewards should not be taken without trying out suggestions. They realised that this would mean delay in taking decisions, but, at the same time, they appeared convinced that trying out a suggestion was the only fair way of determining the question of cash rewards:

> 'Departmental heads were apt to be careless, sometimes deliberately, in giving views on practicability of suggestions.

> Therefore, they were asked to try out first what was considered feasible, and then rewards were calculated on the basis of actual savings."

The 'clearly successful scheme' in the present survey never took decision on cash rewards for important suggestions without trying them out. The management accepted the delay involved in the process as inevitable. They did not even favour the idea of communicating provisional acceptance of a suggestion as they feared that subsequent change of opinion may shake employees' confidence in the fairness of management's decisions. In one undertaking, savings from suggestions were calculated in consultation with the concerned line manager and unanimity was obtained, as far as possible, in the course of joint investigation. When the line manager and the suggestion committee differed in the assessment of savings, the views of the line manager were forwarded to the top management together with the committee's recommendations. Six schemes laid down maximum rewards that could be paid for suggestions. For one scheme the amount was Rs. 50, for another Rs. 250, for the third Rs. 1,000, for the fourth and fifth Rs. 5,000 and for the sixth one Rs. 10,000. Nine schemes laid down no such limit. Eight of the fifteen schemes laid down a minimum for an accepted suggestion, varying between Rs. 10 and Rs. 30.

Communicating Decisions

A suggester is anxious to know the fate of his suggestion; hence every suggestion should be promptly acknowledged, in writing, to give the suggester a feeling that his suggestion is receiving attention. Processing of suggestions should take the least possible time. Once decisions are taken, no time should be wasted in communicating them.

When a suggestion is rejected, the suggester wishes to know the reason for rejection. It is important to tell the reason in order to satisfy him that he has been fairly dealt with. The explanation for rejection serves another purpose. It gives suggesters a better idea of the kind of suggestions that are likely to be accepted. Rejected suggestions require greater care in handling, and this is a task that is more difficult than replying to accepted suggestions. None of the managements in the survey took initiative to explain verbally the rejection of an idea. Handling of rejected suggestions might be an area where rethinking may help in view of the high percentage of rejected suggestions and the necessity of educating suggesters.

Implementation of Suggestions

When a suggestion is accepted, the employee gets a reward and this gives him satisfaction. The satisfaction is greater when the employee sees that his ideas have been implemented to improve the efficiency of the undertaking. However, if the suggestion is merely accepted and rewarded but not implemented, the suggester will have reason to feel dissatisfied and even slighted. Other employees, when they hear of the fate of such a useful suggestion, may fear that their ideas may meet a similar end. For the success of a scheme, it is important to ensure that suggestions accepted are implemented.

We found from the survey that none of the managements laid down a time-limit for implementation. One management was trying to establish a practice that all minor suggestions should be implemented within two weeks of their acceptance. Most managements felt that it was not practicable to lay down a time-limit for implementing major suggestions.

A possible solution may be to make an individual within the organisation responsible for follow up of accepted suggestions and for reporting back to the committee the results achieved. We noticed a good practice in one organisation. Immediately after a suggestion was accepted, proposed changes were recorded in production documents and processed by

the production and planning engineer who was the Secretary of the suggestions committee. The management of three schemes made it a point not to reward a suggestion till it was tried out and implemented.

For seven schemes included in the survey, the secretaries were responsible for follow up of accepted suggestions. For one scheme, the members of the suggestions committee divided the follow up work between themselves. In one organisation, *ad hoc* subcommittees with the Secretary and a few other members were formed for follow up of important suggestions. Two managements relied on departmental heads for follow up. At four places no thought was given to the problem.

Publicising the Results

Social recognition is one of the satisfactions employees derive from the acceptance of their ideas. Social recognition can come when others within and outside an organisation know that an employee's suggestion has been accepted. Wide publicity of a suggestion and its suggester is necessary to let others know of the important contribution of the individual, working as he may be in one corner of a big organisation. Publicity serves another purpose. When other employees come to know of a contribution made by a fellow employee, they also start feeling that possibly they too can contribute useful ideas.

The survey shows that all the managements of the schemes that accepted and awarded suggestions gave publicity to the suggesters. Again all of them, with two exceptions, gave publicity to accepted suggestions. The media of publicity used by the managements differed. All of them used house journals and notice boards. Some of them used a few of the media listed below:

1. Internal broadcasting system
2. Awards presentation ceremony
3. Display of suggester's photograph at prominent places within the undertaking.
4. Placing of suggesters' photograph at the Distinguished Workers' gallery.
5. Posters
6. Hoardings
7. Supervisors' newsletters
8. Monthly awards circular

The administrator of the clearly successful scheme and those that achieved a certain measure of success were unanimous in recognising the impact of effective publicity on suggesters and other employees. Some of them felt that the display of a suggester's photograph at a prominent place in the administrative building, factory or canteen for a period of two weeks or a month is a very effective way of giving recognition to the suggester and for encouraging other employees to come out with new ideas.

Keeping up Enthusiasm

An administrator of a scheme observed that a suggestions plan, by its very nature, has no permanent appeal. Enthusiasm is created in employees for the plan when suggestions start coming. Then, enthusiasm slowly disappears and a stage comes when some new measures have to be taken to rejuvenate the plan or else it dies for good. The administrator has worked out a plan to overcome this problem. The scheme in his company is known as 'Suggestions Scheme Competition'. The competition is held quarterly. It opens and closes on dates announced by the management. Every time the competition is opened, there is a renewed effort to whip up enthusiasm through the application of new publicity techniques. In addition, occasionally, slogans are printed on pay packets.

The managements of three schemes attempted to create fresh enthusiasm for

their plans through Best Suggesters' Contest, declaring bonus on rewards and arranging public functions for presentation of awards. The remaining eleven managements had no plan to keep up employees' enthusiasm for their schemes.

During visits to industrial undertakings in the course of normal duties, I noticed at some places shabby-looking boxes painted with the words 'Suggestion Box'. It was kept in an obscure corner beyond the reach of most employees. Enquiries revealed that these boxes once occupied prominent positions, but, then, suggestions did not pour in as anticipated, and a time came when some one thought that it made little difference whether the boxes occupied their positions of pride or they were thrown out. The boxes, however, could not be thrown out without going through a cumbersome administrative procedure, and, consequently, it was decided, as a temporary solution to the problem, to relegate them to a secondary place.

It is hoped that the material presented in this research piece may help managements to avoid their schemes suffering from the same fate. This analysis proves conclusively that a suggestions scheme, to be successful, must be well-conceived, planned and administered and this job is more than sending out a circular and placement of well-painted boxes.

JA PANAKAL

Management Research Officer
TISCO, Jamshedpur

Pre-requisites for Success of Suggestion System

AMONGST the many devices intended for promoting productive efficiency in a company, the suggestion system has a significant role to play. Broadly speaking, it is a formal device to seek and process employee suggestions, and to implement and reward accepted ones.

Though the aims and objectives of suggestion systems may differ largely, depending on the needs and requirements of particular companies, the broad purpose is "to foster better employee relations and to improve productive efficiency."

Experience and research, however, indicate that employee relations and productive efficiency in a company are influenced—directly or indirectly—by a variety of factors, both internal and external. As such it is rather difficut to isolate and precisely assess the contribution of the suggestion system in this area. Nevertheless, it helps to give employees a better sense of participation in the working of the company, and satisfies the need for a two-way communication between management and employees on matters of mutual interest. It does recognise and encourage the urge for self-expression.

A large company, which has successfully operated a suggestion system for the last two decades, is on record to say that the purpose of the suggestion scheme is:

(a) To encourage constructive thinking in every phase of the company's business within or without the sphere of an employee's work; and

(b) To develop closer relationship between employees and management.

The suggestion system has a fairly long history. It has assumed considerable importance in recent times for one reason or

another. A large number of companies install this system every year, with a certain number failing to achieve the desired objectives.

A close analysis shows that failures are mostly due to:

(1) inadequate publicity;

(2) tactless handling of suggestions;

(3) complicated procedures; and

(4) unattractive rewards.

These are, however, matters which can be set right, if there is a will to do so.

Difficulties

The basic factors affecting operation of suggestion schemes, however, cannot be easily isolated and remedied to make their operation effective. They may be broadly grouped as under:

(i) The attitude and support of management—top, middle and shop floor—to the suggestion system.

(ii) Lag between the expectations of management and the actual accomplishments of the system.

(iii) Limitations—direct or indirect—under which the system operates.

(iv) Employee-commitment to the system.

(v) State of human relations in the company.

Despite these difficulties, many companies have a proud list of employee suggestions which have contributed to improved efficiency and employee relations.

For instance, in a steel plant when the motor coupling of the Blooming Mill had broken and no replacement was readily available, an employee came forward with a suggestion to get the broken coupling joined by special welding. The suggestion, which worked well, averted the closure of the Mill for about 10-12 days, the period normally taken to manufacture the coupling.

Again, in the very same company, an unlettered mason offered a suggestion to modify the design of the furnace-door in the Steel Melting Shop in order to keep the brick lining in position even when the bottom flange got burnt. The suggestion when implemented increased the life span of the furnace door at least three times: this means considerable economies in operation in terms of continuous output.

These and many other instances highlight the results obtained through the creation of a suitable climate in a company wherein employees—however humble they may be—are given the necessary encouragement and assistance to offer suggestions on company problems.

Realising the importance of the suggestion system, many companies are taking more and more interest in this area. The Union Government has also instituted "Shram Vir National Awards" giving added recognition to industrial workers who make outstanding suggestions. There is still room for improvement. A more dynamic approach, especially during India Productivity Year-1966, can yield better results.

Task Ahead

The present foreign exchange crisis has posed a variety of problems. Amongst the many remedies suggested, the most significant is import substitution. For developing indigenous substitutes for maintenance and development work in companies, the concerned employees will have to be motivated to think out suggestions based on their experience. In this context an effective suggestion system to seek, obtain, process and reward employee suggestions assumes importance. What is required is the creation of a congenial environment at work situations to stimulate employee suggestions. This means making the employee know the significance and urgency of the programme; and including in the programme, where possible,

a system of goal setting and purposeful performance review at regular intervals.

In the implementation of such a comprehensive and dynamic programme, the following aspects need consideration:

(a) Issue of a policy statement incorporating the need, significance and objective of the suggestion system, pledging full and continued management support thereto;

(b) Wide publicity to the policy statement giving details of the system such as scope, eligibility and schedule of awards;

(c) Streamlining the processing of suggestions with a view to establishing a reputation for integrity and efficiency;

(d) Making employees know the areas where their suggestions are most needed;

(e) Fixation of certain targets for employee suggestions and review of performance at regular intervals;

(f) Provision of specialised services for employees needing assistance to develop their ideas and suggestions;

(g) Special privileges or facilities, and publicity to winners of suggestion awards.

For the effective working of a suggestion system, it is essential to understand that one of the pre-requisites is the existence of good human relations within the company, in the absence of which no system will tick. Quick processing of suggestions and the implementation of accepted ones alone will convince employees of the sincerity of management and enthuse them to offer more and more suggestions. Quick recognition, of course, goes without saying.

Maintaining Employee Interest

Many a suggestion system experiences difficulty in sustaining employee interest. One of the methods that is being tried with some success, is the institution of periodic contests or the celebration of a "Suggestion Month" once a year or so.

Another method is to pose a company problem in detail to the concerned employees, and to invite their suggestions. For instance, one company sent the following appeal to its employees:

> "Our lubricant cost per month is Rs. 4,500. We think it is too high. Can you say how it can be cut? We shall pay you not just the customary 10%, but 25% of what your suggestion saves during the next year."

This appeal yielded the desired results.

It should, however, be remembered that continued interest cannot be ensured by meaningless slogans, but only through meaningful action.

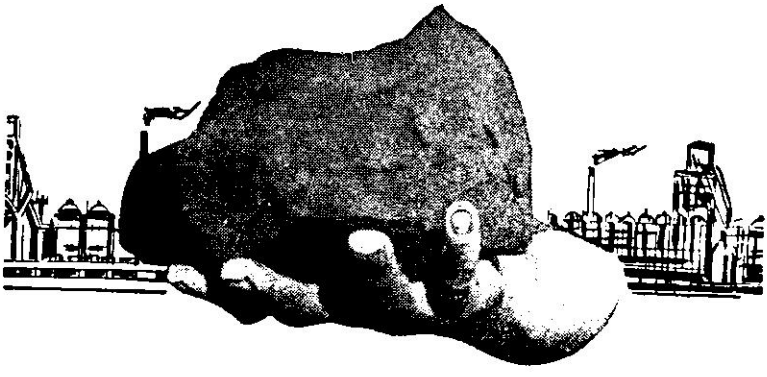
Need for Periodic Review

When a system operates for some time, there is a chance of complacency setting in. The suggestion system is not an exception to this rule. It is, therefore, necessary to review at regular intervals whether or not the suggestion system is achieving its objectives, especially when our progress is linked with our ability to invent, innovate and conserve.

To determine the effectiveness of the system, among many methods, yearly figures of employee suggestions—accepted or otherwise—per 100 employees or some such index may prove useful. It would also be worthwhile working out the ratio of administrative cost to the annual savings effected through the suggestion system. Inter-firm comparisons in this area will be yet another method to determine the relative effectiveness of the system. These comparisons can throw up some significant information which may be useful for the effective operation of the suggestion system.

Such an operation, in the present context, will satisfy the growing needs of each company and in that process help to bring about better employee satisfaction. Any effort in this direction is, therefore, a worthwhile effort. It is time for action.

INDIAN IRON ORE PROVIDES THE MUSCLES AND SINEWS OF INDUSTRY ALL OVER THE WORLD



India's hard-lumpy ore has a high iron content ranging from 62% to 69% FE, with impurities of Sillica and aluminium in a proportion that facilitates slag-making. This iron ore is in universal demand for blast-furnaces. The quantity of India's quality ore bought by various countries in 1964 is shown below.

Country	Lakh Tonnes
Japan	66.26
WESTERN EUROPE	
Italy	2.68
Germany	7.47
Others	3.42
EASTERN EUROPE	
Czechoslovakia	7.51
Rumania	5.25
Poland	2.70
Yugoslavia	3.53
Hungary	0.60
East Germany	0.48
Grand Total	99.82

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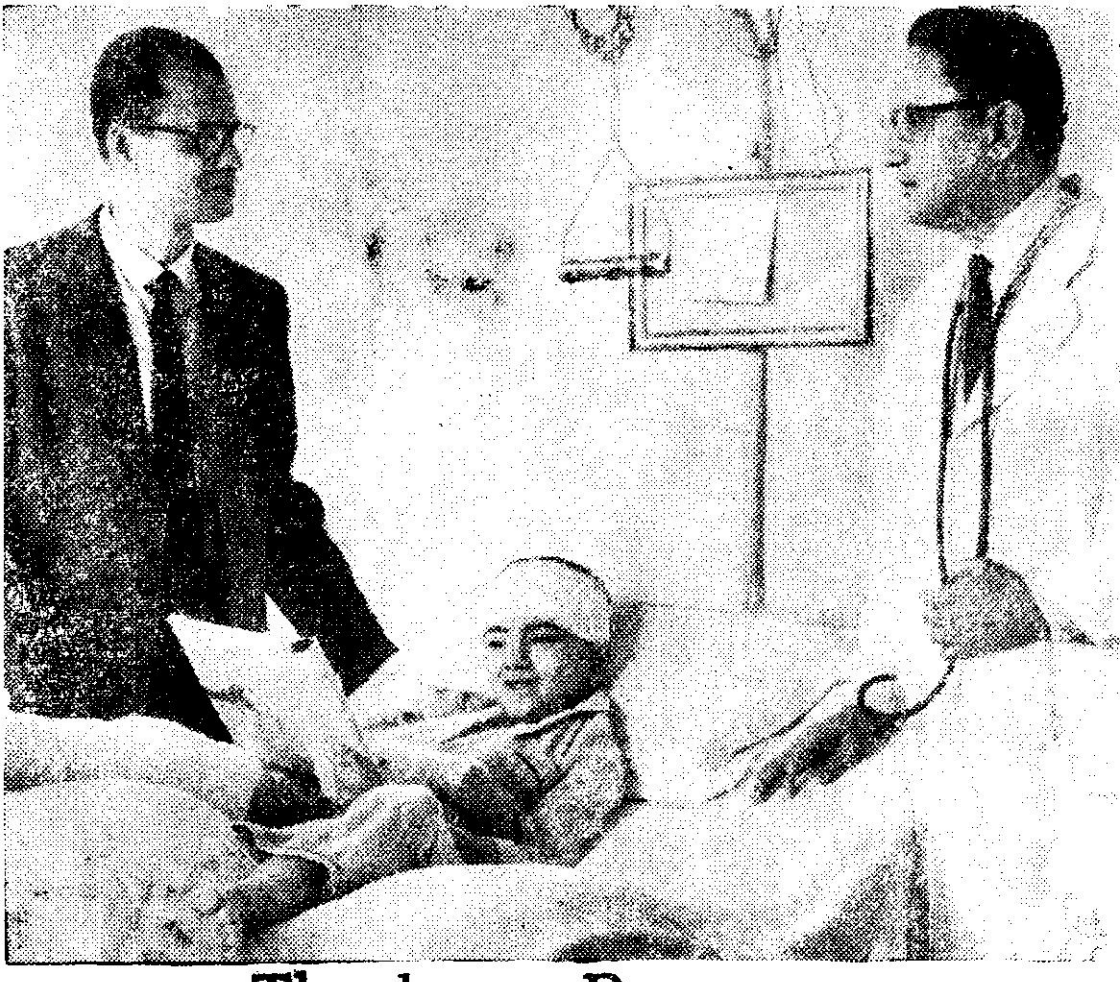

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A few years ago it might have been fatal. Today antibiotics such as Penicillin are successfully battling infection and disease in every corner of the country.

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At its Chemicals and Plastics Plant on Trombay Island, Union Carbide makes essential chemicals for many of India's industries. Acetic Acid, Butyl Alcohol, Butyl Acetate, Ethyl Acetate manufactured here are used not only for antibiotics and pharmaceuticals but serve as solvents and intermediates in the manufacture and processing of a wide range of products —from paints and lacquers to photographic films, textiles and dyestuffs.

Union Carbide India's Chemicals and Plas Plant is but one seed of industry that the Co has sown in India. The variety and value of pro made by Union Carbide India today show h resources and know-how of a world-wide orga tion can serve the needs of a developing econo

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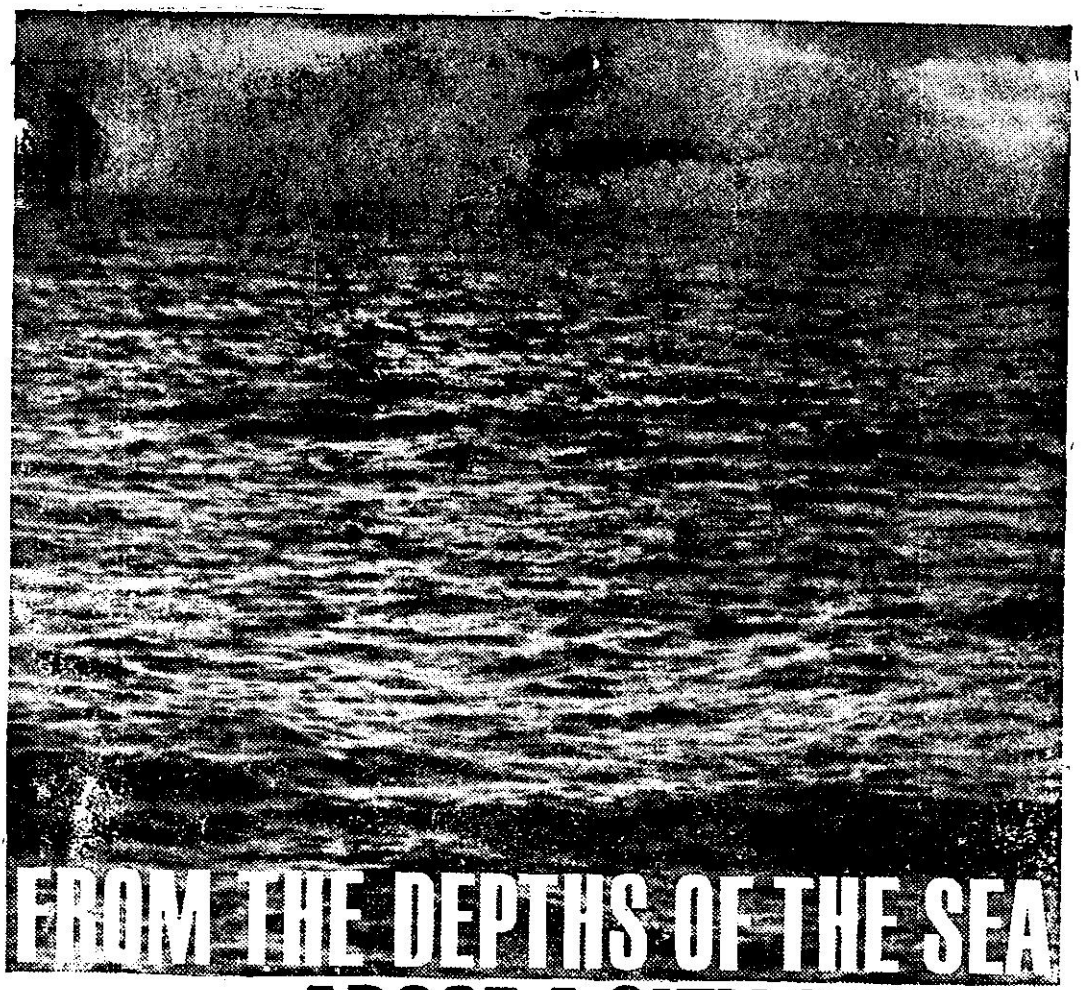

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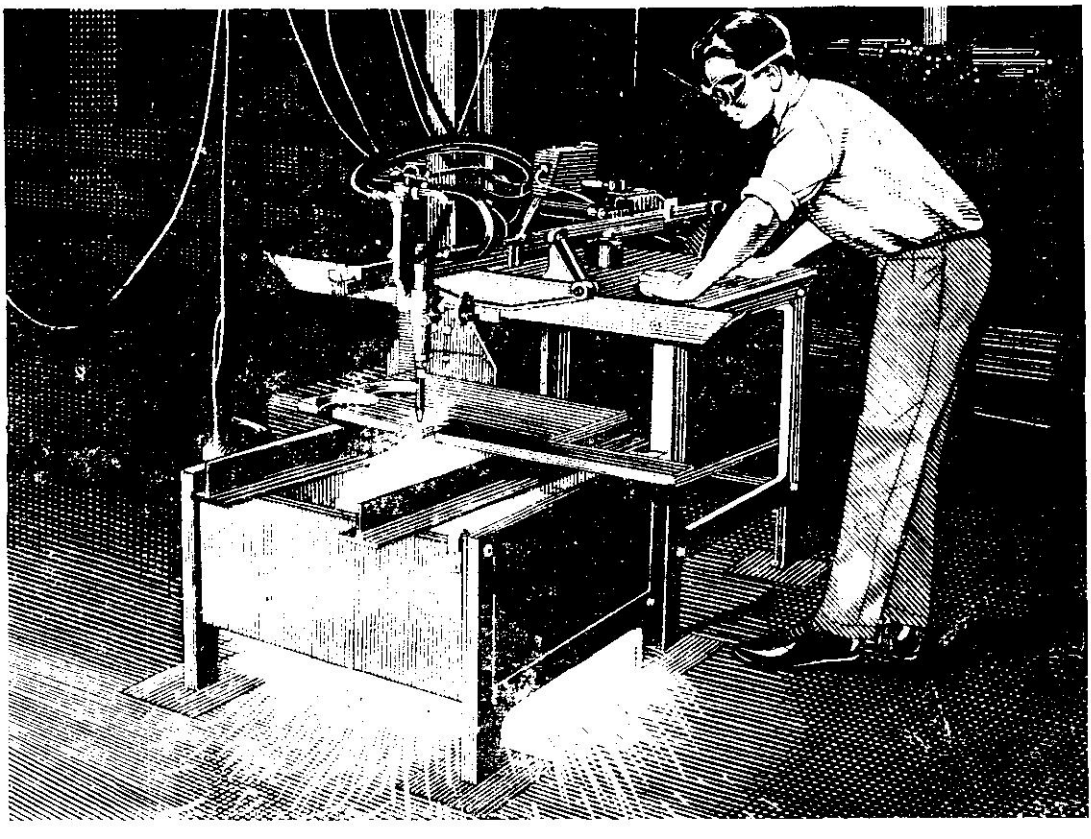

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Suggestion System

Determinants, Procedures and Pitfalls

WALKING DOWN the aisles in large industrial plants in Western countries, one is bound to be struck with repetitious installation of bulletin boards, wooden structures after the manner of mailboxes, and receptacles doling out blank forms. These outfits bear the inciption 'SUGGESTIONS' in bold letters; and so ubiquitous, indeed, are they that in any sizable industrial establishment you may observe them at each corner, near each concourse of men and machines, besides refreshment automats, on the walls of the parking lots, and at each of the main gates of entry or exit. They are about what is called the 'Suggestion System': a device for the utilisation of workmen's ideas for the betterment of company operations.

A Suggestion System may be defined as a formal, institutionalised procedure established by employers to solicit ideas from employees; to provide the machinery for the appraisal, acceptance or rejection of such ideas; and, if accepted, to ensure use of the ideas. The incentives offered to the suggester are primarily monetary in nature, though supplemented by public recognition in many cases. Usually, suggestions to be rewarded have a well-defined compass of acceptability, and include concrete, practicable proposals to improve work methods, procedures, mechanical equipment, and operations. Many systems also admit proposals covering industrial safety, working environment and even customer relations.

The Suggestion System is really an extension of democracy in the sphere of economic activities. The first Suggestion Scheme was introduced in 1880 at Stamford, Connecticut, USA, at the plant of Yale and

Browne Manufacturing Company. This was followed by such a number of notable cases as National Cash Register, 1894; Public Service, 1915; and Firestone Tyre, 1918. In 1912 the US Congress itself authorised periodic offers of special cash awards to civilian employees submitting useful suggestions in the Ordnance Department, to which was added the Post Office Department in 1913. Formal legislation on the subject came with the enactment of the US Public Law 600, in which suggestion plans for governmental agencies in general were provided for.

Modest Start

Like any other social innovation, the suggestion system had a modest start: it progressed at a snail's pace for nearly four decades—so that in 1921 there were no more than 21 suggestion plans in operation in the USA. At the end of World War I, however, there was an upswing in the popularity of the system so much so that 316 plans were working in 1927. Yet, 20 more years were to elapse for the system to attain something like a mass character, and it was only during and after World War II that a really tremendous upsurge of activity took place. The result is that today more than 20,000 suggestion plans are in operation all the world over, in government undertakings as well as in private industries.

We may now consider its *raison d'etre*. The suggestion system represents no less than an extension of the pervasive democratic sentiment in the area of industrial management. In step with progressive personnel policy, it discounts the authoritarian approach based on what are called procrustean methods. It does not countenance the theory that masses of people can be dragooned into real, genuine cooperation for any sustained length of time. In contradistinction to the attitude of the industrial tycoon who believes that he and his colleagues in management have a hegemony over creative ideas, the suggestion system is based on the concept that such traits as ingenuity, originality, and imaginativeness are diffused widely, though, of course, to varying degrees, amongst the populace.

More than that, it takes off from the premise that it is the man on the job who, through his long experience of the intricacies, potentialities and exigencies of the situation, is often in the most favourable position to suggest practicable and realistic improvements. Humble and humane in its origin and possessing a social orientation the system allows every human being the capacity of being pregnant with creative potential which it seeks to actualise through a vigorous use of incentives and motivations, thus bringing to the surface the dormant, quiescent, and hitherto unexerted inventive endowments of the work force.

The basic objective of the Suggestion System is twofold—better employee relations, and improved methods of production. The former, therefore, is the morale aspect; the other relates to cost reduction. There is a cleavage of opinion, however, as to the relative importance of these two primary goals, and a lot of polemical argument has been expended on the issue. Yet, to my mind, there does not seem to be any inherent antagonism between the two. Any effective increases in productivity are possible only through labour-management cooperation. There is no gainsaying that harmonious labour relations in an industrial undertaking are unmistakably translatable in financial terms inasmuch as, directly, they reduce the eventual possibility of strikes and lockouts, and, indirectly, as they generate the requisite tone and atmosphere for cooperative effort, enhance the general will-to-achieve, and augment on the part of everyone the desirability of doing more than the barest minimum.

Be that as it may, however, many more advantages of the suggestion system, besides the above two, have been observed, and some of them may be listed as follows:

1. Attention of the management is drawn to those employees who have

exceptional ability, and are, therefore, suitable for promotion to supervisory grades.

2. Public relations are improved by showing to the customers that the employer and the employee are working together for better products and service.

3. By permitting employees to participate in managerial functions, business is democratised.

In simpler terms, this is tantamount to saying that the Suggestion System encourages everyone to think constructively about his work; and ideas are drawn from the widest range of possible sources. Every worker gets the chance to benefit himself directly through rewards, if only he applies his mind to the job he is doing. Even those who do not offer suggestions stand to gain indirectly, through improvements made as a result of the suggestions of others. It is obvious that basic to the advocacy of the suggestion system as a means of improving methods of production is the thought: "the man closest to the job is the man who knows best how to improve that job." He has been doing the job for some time and he is well aware of the snags and predicaments encountered by him in performing it. If he thinks about his work at all, he may see various ways of overcoming them. If he looks further, he may notice things not directly under his control, but which affect his job and make it more difficult than it need be. The suggestion system, therefore, is an arrangement for upward communication. Through the formalisation of its procedures, its physical facilities, and its incentives of cash rewards and public recognition, it seeks to harness the creativity and cooperation of all the employees for the inclusive benefit of the company.

If, then, we concede the importance and utility of the suggestion system, we may go on to consider the various steps required for the installation of the system. These, generally, can be divided into two categories: 1) Policy, 2) mechanics. We shall examine about policy issues first.

(a) *Top Management's Interest:* The foremost requirement in this regard is a genuine, deeply-ingrained, and long-sustained interest in the institution, and continuance of the system by the higher echelons of the management hierarchy. A nonchalant, lackadaisical attitude on the part of top management is bound to kill the plan even before it is hatched. It has often been observed that the companies which started the scheme just because it was 'fashionable' to do so, with merely a wishy-washy, milk-and-water, emasculated concern in its success ensured that the death-knell of the scheme would be sounded at the soonest. One of the measures for guaranteeing the success of the scheme, therefore, is for the company high-ups to possess profound, intellect-based enthusiasm for the plan. Not only that, they need to spread the contagion amongst the rank-and-file workers, as well as the various levels of middle management and supervisory personnel, through such media as conferences and meetings, newsletters, bulletin boards, personal contacts, and active participation in the activities connected with the scheme.

(b) *Definition of 'Suggestion':* The next basic issue to be settled concerns the definition of what a suggestion is; for there are suggestions and suggestions. Some are tangible, resulting in calculable savings in materials or labour costs, or both; others are intangibles, relating, for example, to safety, plant housekeeping, working conditions, quality of production, etc. There are yet others which can only be termed as gripes and grievances. The scope and admissibility of suggestions should, therefore, be carefully identified, appropriately hemmed in, and widely publicised, to obviate subsequent heartburning and squabbles in the matter.

(c) *Who is eligible:* The third question of policy relates to determination

of the categories of employees. eligible for awards. The basic controversy arises from whether or not to reward an employee for an idea which results from the normal duties and responsibilities of his position. For example, should personnel belonging to research and development, organisation and methods, and industrial engineering functions be rewarded under the suggestion system when they are paid normally for making innovatory changes? Another ticklish question under this head is whether foremen should or should not be eligible for rewards; and, if eligible, should they be allowed to submit suggestions relating to their own departments, or only to those not directly related to them?

. . . The suggestion system bristles with a multiplicity of pitfalls and snags . . . We must shed the notion that it is only the employer and the manager who has a monopoly of bright and useful ideas . . .

(d) *Should identity be disclosed?* The fourth policy issue poses the question whether the identity of the suggester should be disclosed to those entrusted with the task of appraising his suggestion, and determining the nature and amount of the award. The secrecy can be complete, partial or non-existent. Each of these three alternatives has its respective advantages and disadvantages, and a company is required to take a definite position on the issue, based on its own specific circumstances.

(e) *Rewards:* The final consideration in the category of policy matters is the quantum as well as the maximal and minimal limits, if any, of the awardable sums, which are usually in cash. Generally, these awards are calculated as a percentage of the first year's savings, and may range from 10% to as much as 50, 70, and, in certain rare instances, even 100%. It may also, perhaps, be desirable to set limits to the maximum award any suggestion can win. Similarly, a minimal limit, is fixed for suggestions which, though trivial, are nevertheless useful.

Having discussed briefly some of the policy matters which must form part of a carefully planned pre-launching series of preparations, we may now consider the mechanics or procedural steps necessary for the operation of the suggestion system.

(i) *Inauguration:* The inauguration of the scheme is a major event which must be properly celebrated. A good "kick off" with attendant built-up and follow-up publicity helps to impress employees with the seriousness and permanence of the project. Attractive brochures and handouts may be issued to employees explaining the suggestion plans and answering questions which they are likely to raise. Information about rules and regulations for eligibility of awards, types of suggestions that are accep-

table, procedures for submitting suggestions, methods of determining awards, etc., is also provided at this time.

(ii) *Entering the suggestions:* Practically all Suggestion Systems require that suggestions be submitted in writing, sealed in an envelope and addressed to the proper person—generally the Secretary or Administrator of the scheme. For this purpose, usually suggestion boxes are provided at convenient and significant locations in the plant. A suggestion box often consists of a combination bulletin board, slotted box with a lock attached to it, and a pocket for supplies of blank suggestion forms and envelopes. It serves several purposes—as a dispenser of suggestion blanks, a focus of suggestion advertising, a mail box, and as physical evidence of management's announced intention of receiving and considering employee suggestions.

However, there are in use other methods also for entering the suggestions, besides the suggestion box. The suggester sometimes

Workers' Suggestion Leads to Saving of 28,000 Dollars

"One mill in the USA decided to change over from the use of artificial gas to the use of natural gas in their soak pits, but they were worried about the costs. They consulted competent engineers who said that it would cost about 30,000 dollars to change these pits, and that it will take a long time. But this company was operating on the principles that I have discussed elsewhere, and under these conditions the people know a lot about what was going on and the worker down to the pit knew that it would cost the company something like 30,000 dollars to do this job. One of the workers offered that if he was given the bricks, pipes, etc., he could change one of them, and it would not cost more than 400 to 500 dollars.

"In the ordinary situation that kind of idea from an uneducated person would be thrown out of the window, but this company operated on different principles. They got their engineers, and they said '... the man has an idea. After all it is not going to cost us much. We can try.' And the man did the job, and the total cost was 2,000 dollars, instead of 30,000 dollars. The idea came from an ordinary, simple, uneducated worker. These things can be applied to hundreds and thousands of people only if we have the people interested in using their creative energy."—Douglas McGregor.

sends the suggestion through the company mail, the national mail, or hands it over directly to the foreman, or perhaps to the suggestion secretary.

(iii) *The Suggestion Committee:* One of the fundamental features of any formal employee suggestion system is the appraisal of employees' ideas by a combination of opinions of a number of competent persons who, as a group, represent a broad background and diversity of practical experience in the business. Such a group is usually known as the Suggestion Committee, but has also been diversely described as Award Commmittee, Coin-Your Ideas Committee, etc. It consists usually of some or more of the following executives: Plant Engineer, Superintendent of Engineering, Personnel Manager, Production Superintendent, Methods Engineers, Training Director, etc.

In order, however, to do the spadework and for facilitating the work of the suggestion committee, most companies employ a suggestion secreary who is in full charge of the administration and coordination of the suggestion programme. The suggestion secretary thus becomes a pivotal personality in the success or failure of a plan. A good secretary must possess enthusiasm for his programme, tact with people, and a sound knowledge of plant operations.

(iv) *Adoption and Rejections:* Skilful personal dealings are a *sine qua non* for the promotion of the suggestion plan. Personal contacts with a suggester may occur once or several times in the course of processing a suggestion. But, regardless of the investigative procedure, sooner or later a suggester must be informed whether or not his suggestion is to be adopted. It is at this crucial time, however, that the suggestion programme may be bolstered or weakened.

There is, of course, plain sailing in case the suggestion is adopted and the suggester rewarded. It is the manipulation of rejections that presents a real challenge to management. It needs to be done in such a manner that the unsuccessful suggester will not lose interest in the possibility of eventually becoming an award winner. It is felt, therefore, that the best way to handle rejections is to talk individually to the unsuccessful suggester.

(v) *Award Presentation:* Nothing conduces to the success of the scheme better than adequate quanta of awards, and the mode of their presentation. We have already touched upon the former question. While 10% of the total savings—in labour and materials—as a result of the submitted suggestion seems to have become the universal mean, some companies have begun to regard this proportion as inadequate, and have gone up to 25, 40 or 50%.

Effect on Morale

In regard to the physical presentation of the award, experience shows that making a ritual of it pays good dividends. At a suitable ceremony held at the plant premises, the immediate supervisor of the suggester presents the cheque after a higher executive expresses appreciation of, and offers congratulations to *both* the suggester and his foreman. The suggestion secretary is usually present. The effect on morale of an on-the-job ceremony and the personal touch of having the immediate supervisor hand over the cheque increase the returns on the suggestion system. If possible, the ceremony should be recorded by a camera, and adequate publicity given to it in the company paper.

From the foregoing description, it might appear, to some, that the suggestion system, once launched, would continue to run easily on its own steam. Yet nothing is farther from the truth. Running a suggestion system is no campus lark. Many managements have only burnt their fingers with them, and a number of systems never got out of the swaddling bands. Others prospered for a few years, then languished, and now are dead as butterflies on pins in a museum. In fact, the mortality rate of these schemes is so inordinately high that one wonders how the viable schemes manage

to continue into existence. Indeed, the system bristles with a multiplicity of pitfalls and snags. And it is a pity that once a particular scheme goes under, there is hardly an off chance to retrieve it, no matter how many tricks in the catalogue one may employ.

In the preceeding pages, I have endeavoured to present an outline of the concept and mechanics of the suggestion system, with a few brush strokes added here and there to make the picture realistic. For reasons of space, I have not touched upon certain critical points. Of these, the role of the superviser as an administrator of the plan, the demeanour of the workers' union in relation to it, and the relationship of the system to other connected activities, functions and operating conditions are some pre-eminent instances. In fact, many a scheme, otherwise honestly conceived and diligently executed, have floundered because of one of these factors. Solace, however, can legitimately be derived from the observation that the number of schemes in operation today is a consequence of the proliferation of the system beyond the expectations of its originators. Nor can we be oblivious of those illustrious adherents to the system who have happily and profitably continued it for over half a century now. It is, however, better to be warned and then to be forearmed.

Racing against time, we are today in a state of betwixt and between, in the midst of a shift of economic gears, as it were, where even the minutest strategy, the simplest make-weight, may tip the scales either in our favour or against us. Having to make up the backlog of arrested development and with our external resources failing us every day, we have recently been made increasingly perceptive of our need to develop the competence of lifting ourselves by our own bootstraps.

In such a situation, while we lack so many other essential ingredients of progress, viz., capital, mechanical equipment, specialised knowhow, and the like, we do not have to wait on anyone for the maximum utilisation of at least the cooperativeness, imagination and creativity of our people. All that we need to do is to provide them with the institution that would give them the opportunity and the incentive to express themselves, for their own good as well as the good of the industry and the nation. We must shed the notion that it is only the employer and the manager who has a monopoly of bright and useful ideas. If we do so we should also be conforming to the tenets of the highest ethic of our land which regards all human beings as manifestations of the same celestial Spirit, sparks of a common divine fire, and drops in the one universal ocean of humanity.

. . . The Suggestion Scheme should be designed to increase operating efficiency; result in savings to the organisation in money, time, human effort, materials, and utilities; result in substituting indigenous materials, spare parts or equipment in place of similar imported items, etc.

Aims and Objectives of HIL's Scheme

HINDUSTAN INSECTICIDES, an undertaking in the public sector, has, under its consideration, the introduction of a Suggestion Scheme, with a view to draw upon the large reservoir of talent of its many employees who have contributed so significantly to the success of this important public concern. The management believes that the adoption of this scheme will contribute towards making the Hindustan Insecticides a more productive firm, and will also maximise its contribution to the public good, as also the welfare of its own employees. This article contains details of the tentative scheme proposed by the company.

The objectives of the suggestion scheme are: to harness the initiative, imagination and enthusiasm of employees for all-round improvement of the factory by taking advantage of their ideas; to give the employees an opportunity for developing their latent creative powers; to provide an organised method by which the employees may submit their suggestions; to reward employees submitting adoptable suggestions, to encourage more suggestions, and to recognise and compensate the creative efforts of individuals; and to improve human relations and the morale of the individual employee and inculcate in them a sense of participation.

The scheme generally invites all types of suggestions which will benefit the organisation or its employees. More specifically

they should be designed to increase operating efficiency; result in savings to the organisation in money, time, human effort, materials, and utilities; result in substituting indigenous material, spare parts or equipment in place of similar imported items; improve products, processes, equipment and tools; improve methods and procedures and make them more effective, easier, and more interesting; provide safer, healthier and pleasant working conditions; improve employee-employer relations; and provide better and more effective welfare measures.

While suggestions on the lines indicated above will be most welcome, the company will not entertain suggestions in respect of Government policies and other activities beyond the control of the organisation and the management; ideas, already patented; suggestions which are duplicates of those submitted earlier and have been considered; matters or ideas that are being considered by management on its own or have been or are being implemented through management decisions; complaints or grievances; and suggestions which merely point out the faults or criticise the existing conditions, without suggesting concrete alternatives.

It is inherent in the scheme that a suggestion should be identifiable with its author. Suggestions should not, therefore, be anonymous. Every suggester must write his name, number, designation and department, on the suggestion.

Employees are free to make suggestions individually or jointly. When a suggestion is made jointly by two or more employees, the reward given (if any) will be equally shared.

Employees will be free to consult their supervisors to put their suggestions in proper shape. If any assistance is required in drafting the suggestion or preparing drawings, etc., it will be provided by the supervisor at his discretion. The suggesters will also be free to consult any person they like, including their colleagues, superior officers and other employees of the company in developing their suggestions. The suggestions will, however, be considered only in the names of those whose particulars are recorded on the suggestion.

Repeat Suggestions

Repeat suggestions will be entertained provided they are submitted at least six months after the original suggestion. This is allowed on the basis that, in course of time circumstances might change, making the old suggestion useful to the organisation.

Even if a repeat suggestion is not made and the old suggestion gets implemented through management decision in due course, the giver of the original suggestion will be entitled to a suitable reward depending on the nature and value of the suggestion.

A duplicate suggestion is one which is a duplicate of, or similar to, or identical to, the suggestion made earlier by a different person, irrespective of whether the two were conceived independently, simultaneously, or otherwise. For the purpose of the scheme the suggestion which is dated earlier will be considered as the original, and all other identical suggestions as its duplicates. When two or more identical suggestions are submitted on the same date, the suggestion will be considered as having as many authors, and all of them will share the reward, if any. The value of the reward will, however, not be increased, but the same will be split equally.

The scheme is primarily meant for the employees of the Hindustan Insecticides. However, suggestions from non-employees will also be welcome, but will be considered separately. All employees of the Hindustan Insecticides are eligible for submitting their suggestions. The suggestions should, however, recommend actions beyond the competency of suggester's own duties and responsibilities.

In order to take advantage of the ideas of all those in a position to contribute to

our efficient working, the scheme also invites suggestions from our well-wishers, visitors, contractors, suppliers, customers, etc. These suggestions will also be governed by the rules and procedures contained in this scheme.

Administration of Scheme

The operation of the suggestion scheme at each factory will be the responsibility of the development department at each of the factories of the company. This will include administration of the policy, procedures and mechanics of the scheme; promotion and popularisation of the scheme, including measures for encouraging more and better ideas; collection of suggestions; processing of suggestions; administration of suggestion awards; follow up of adopted suggestions; handling grievances of suggesters; and keeping records and statistics of the suggestions and the suggesters.

The suggestion scheme at each factory will operate under the supervision of the works manager who will—i) supervise the work of the head of the suggestion scheme; ii) make recommendations to the Managing Director on the value of a suggestion and the nature and the amount of the award. The final decision regarding acceptance of and reward for, a suggestion would rest with the managing director); iii) arbitrate differences; and iv) evaluate and control the performance of the scheme.

All suggestions which are accepted for implementation will be rewarded. Suggestions whose feasibility and economic benefits are obvious will be rewarded immediately on their acceptance. The suggestions, whose feasibility or economic benefits can be determined only after trial, will be rewarded after the suggestion has been successfully tried.

In the initial stage, the rewards will be *ad hoc*, and will be of the nature of advance increments, cash awards, letters of appreciation, and recognition through publicity. In due course necessary rules will be laid down for determining the nature and the value of awards for the various types of suggestions. In general, the basis will be the net benefit of the suggestion to the organisation.

The decision of the management regarding the eligibility of the suggester, acceptance or rejection of the suggestions, admissibility or otherwise of the reward, and the amount of the reward, has necessarily to be final, as there is no practical alternative to this arrangement. In all human affairs, someone has to say the last word.

The management has, therefore, to reserve the right to amend or withdraw any part or whole of the scheme, or expand or shrink its coverage. It also reserves the right to patent, or exploit in any manner it likes, the suggestions given under the scheme. Once a suggestion is given, it becomes the property of the Hindustan Insecticides Ltd.

Suggestions may be handwritten or typed on paper, written in English, or, if the employee is not familiar with English, in his/her mother tongue. Suggestions should be carefully prepared so as to be legible and convenient to examine. The merit of the suggestion also depends upon the ease with which it communicates the idea, and convinces the reader. The following points may be noted in writing out suggestions:

i) One sheet of paper should contain only one suggestion. Separate sheets should be used for different suggestions.

ii) Each suggestion application should contain the name, number, designation, and department of the person making the suggestion, and the date of submission.

iii) The suggestion application should explain precisely—

a) What is the suggestion?

b) Why is it being made?

c) Where does it apply?

d) When could it be adopted?

e) How should it be adopted or implemented?

f) What benefits are expected from it?

In writing the suggestions a suggester may take the help of his chargeman, foreman, shift engineer, head of the section, and any supervisor or officer of HIL.

A suggestion can be sent directly to the Development Department at the factory concerned, or dropped in any of the suggestion

Suggestion Behaviour

Studies of Inter-personal Differences

Inter-personal differences in suggestion behaviour offer an interesting field of study. In fact, published findings on the subject are very fragmentary, and are based on undisclosed data. Mr Einar Hardin, in a paper, refers to a few suggestions made by Dickinson, Villers, and a few others in recent years, and says—

"In a study by Dickinson (1932), many good suggestions were apparently obtained from native-born, well-educated workers holding jobs in which a multiplicity of products were made, and women employees were said to have few suggestions and rewards, but little supporting evidence was presented. Current and past office holders in two Finnish union locals had higher suggestion rates than rank-and-file workers, but were more critical of the management of the suggestion plan as well as other company activities (Seppanen, 1958).

"An unpublished study by Villers (Ryder, 1959) is said to show that suggestions and complaints came primarily from the same persons. No supporting data were presented, and it was not clear whether the complaints expressed general frustration and dissatisfaction or referred to inefficiencies and poor working conditions for which the complainants had simply not found remedies to suggest.

"Comparing award recipients, unawarded suggesters, and nonparticipants in an Australian company, Holmes and White (1953) found that both classes of suggesters knew more about the suggestion plan than did the nonparticipants, and that the unrewarded suggesters were more critical of the size of the awards and of the fairness of the suggestion plan. A similar report was given by Poidevin (1957)." Carr (1959-60) reported that many employees were skeptical about the fairness and competence of the evaluators of **suggestions."**

boxes, placed at several points in each of the factories.

Suggestion boxes will be locked, and the keys kept in the Development Department at the factories. They will be opened once a month by an officer of the Development Department, and the suggestion applications collected. The company has worked out a detailed procedure for acknowledging suggestions, for processing them, and for determining and communicating their eligibility or otherwise.

All acceptable suggestions will be considered once a month by the respective works managers, who would, with the assistance of the Development Department, study the suggestions, and make investigations regarding their need, feasibility, and claimed benefits. It will also make economic evaluation of the suggestions.

After its investigation, the works manager will record a brief summary of his findings on the 'suggestion processing form,' and make his recommendation to the managing director.

The Managing Director will decide whether to accept the suggestion for implementation, or trial, or further development by the organisation, or to reject it. The accepted suggestions will be rewarded. For this purpose, it will be first decided whether an award will be made right away or after trials. If it is decided to give the award right away, the nature and value of the award will be determined. Since the decisions will be by the Managing Director himself, they will be final and binding on all concerned. The decision will be recorded on the 'suggestion processing form' itself.

The success and usefulness of the scheme entirely depends upon the action which the management at the concerned level takes in implementing the suggestion or otherwise making use of the idea contained in it. The scheme, therefore, envisages that the decision taken on the suggestions shall be implemented by the concerned executives. Implementation will be their responsibility. If it is not possible to implement, they will record the reasons thereof, and bring it to the notice of the works manager, and through him to the notice of the Managing Director.

Actions on the accepted suggestions will be of the following six types as decided by the Managing Director:

i) **Immediate Implementation:** Suggestions whose economic benefits or improvement value are obvious will be accepted for immediate implementation. Such suggestions will be implemented by the concerned executives under their own authority, or after obtaining the necessary approval or sanction of the competent authority.

ii) **Implementation after Elaboration:** Suggestions which are good, but can be implemented only after examination or elaboration by the concerned executive, will be accepted for implementation after elaboration. On receipt of such suggestions the concerned executive will examine the suggestion, modify or improve it, and implement it under his own authority, or after obtaining the approval or sanction of the competent authority.

iii) **Implementation at Appropriate Time:** Suggestions whose economic benefits or improvement values are obvious, but which are premature in the sense that they cannot be implemented immediately, will be accepted for future implementation at the appropriate time. Such suggestions will be sent to the concerned executive for being kept pending their own authority or after obtaining the necessary approval or sanction of the competent authority.

iv) **Further Development:** Suggestions which cannot be implemented unless they are further developed by the organisation will be accepted for further development by the concerned executive. After they have been developed, they will be sent to the managing director through the works manager for final decision.

v) **Review and Report:** Suggestions which do not make any positive or useful recommendation, but merely draw the management's attention towards an obvious area of improvement, will be accepted for inviting the concerned executive to review the present condition, take the necessary action if called for, and report his findings.

vi) **To be Noted:** Suggestions which have the germs of some useful ideas, but do not make any worthwhile recommendation for immediate implementation, will be accepted for being merely noted by the concerned executive. No action is called for on such a suggestion; all that is necessary is to make a note of it as it might strike in the executive's mind a new useful alternative idea then or at a later date.

Management reporting will consist of a quarterly report on the scheme dealing with the following:

i) Analysis of suggestions received indicating the total number of accepted suggestions by categories, etc

ii) List of unimplemented suggestions and reason(s) thereof

iii) Uptodate net result of the scheme in terms of savings

iv) Proposals for improvement if any

v) Summary of special efforts made to popularise the scheme

These reports would be drawn up by the respective works managers.

JN KANSAL

Central Glass & Ceramic Research Institute, Calcutta

Productivity in Indian Glass Industry

Glass industry in India has made considerable progress during the last few years. In this paper, productivity and size efficiency in the glass industry have been calculated by applying the two variable Cobb-Douglas production function.

PRODUCTIVITY is a measure of the efficiency with which the nation's resources are transformed into consumption, investment and other goods that satisfy individual or collective wants. Increased output of the product of any industry is usually associated with increased employment and capital. If input or the investments remain the same and output or the total production increases, there is a rise in productivity. If the output rises in greater proportion than the increase in input, there is still a proportionate rise in productivity. If, however, the output rises at a slower rate than the input there will be a fall in productivity even if on the whole there is an increase in production. Productivity thus refers to efficient utilization of resources, higher productivity being the result of higher contribution from labour and capital. Productivity does not necessarily mean profitability: profits can be caused by other means also, such as better demand, shortage of supply etc., but productivity is the measurement of the physical output per head or per manhour to know the real income and the standard of living.

The Indian glass industry is small in size and is a good example of co-existence of two types of organisations: the cottage industry and the modern large-scale industry. The industry is concentrated in Calcutta and Bombay areas and in the State of Uttar Pradesh. According to the nature of the manufacturing operations, the glass industry in India can be divided into three categories: manual, hand-operated machines

and automatic. Most of the glass factories are having semi-automatic or hand-operated machines; only recently have automatic machines been installed in some of the factories. It is a general belief that productivity can be achieved by using more machines and by developing more and more automatic machines. In the glass industry, we may say, productivity has increased during the last 10 years, as production has doubled, against only a 10% increase in employment.

Two Aspects

Productivity in any industry can be judged from two important aspects: net output per worker and net output per unit of productive capital. Net output is the value added by manufacture which represents that part of the value of the product which is created in the factory. It is a general practice now to take wages instead of number of workers for finding out labour productivity. Productive capital is necessarily taken in value terms after making a simple correction in the fixed capital, as suggested by Prof. Mahalanobis.

This study is based on the figures collected from the census of Indian manufactures. Glass factories have been classified according to number of workers to form different size groups. A large number of factories are in the size group of 100–249 and 250–499 workers, with an average of 160 and 360 workers respectively.

The value added per unit wage is the average productivity of labour, and the value added per unit of capital, the average productivity of capital. The productivity of labour and capital for different sizes are given in Table I. The average productivity of labour and capital is higher in the medium-size factories than in the large-size factories.

The marginal productivities of labour and capital have been calculated for different sizes by the two variable Cobb-Douglas production function. The function is:

$$V = PW^q C^r$$

where,

V = Value added by manufacturers
W = Wages of the workers
C = Productive capital

P, q, r are the parameters; q and r represent the elasticities of production with respect to wages and capital respectively. If this function is differentiated with respect to W and C then the first partial derivative will be:

$$\frac{dv}{dw} = q\frac{v}{w} \quad \text{and}$$

$$\frac{dv}{dc} = r\frac{v}{c}$$

These may be considered as the marginal productivity of labour and marginal productivity of capital respectively.

The elasticities of production with respect to labour (q) and capital (r) have been calculated from the census figures by the Cobb-Douglas production function. The coefficient of multiple correlation for the two independent variables of labour and

TABLE I

Productivity of Labour and Capital

Size	Average productivity of labour (Value added/wages)	Average productivity of Capital (Value added/capital)
Below—20	0.013	0.0002
20—49	1.310	0.4613
50—99	1.527	0.4305
100—249	1.531	0.3404
250—499	1.707	0.5217
500—999	1.907	0.3610
1000—1999	1.522	0.1307

TABLE II

Marginal Productivity of Labour and Capital

Size	Exponents of Labour (q)	Exponents of Capital (r)	Marginal Productivity of Labour	Marginal Productivity of Capital	Coeff. of Multiple correlation
Below 20	0.621	0.85	0.008	0.002	0.67
20—49	2.54	2.84	2.867	0.849	0.64
50—99	2.14	3.71	1.214	0.306	0.77
100—249	2.97	5.77	1.979	1.964	0.87
250—499	1.18	4.84	2.014	1.795	0.88
500—999	0.88	4.27	1.683	1.686	0.83
1000—1999	1.40	1.92	2.131	0.133	0.64

capital with a dependent variable of value added have also been calculated and it is found that for medium-size factories, multiple correlation is high.

With the help of these exponents, the marginal productivity of labour and the marginal productivity of capital have been calculated and these results are given in Table II.

The exponents of capital are higher than the exponents of labour while the marginal productivity of labour is more than that of capital in all sizes. The average capital productivity is highest in the size group of 100–249 and lowest in the group of 1000–1999, if the first group is not taken into consideration because of its negligible volume. The marginal labour productivity is minimum in size group 50–99, and highest in size group 20–49.

From the marginal productivity of labour and capital of different sizes, it is evident that the most efficient factories lie in the groups of 100–249 and 250–499 because of higher marginal productivity of labour and capital; and also, as stated above, a large number of factories fall in these two groups. The coefficients of multiple correlation are also high for these groups.

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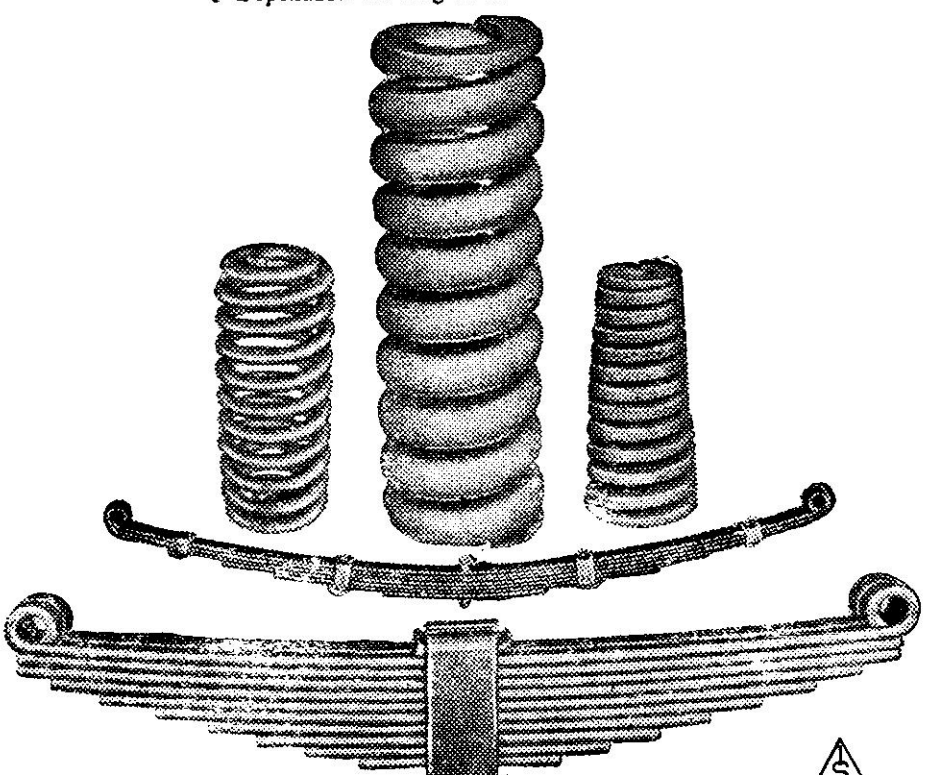

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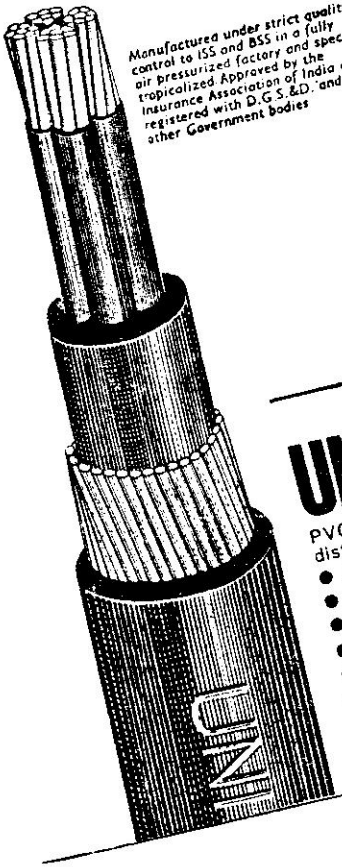

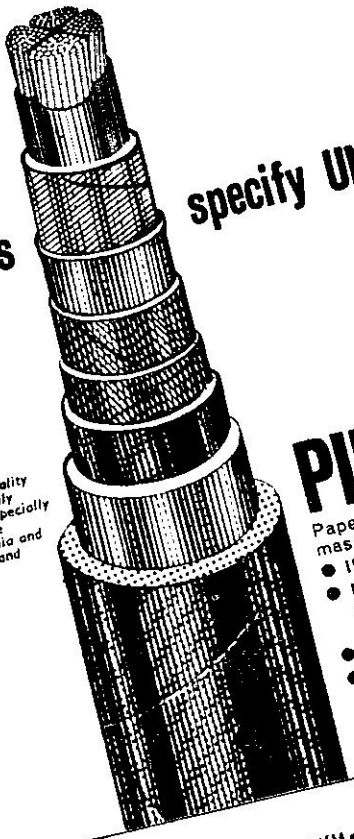

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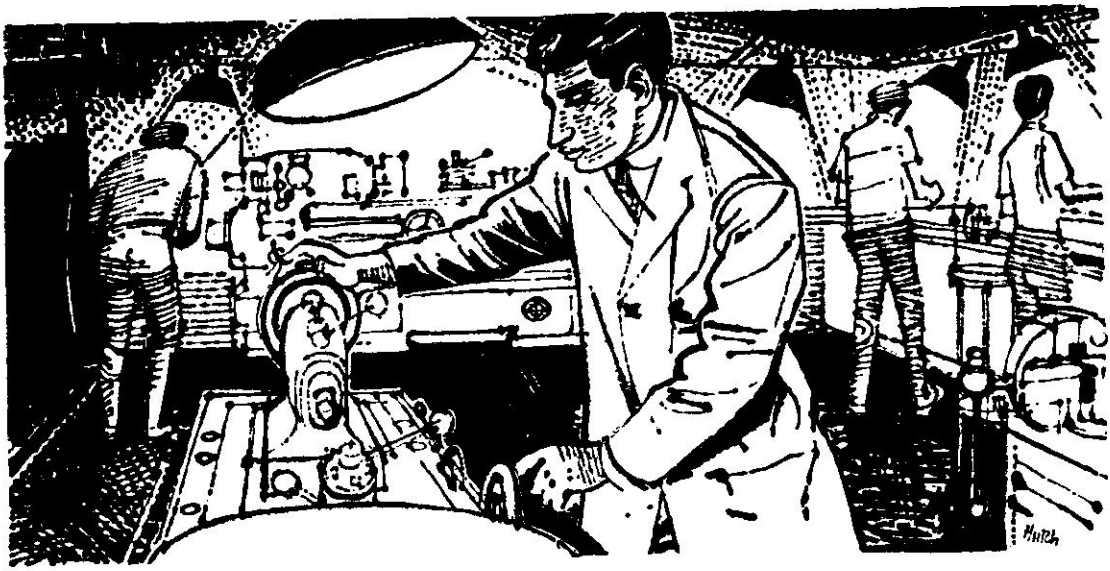

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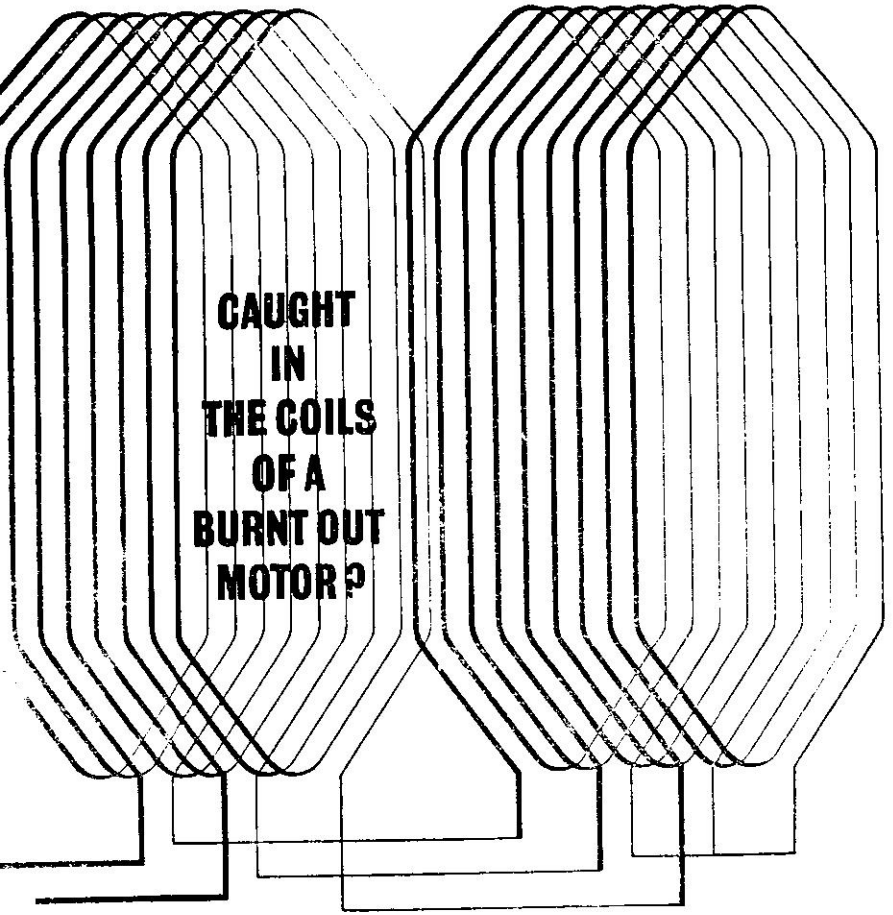

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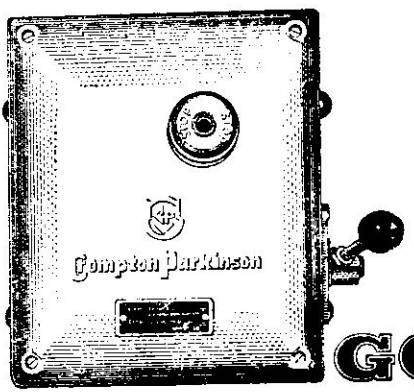

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Tuticorin

Salt Industry: Application of Productivity Techniques

The Indian salt industry has made rapid strides during the last decade in achieving self-sufficiency. Efforts are being made to improve the quality of salt for the alkali industry, and for export. Stressing the need for stimulating cost-consciousness in the industry, the author draws attention to the importance of proper lay-out of crystallisers.

THE PARAMOUNT need of the Indian Salt Industry is twofold: improving the quality and reducing the production cost of salt. These objectives can be achieved without scarifice of overall production, provided the problem is tackled with initiative and forethought and by the application of productivity techniques. Salt production in India increased from 2 million tonnes in 1950 to 4.5 million tonnes in 1965. The country attained self-sufficiency for the first time as early as 1952. We are in fact exporting 2 lakhs to 3 lakhs tonnes of salt annually to Japan, Ceylon, and other countries.

Even though the quality of salt has not shown all-round improvement, there is a general awareness to improve the quality. Thanks to the initiative of the Salt Department and the cooperation of the industrialists and the salt technologists of Saurashtra and Tuticorin, the Indian Salt Industry has made rapid progress in the last decade. The establishment of the Central Salt and Marine Chemicals Research Institute at Bhavnagar, in 1954, accelerated the growth of the Indian Salt Industry along right lines.

Even though our achievement is commendable, much remains to be done to increase productivity and improve the quality of salt, suitable for alkali industry and for export. Little attention has been so far paid towards reducing the cost of

production of salt particularly in solar salt works. This paper makes a modest attempt to find out how productivity techniques can be applied to the Salt Industry.

Climatic Factors

The climatic and topographical factors affecting Indian salt works vary largely in different parts of India. Broadly the solar salt works can be conveniently divided into three groups:

(i) **Group A:** Salt works situated in Saurashtra and Tuticorin having a low rainfall, and a season exceeding 9 months.

(ii) **Group B:** Salt works in Bombay and North of Madras, having a rainfall above 40 inches a year, and a season of 6-7 months.

(iii) **Group C:** Inland salt works of Rajasthan having a season of 8 months, with wide variations in temperature in winter and summer.

The relative efficiency of various salt producing units — their per acre production and unit production cost — vary to a large extent. As between various States, the per acre production is the lowest in West Bengal and the highest in the Rann of Kutch area. The present study covers only Group A, mentioned in the preceding paragraph. Based on the initial density of brine of 30° Be., the per acre production at Saurashtra and Tuticorin ranges from 40 to 70 tonnes. Due to the availability of high density 8° to 10° Be. subsoil brine at a depth of 60 to 70 feet at Tuticorin, productivity rises to 120 to 150 tonnes per acre.

In order to achieve higher productivity, the salt works would be well advised to organise themselves on the following lines:

(a) Proper layout of the works in the ratio of 1 : 8

(b) Copious supply of brine

(c) Beds and sides of reservoirs, condensers and crystallisers should be made of suitable soil to prevent seepage of brine.

(d) Maintenance of proper gradient from reservoir to the crystallisers.

(e) Charging crystallisers either in series or singly with well-condensed brine of 25.5° Be, and proper elimination of bitterns at 29° Be.

(f) Washing of scrapped salt with brine of 25° Be. before lifting to the ridges.

(g) Providing the sides of the crystallisers with gypsum and wooden planks to avoid the spoilage of salt with mud from the rain water.

A study of the salt works in and around Tuticorin has revealed that seepage of brine in reservoir and condensers is one of the main reasons for low productivity, particularly in the defective units. In such cases, loss due to seepage should be studied in each compartment, and those having more than 10 per cent should either be improved by laying clay to a thickness of 4 to 6 inches or with a mixture of gypsum and clay in the ratio to be determined at the site depending upon the nature of the soil. After such treatment the seepage is greatly arrested, and the productivity of the units increased. In a survey of 12 salt works, seepage was found in respect of nine. In two salt works the low productivity was attributed to poor brine supply, and in only one case it was due to improper alignment. It can be confidently asserted that application of productivity techniques to salt works will increase the per acre production of the units in India.

Elimination of Impurities

The main impurities in solar salt in India are high calcium and magnesium salts. It is more economical to get pure salt directly from the crystallisers than washing it separately after scrapping. $CaSO_4$ is, however, a sparingly soluble chemical, and its complete elimination is very difficult. One cubic metre of sea-water contains 400 gms. of $CaSO_4$ at 23° Be., and 200 gms. at 25.5° Be. Hence,

elimination of calcium is possible only if well-condensed brine of 25.5° Be. is charged in the condensers. This has been practically achieved in the Veppalodai Salt Factory, situated 25 miles north of Tuticorin, by having a convertible crystalliser for the density up to 25.5° Be. where salt containing a higher percentage of calcium sulphate is harvested.

An analysis of the salt scrapped is given below. Brine at 290° Be. is discharged and the salt is scrapped from the crystalliser bed leaving a bed of salt, thus avoiding the contamination of salt with mud etc. The magnesium salts present in the salt are more soluble than sodium chloride. Hence, their removal is more easy. It is, however, advisable to submit the scrapped salt to a good washing with fresh brine of 25.5° Be., to remove magnesium salts adhering to the salt crystals. It has been found that the salt of the specifications given in the following table be scrapped by adopting the procedure outlined above, without losing production. If higher purity salt is required for certain purposes, the salt so scrapped is allowed to 'rain wash' in heaps stored along the platform. After the rain wash the quality of salt was found to improve remarkably. There was, however, some loss in output of around 8 to 10 per cent. The following table gives significant details:

	Salt scrapped at 25.5° Be.	Salt scrapped at 29° Be.	Salt scrapped at 29° Be. and rain washed
Sodium Chloride	98.47	98.67	99.0
Magnesium Chloride	0.55	0.40	0.19
Magnesium Sulphate	0.39	0.29	0.10
$CaSO_4$	0.56	0.32	0.29
Insoluble	0.03	0.32	0.24
Moisture	3.21%	5.25%	6.21%

Cost of Production

Indian Salt Industry has given little thought so far to cost reduction. As the geographical position and natural conditions vary considerably, the cost of production is not uniform. Despite these limitations, an attempt has been made here to analyse the various elements that enter into what may be called direct costs.

	Cost per tonne in Rs.
(a) Pumping	1.25
(b) Preliminary operations like annual cleaning of drains, channels, minor repairs to bunds, preparation of beds etc.	1.00
(c) Scrapping:	
(i) once a week	1.05
(ii) once a month	0.50
(d) Transport from pans to drying ground.	1.50
(e) Direct permanent labour	0.50

The cost of pumping brine depends upon topography and location of salt works, availability of electricity, its tariff etc. In Saurashtra and Bombay, advantage is taken of tides to fill up the reservoirs. In places like Tuticorin where the difference on account of tides is negligible, it is necessary to depend upon pumping for practically the entire supply of brine particularly because of borewell brine of 90° Be. In such cases, a proper choice of pumps with high rated capacity and low heads will add considerably to efficiency of salt works.

Many of the salt works in India have to incur considerable expenditure on cleaning and preparation of crystallisers. Much of this expenditure can be avoided if the crystallisers are laid in the beginning in hard soil, with a layer of black sand spread on it. Alternatively the crystalliser beds can be brick-lined. Further, if the annual rainfall is within 20 to 30 inches range, it is not necessary to prepare the bed afresh every year.

Scrapping and transport account for

30 to 40 per cent of the cost of production. A close look at the mode of operation of scrapping leads to interesting conclusions. Salt is generally scrapped from the pans, once in 7 or 10 days. If salt is allowed to accumulate 1 to 1½ inches in thickness over 30 to 45 days, and scrapping is limited to once in 30 days, supplemented by deep charging of crystallisers, the scrapping cost would be reduced by 100 per cent. For this purpose the pans should have a minimum dimension of 240×40 ft. against the existing measurement of 80×60 ft. Improved technique of scrapping is of course necessary to get optimum results. The salt bed should be carefully prepared in the first instance, and the salt collected either by scrapping boards or spades. Instead of collecting it on the pan ridges, it can be heaped in the pan and transported to the nearby platform. This technique has been adopted in two or three salt works at Tuticorin.

An important item of cost is transport from crystallisers to the platform and store godown. The crystallisers are generally laid out in a block involving a long lead. By a different arrangement, the transport cost can be minimised to a large extent. The crystallisers can be laid out in single row on either side of the platform-cum-road. As the road runs across the centre of the platform along the crystallisers, the salt has to be transported only to an average distance of 300 feet. This would reduce the cost of transport from Rs. 1.50 to Re. 0.50 per tonne. This is a substantial reduction, considering the fact that the total cost of production of salt is in the range of Rs. 7.00 to Rs. 9.00 per tonne.

India can build up a substantial export line in salt, particularly to Japan and other Asian countries, provided the Indian salt industry pays particular attention to increase productivity, improving quality, and reducing cost of production by adopting newer techniques of salt manufacture, coupled with labour-saving devices.

A PRODUCTIVITY MODEL

"Just as Britain found Churchill in 1940, so, by some intervention of democratic providence, we have got Wilson now," writes Paul Johnson in the *New Statesman.* **He adds: "Together with brain-power goes a capacity for administrative work which is formidable, and which allows him to achieve the correct balance between intense activity and reflection—a very important quality in a Prime Minister. I am tempted to recall Bagehot's words on Palmerston:**

'His objects were common objects: what was uncommon was the will with which he pursued them. No man was better in action, but no man was more free from the pedantry of business... He knew that the real essence of work is concentrated energy, and that people who really have that in a superior degree by nature, are independent of the forms and habits and artifices by which less able and active people are kept up to their labours.'"

ASOKE GUPTA

Head of Work Study Dept.
Indian Explosives Ltd., Gomia

Critical Path Scheduling Simplified

Critical Path Scheduling is being used at present by many firms for planning project work, plant maintenance, construction and fabrication work. It helps to determine the minimum time for completion of a project and the jobs which could affect this time.

The main purpose of this write-up is to give fundamental ideas of different Critical Path Scheduling techniques as applicable to small or medium-sized projects commonly encountered. This does not go into the complexities of the applications of Critical Path Scheduling to large projects.

This technique was first used by DUPONT in 1957 while doing the planning of the overhaul of its plant in Louisville. The refined version of it, known as PERT (Programme Evaluation and Review Technique), was used by the United States Navy for Polaris Project in 1958. Some independent development work on Control Sequence Planning was also carried out at the Imperial Chemical Industries (UK) in its Agricultural Division at Billingham.

CRITICAL PATH SCHEDULING is nothing but a planning and scheduling technique used for Project work, Maintenance work etc., for controlling the progress of the interrelated jobs in order to complete the job in the most efficient way depending on the resources available. By establishing the interrelationships between jobs separately from their time relationships, attention is focussed on jobs which control the overall project duration.

Procedure

The procedure of Critical Path Scheduling is based essentially on

(i) Preparing a list of constituent jobs for the project: Example of a JOB

SHEET for a simple maintenance work is given in Appendix-I.

(ii) Estimating the time for completion of each job separately together with the cost. This estimate could be made into two parts:—

(a) JOBS done at standard

(b) JOB durations crashed to minimum.

(iii) Establishing the relationship of one job to another and also the priority and sequence of each job with respect to the others. This relationship is job sequencing and is also given in Appendix-I.

(iv) Determine the Critical Path (the schedule identifying the jobs that must be completed in succession and which determines the time limit of the jobs so that the project work could be completed without delay—this is shown in Appendices I & II by the thick lines).

Of the various methods adopted for drawing the Critical Path Schedule, the following are discussed in the write-up :—

(a) Arrow Diagram

(b) Job-Progress Chart

(c) Job-Progress Chart on Display Board.

Arrow Diagram

An Arrow Diagram or Project Net-work is first drawn up from the interrelationships of the jobs which form the basis of Construction and other maintenance work.

From estimates of the time to carry out the jobs, it is possible to find the overall project duration and the spare time or 'float' associated with each job in the project. This information is then used to control the progress of the project, allocate job priorities and avoid unnecessary work. The controlling jobs are highlighted so that they can be subjected to further study with a view to reducing the project duration.

FAO Study of Rice Yields

In parts of South-East Asia it takes seven hours of man-labour to produce 20 kg of rice, and in more mechanised countries, like Japan, seven minutes of labour produces the same amount. In many African countries rice yields are far less than 1,000 kg per hectare. In Australia, the yield is more than 6,000 kg per hectare. In between are such countries as Brazil with 1,800 kg per hectare, and the USA, with 4,500 kg per hectare.

A new study by the UN. Food and Agriculture Organisation (FAO) gives these widely diverse figures, and says that more modern equipment and better farming techniques are needed to bring rice production up to generally higher levels.

Rice is the world's largest general crop and provides the main part of the diet of more than half the world's population.

The FAO survey questions many practices long regarded as normal rice-growing techniques. One of these practices is deep submergence under water. Another is the labour-consuming practice of transplanting.

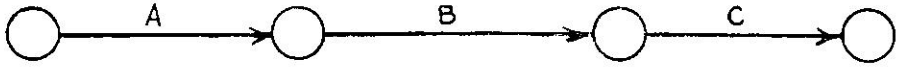
DRAWING ARROW DIAGRAM

A job or activity is represented by an arrow which carries a job description or a code number. The tail represents the start of the job and the head finish, but the arrow is not drawn to scale.

An event (also called a state or node) which is shown as a circle indicates the start or end of a job. It has no time duration and merely represents the state of having completed jobs or being ready to start jobs.

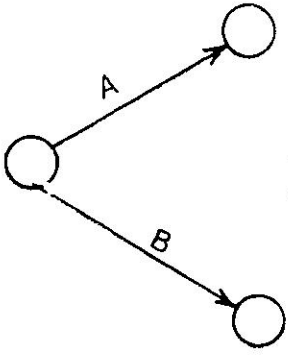
Jobs can be related in three ways :

(a) One job can precede another
(b) One job can follow another
(c) They can be done simultaneously



JOB A precedes job B; JOB C follows job B.

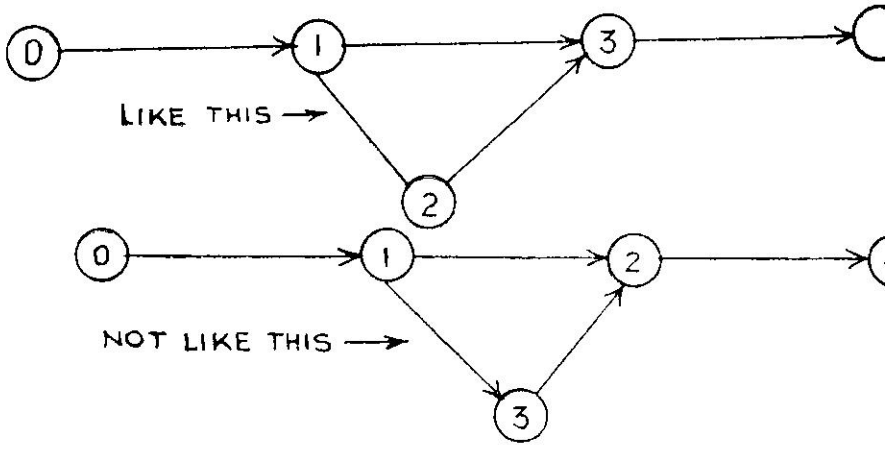
When jobs are done simultaneously they are expressed as follows:



Jobs A & B are performed simultaneously and having the same starting event.

EVENT NUMBERING

By convention time flow is from tail to head of an arrow and therefore for any job the head event number is greater than the tail number.



DEPENDENT & INDEPENDENT BRANCHES

The network shown below Fig.(a) indicates that C & D are dependent on both A & B. Suppose now that job D follows A & B, but C is only dependent on A. This relationship is shown in Fig.(b).

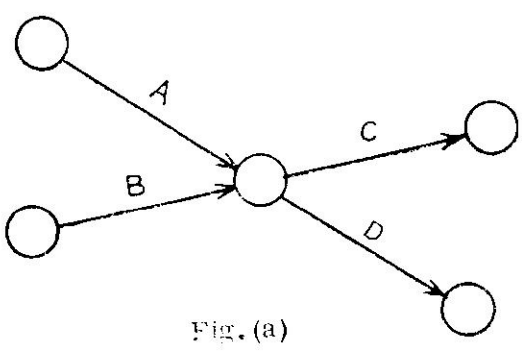


Fig. (a)

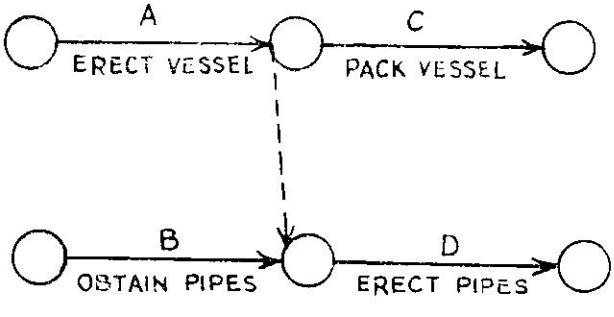
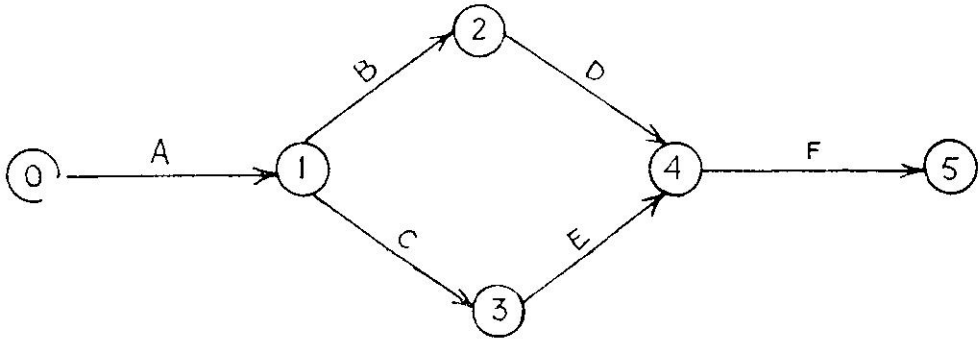


Fig. (b)

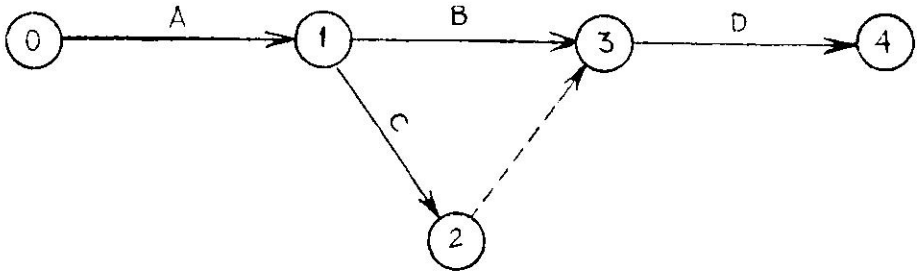
A grouping of arrows and events which makes up a project is called Arrow Diagram or Network.



Here jobs B & C are dependent on A, whilst F is dependent on the completion of both D & E.

DUMMY JOBS

Dummy jobs, which are shown by dotted arrows, have zero duration.



In the above diagram job B & C have the same job reference and they can be started independently on completion of A. But D could be started only after completion of B & C. This relationship is shown by the dotted line.

Also, note in Fig. (b), A & B are connected to Dummy job for zero duration which is shown by dotted line and it indicates that job D will follow after completion of job A & B whereas C is not dependent on job A.

Based on these principles, an Arrow Diagram with its Network has been shown in Appendix-I where a very simple job—(specially chosen for clear understanding)—"Changing a pipe line" in an acid factory has been shown. Details of the work are listed with their interrelationships (job-sequence) in JOB Sheet in Appendix-I.

Drawbacks of Arrow Diagram

Except for the simplest projects involving only a few jobs, an Arrow Diagram is not easy to draw up. Even when constructed successfully, it shows little information that is not on the job sheet. In order to get additional information from the diagram, a critical path matrix or network must be constructed. Since, arrow diagram is not drawn to scale and also the basic rules such as using dummy jobs of zero duration, the event number at the head of an arrow must be always higher than that at the tail end, it makes the procedure to draw arrow network somewhat complicated. The Arrow Diagram, no doubt, enables us to determine the Critical Path, but it does not reveal at a glance any other information such as the float. Its necessity is felt only in the case of highly complicated projects, where a computer has to be used. Then the arrow diagram provides a systematic means of programming the computer.

Job Progress Chart

For comparatively smaller projects the complications involved in the Arrow Diagram Network have been overcome by the introduction of Job Progress Charts. Recently, it is found that many Engineers prefer it to Arrow Diagrams. And also it is easy to draw and eliminates the use of a Computer.

Job Sheet

The first step is to prepare a Job Sheet as in Appendix-I, giving the list of jobs with their estimated duration and cost. If the jobs were to be crashed (expedited by employing more men and material) the minimum duration and corresponding cost are also given. The list should also include restraints, if any. For example, waiting for approval or availability of equipment would be a restraint on the project.

Job Sequence

Going through the list in the job sheet, the relation between the jobs are carefully analysed. The job sequence is determined by finding out:

(i) the jobs that can be started together

(ii) the jobs that must be completed before another can be started.

These are entered in the job sheet.

Job Progress Chart

This is a graphical representation of jobs to a time scale. The jobs are drawn in sequence as given in the job sheet.

The job progress chart for the changing of a pipe line is given as an example (see Appendix-II). The method of drawing the chart is described below:

The thick lines represent the jobs. Then Job No. is written above the line with the duration and cost below the line. It has been drawn to a scale of 1 cm—2 days. The starting is represented by a 0 line from which jobs 1 and 2 start. The completion of a job is shown by a thin line drawn across. It also represents the completion of a stage in the project, i.e., where two or more jobs must be completed or places where 2 or more may start. This can be seen in the JP Chart, where three jobs: 9, 6 and 5 start after the completion of job 4.

All the jobs are thus drawn on the chart. The time required to complete the project is

indicated by the CRITICAL PATH, which is the longest continuous line from the starting point. This is shown by the thick line. Any delay on jobs on the Critical Path will delay the whole project. Such jobs are called Critical Jobs.

Floater

From the JP Chart we can also see those jobs that can be delayed without affecting critical jobs. These are called floaters and the amount of delay possible is called the float. Floats are shown by dotted line.

Crashing the Programme

There may be some jobs that can be completed in a shorter time if additional costs such as overtime, quick delivery extras can be tolerated. The estimated shorter time and the total enhanced cost have been shown in the Job Sheet.

It would be obvious that to reduce the project duration, jobs should not be crashed indiscriminately. Maximum advantage with least additional cost is obtained by crashing only Critical Jobs.

In this process, it may be found that some noncritical jobs may become critical. Then these should be crashed only to the extent required.

A JP Chart with the project duration crashed along the critical path is also shown in Appendix-II.

It must be mentioned that crashing the project for minimum time may not always be economical. To decide the extent of crashing, the additional cost must be related to the loss in plant operating profit for each day the project continues.

Display Board Technique

Once a JP Chart is drawn, any change in the project or a review will necessitate redrawing it. Also if alternatives have to be compared, the charts will have to be drawn each time.

To overcome this disadvantage and to introduce a certain flexibility in these charts a display board technique is used.

This is just a Graphdex board where jobs are plotted with coloured strips which are movable. The other informations such as duration, cost etc. are written on the strips themselves.

The following are the additional advantages of this technique:

(i) If a suitable colour code is used for the strips, each colour denoting a particular resource, then the number of jobs engaging a particular resource at any one time can be seen at a glance.

(ii) The width of the strips can be made proportionate to the units of resource demanded by the activity. This would be essential to the process of expediting the project without throwing undue load on any one of the resources.

EDWARD MACIEL

Senior Consultant
Beacons Pvt. Ltd.,
Bombay

A New Approach to Work Measurement

IS THE setting of time standards, by the various techniques available, a science or is it only a tool to assist in collective bargaining? This has been a problem ever since Taylor introduced his concept of Scientific Management some time in the eighteen-nineties. Since then, there has been a continuous struggle between Managements and Unions. Management considered it to be their prerogative, while the Union felt otherwise. In the United States of America there was unmitigated hostility between Scientific Management and organised labour till the First World War. Subsequently there developed some friendliness, between the two. However, the struggle continued. The question of labour participation in the setting of standards was pretty well settled only in the nineteen-forties.

From time to time original thinkers in the field of management, psychologists and trade unionists have put forward a number of objections questioning the reliability, validity and precision of time study results. Some of the objections are listed below:

1. Lowry, Maynard and Stegemerten find that as a result of the reaction time of the observer and the momentary halting of the watch as it is snapped back to zero, an error of anywhere between two per cent to nine per cent is introduced when snap back readings are used.
2. The procedures used for the setting of time standards have hardly any

statistical justification. It is felt that the variations may be due to mechanical, physiological, psychological or sociological factors.

3. It has been agreed that fatigue is an important factor in the setting of standards. However, it has been found to be an extremely complex physiological and psychological influence, and as such it has not been possible to reduce it to a scientifically objective and measureable phenomenon.

4. No objective method has yet been developed to compare operator performance with any normal standard. Taylor's concept of selecting only first class individuals or assuming a highly stratified sample of the employed working population makes achievement of the standard difficult since the range between the least and the most competent man according to Wechsler is 2.5 : 1. Even the Westinghouse method of levelling has been found to give variations.

5. Time and Motion economy is based on the fallacious assumption that each individual movement of a total complex task can be considered as a separate and independent unit. It is believed that if one movement is eliminated from the task, then the total time for completing the task is reduced in proportion to the time required to execute that movement as part of the entire sequence. It is felt that the time required to execute one part movement in a total sequence will vary with different characteristics in the working situation and with other part movements that may be only indirectly connected with it.

6. Time and motion economy does not take individual differences into account. Two workers may be equally effective in the performance of a task but nevertheless employ widely different movements to accomplish it. Each worker will adopt that set of motions which he finds most convenient and suited to his physical and psychological make-up.

7. The accuracy of the stop watch reading is questionable. Ralph Presgrave found the possibility of an error of 0.01 in an average elemental timing of 0.10 minutes duration. Leng's experiments with stop watch readings showed a deviation of 12.6 per cent for readings of 0.025 minutes to 3.30 per cent for readings of 0.10 minutes. In the case of the marstochron the deviation was found to be much less.

8. Too little is known of the origin of the various predetermined elemental time study systems and also about the method followed for arriving at the standards. A comparison of basic elements and times from three systems of standard data (Work Factor, M.T.M. and Holmes) was made by McGuire. It was found that the same fundamental motions had different time values.

Psychologists further feel that there is a wide range of production quotas which is conditioned by a motivating factor or psychological drive on the one hand and the limit of the physiological capacity on the other.

From these criticisms, it makes one wonder whether Time Study is an exact science or whether it is a tool to keep bargaining within rational limits. What then is an Industrial Engineer supposed to do? How is he supposed to do a successful job which will to a large extent allay the fears, doubts and the misgivings, of organised labour and at the same time achieve results acceptable to them?

IBM Example

In 1936, IBM (International Business Machines), USA, did away with the traditional system of setting norms and paying incentives. In fact, this was a step beyond the time study stage. Instead of output norms imposed from above, each worker developed with his own foreman his own rates of production. Both knew pretty well how much output could normally be expected. For this, the workers were paid a straight wage. The results of this approach have been found very encouraging. This approach was

successful because the Management were highly enlightened and the labour highly motivated. We are way behind this at present in this country.

No Alternative

Since the opponents of Time and Motion Study have not put forward any alternative system of measurement or a system of assessing what is a fair day's work, we have no other alternative but to go ahead with the existing system in spite of its limitations and shortcomings. The Industrial Engineers' major problem will be to obtain acceptance from the working group. For this, he has to realise his position in an enterprise. He must realise that he works at the bridgehead where technological problems merge with social problems. Whatever he does deals in large measure with human relationships. He should, therefore, get along well with others, have integrity and honesty and his approach to a problem should be absolutely impartial and just. Above all he needs to know his job thoroughly. All this can help develop greater confidence in the working group.

Dealing with the technique itself, much can be done to obtain acceptance from the working group. The methods of working and work-place layout should be standardised and adequately recorded and described. If there is a choice between operators, care should be exercised in the selection of the proper operator for the study. Sufficient number of observations will have to be taken so that it falls within the realm of statistical laws. Timings should be recorded by the continuous method. Particular care should be taken in dealing with out-of-line observations. The arithmetic average has proved to be more acceptable. Rating constitutes the most difficult part of the job. The observer has to be properly trained for the job and the rating will have to be done on the spot. The Industrial Engineer cannot afford to take advantages of the other party's ignorance. He has to do as good a job as possible. The consequences of taking advantage of the other party's ignorance are very serious and the repercussions will be heavy.

Even though the study is to a large extent subjective, the observer by his approach to the problem could allay the doubts and fears of the working group. The quantum of allowances to be given should be based on work done by recognised authorities in the field and must be backed by sufficient data.

Labour Participation

Workers' participation in the setting of production standards leads to a more effective and productive relationship. It makes acceptance of the standards much easier, since the workers will realise that there is no hide and seek involved.

Ultimately, much will depend on the attitude of the Managements and the Unions. The Industrial Engineer will have to be backed by an intelligent and broad-minded management who treat labour well. The Unions, on the other hand, will have to develop a positive philosophy, towards increased productivity and this must be explained to the rank and file. Perhaps, more intensive efforts to educate the workers may help.

Of This & That

Nobody objects to highly skilled technicians, like compositors, getting high wages, though some find it odd that they should often be better paid than many journalists on the same newspapers. The real anomalies are to be found among unskilled workers and semi-skilled men, such as van-drivers. There is still—despite recent improvements—far too much over-manning; and a few men simply hang about getting paid for a job which has long since been abolished.—RICHARD WEST.

What we want is an economy which is not labour-intensive but capital-intensive, with high wages, high profits, and a more stable currency. No tax, of course, can achieve a miracle; but it can create the atmosphere for decision-taking.—HUGH FRASER, *British MP.*

Every American now produces about eight pounds of solid litter a day. To dump this, a city of one million has to spawn every year a plateau of glass, cardboard, plastic and old metal 100 feet high and 10 acres in area. Meanwhile, the economics of mass production and the mass market make fewer and fewer kinds of junk worth salvaging and reusing: we are beginning to discard old cars like old newspapers. —*New Statesman.*

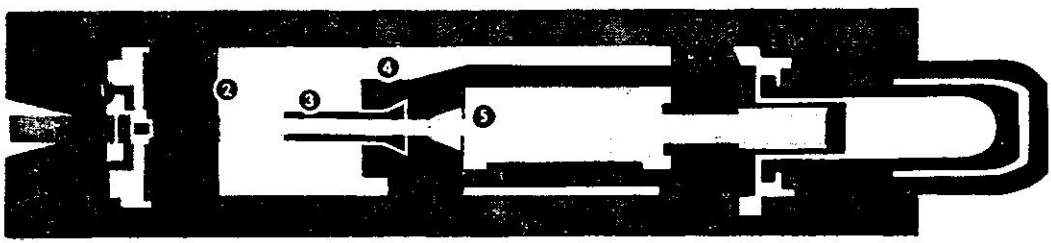
How did it come about that the pursuit of peace led to ever more ferocious wars; of happiness to ever larger and more crowded psychiatric wards; of knowledge to ever greater credulity and vacuity; of security to an ever-intensifying sense of helplessness and loss of identity; of affluence to ever-mounting indebtedness; and of health to the consumption of ever more pills and potions?—MALCOLM MUGGERIDGE.

. . . I read an article in which Sir John Newsom proposed that girls' education should concentrate on subjects requiring a type of thinking which he described as 'personal,' and which, he maintained, girls are particularly good at. One of these subjects was biology —because, Sir John asserted, 'biology is the personal science'. This in itself struck me as a remarkable piece of thinking . . .—BRIGID BROPHY

Less help, too, means more machines: sometimes, when I go into our kitchen on a Saturday morning, I think I'm in the bowels of a nuclear submarine, with gadgets humming and thumping all over the place (breaking down, too). Domestic appliances are one of the few things which have gone down in price, absolutely as well as relatively, in recent years. They are, as I've heard Dr Balogh say, 'a high return capital investment'. Meanwhile, in my capacity as deputy assistant pantry-boy, does anyone know of a machine for cleaning children's shoes?—PAUL JOHNSON *in the New Statesman.*

Devidayal for Extrusion

❶ Die ❷ Billet container ❸ Stem ❹ Moving crosshead ❺ Piercer



Extrusion press with internal piercer

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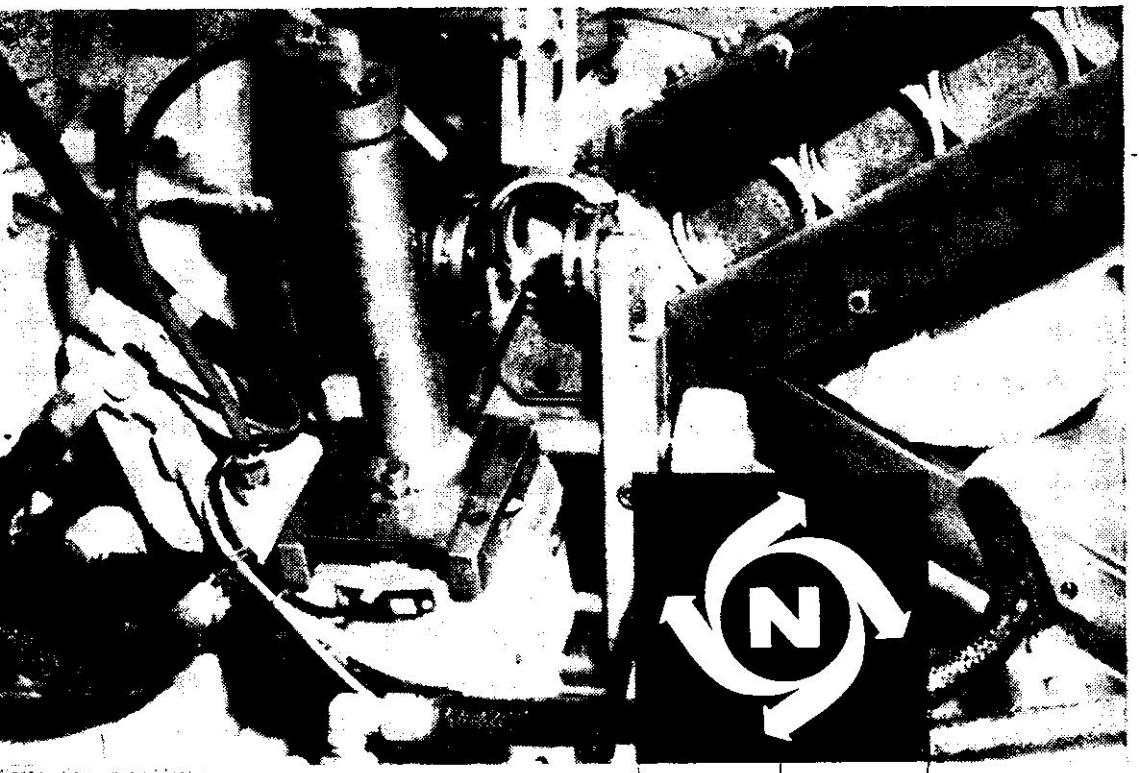

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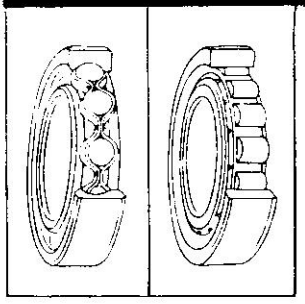

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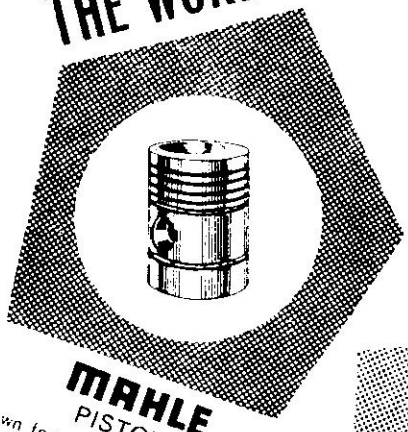

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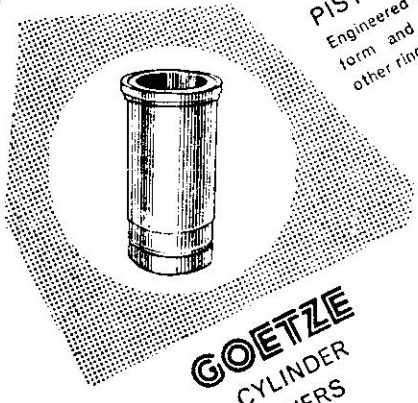
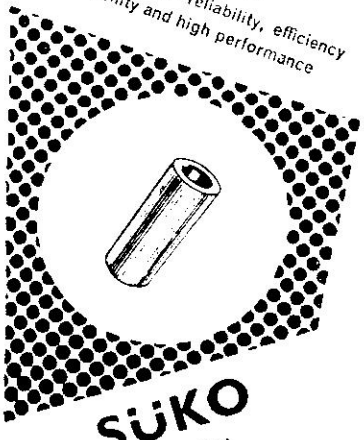


GOETZE
CYLINDER LINERS



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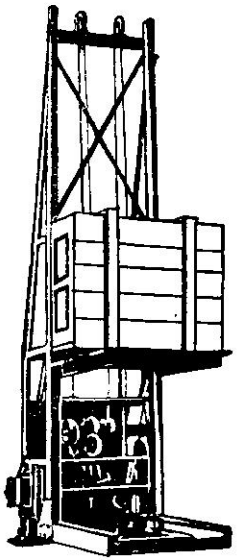

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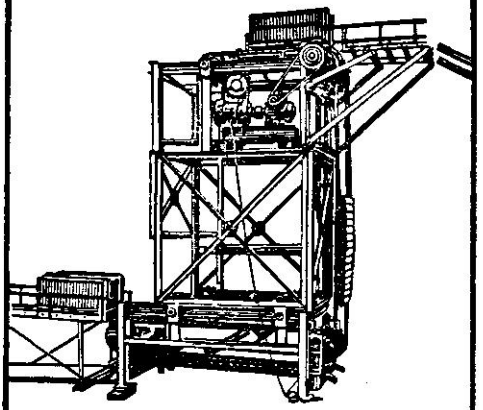
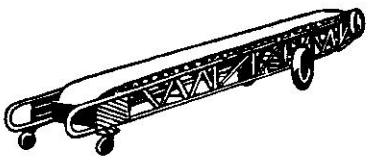
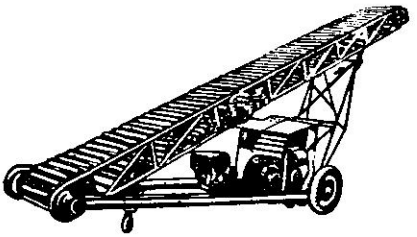


DYNAVATOR



BELT CONVEYOR



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Shilpi DYN. 221 A

We propose introducing a Reader's Forum in the next issue of this Journal.

Readers can write on their experiences in the application of any productivity technique in any field of social or economic activity. Since some, however, may like to have a stimulus, or some focus point for concentration, we have posed six questions which are obviously important as they are of national interest. Readers of PRODUCTIVITY can answer any of these questions. It will be appreciated if the answers are precise, and brief. Generalisations should be avoided as far as possible, and readers should concentrate on making available to us the best of their experiences.—EDITOR

SIX QUESTIONS ON PRODUCTIVITY

1. *What concrete suggestions would you like to make for achieving what is called Productivity in Depth, as explained in the leading article in this issue of the Journal?*

2. Our broad statistical calculations show that during the last many years we have had a three per cent growth rate in Productivity. Assuming a target of accelerating the growth rate in productivity to five per cent, what measures of social policy and economic incentives would be necessary to achieve the target during the Fourth Five-year Plan period?

3. *What are the possibilities of import substitution as a practical line of policy? Illustrations may be given from experience in any line where import substitution has made or can, in your considered judgment, make a significant contribution to savings in foreign exchange.*

4. Is it possible to push up productivity through the reorientation of economic policies? If you think so, what reorientation would you suggest? And how would you argue it out that such reorientation will actually lead to a sizable increase in productivity or remove the obstacles in the way of achieving higher productivity? (The argument should be closely analytical and proceed step by step, without generalisation).

5. *Safety in industry (including mining) has been a much-neglected subject in practice. Probably it is usually limited to the printing and display of posters. In actual practice, neither the management nor the workers appear to be conscious of the high priority of safety in modern industrialisation. The question is, how can safety consciousness be created in a practical way, and with good effect?*

6. The health aspect of industrial life has been much neglected. What should be done to see that industrial managements invest in their workers' health?

BANSI DHAR

Efficiency Adviser to Labour Commissioner, U.P.

Work Study: The Human Aspect

THE ADVANCEMENT of technology in various fields of knowledge has been considerably assisted by the evolution of yardsticks or summation devices, as exact as possible. It is this exactitude that made possible advances in rocketry, navigation, engineering, etc. Researches in various fields have been broadly under fundamental and applied categories, the latter being derived from the former. Work Study is an extension of researches in technology into man-machine situations. The machine has its own principles of functioning, depending on correct alignment of its parts, speeds and supply of raw material of the proper specifications. Man, however, enters into the operational efficiency of the machine inasmuch as he starts and stops it and keeps it going. The function of man in relation to machine is known as service time.

Optimisation of service time depends on the matching of a certain intraorganic level of environment with the extraorganic: the physical, mechanical and operational conditions of the machine. Work study has, unfortunately, concentrated more on the extraorganic aspect of work: how the worker does his job at the machine effectively, e.g., attending to breakages on a spinning frame or a loom, replenishing creels, doffing, as and when required, etc. These operations should not ordinarily keep him occupied for more than, say, 80% of the time he has to work on the machine. The remaining time is supposed to minimize his fatigue to an extent

where it will not interfere with his operational efficiency materially. The speed of the performance of the workman and the level of his abilities will vary from individual to individual and constitute his skill. These two are important elements and may well be described as speed and power. As in intelligence testing, so also here there are individual differences; and it is possible to group workers in a particular category as *average, above the average, and below the average.* In order to improve the shed efficiency we must have as small a dispersion from the average as possible. It should not be more than $\frac{1}{2}$ sigma of a normal population of weavers, with efficiency percentages attained over a sufficiently long period.

For Work Study to evolve a reliable yardstick, the yardstick must be statistically and physiologically sound. In the first instance, we must know the dispersion or work it out for the population for which we propose to evolve the yardstick. If the dispersion is large, we shall have to make allowance for deviations beyond $\frac{1}{2}$ sigma. This will enable us to get the best from each according to his ability.

Biochemical Approach

Having done this much to make extraorganic adjustment possible, we have to have a fairly correct measure of the intraorganic environment of workmen to back up the extraorganic adjustment. Here quite a few factors count, age being one of them. The approach has to be biochemical, that is, we must find out the functioning of the blood circulation, its composition and the nature of lymph and tissues. In this regard, statistics can be of some help to a point.

Although the lymph and blood, which constitute the organic medium, are continually modified by the waste product of cell nutrition, their composition is maintained by the lungs, kidneys, liver, etc. Work Hygiene and Work Study sections have to see that the working condition, physical and operational, does not result in the cumulative accumulation of cell wastes in a degree as to result in damaging the function of lungs, kidneys, liver etc. Statistics applied to medicine gives indications of danger points when waste material rises beyond the limits of tolerance. That this aspect is sadly neglected in some units of textile mills is patent from the fact that among the admissions to a T.B. Clinic for labour in Kanpur, 74% of the patients were weavers, their ages ranging from 20 to 69, the largest frequency being in the age group 40-49 as the following would show:

Age groups	Frequency of evidence of T.B.
20-29	12
30-39	22
40-49	26
50-59	15
60-69	1

Wheel Hand Hoe

The Indian Standards Institution has published an Indian Standard Specification for wheel hand hoe which prescribes the requirements and the methods of test for the wheel hand hoe with its working tools.

The wheel hand hoe is used for interculturing purposes in between rows of crops. It has a light wheel attached to two handles to which a working tool of the implement is attached. The wheel assists in guiding the implement, improving the manoeuvrability and in maintaining the proper depth.

Human Aspect

It is at about the age of 45 that the human organism starts ageing and this means decreased power of resistance to infection from bacteria, virus, etc. The frequency figure for age groups 20-29 and 30-39 are an indication of the fact that even before 45, the intraorganic environment of some weavers cannot stand up to the stresses of extraorganic environment. The demand is too heavy. A measure of immunity is attained in the case of age group 50-59, though not without a decline in power and speed in most, if not all, cases. Not only that, the infection contracted at the work place affects the health of children. We came across the pitiable case of a girl of 14, suffering from pulmonary tuberculosis. True, there is a T.B. clinic for industrial workers, but T.B. is a degenerative disease and here prevention is better than cure. Work Study has to take cognizance of these aspects of the work situation.

Even when the regulatory mechanism is not allowed to be impaired, very slow changes come with age. They are actually detected by the variation in the growth index of plasma and the regenerative activity of the skin. That being so, the measure of relaxation allowance will have to be adjusted to the year of age of workmen; and this will be reflected in drawing up a descending scale of production for certain age intervals, beginning with 45.

STATEMENT ABOUT OWNERSHIP AND OTHER PARTICULARS CONCERNING "PRODUCTIVITY"

FORM IV

(See Rule 8)

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I, DH Butani, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Dated: Feb. 28, 1966

(Sd) DH Butani
Signature of Publisher

MK DORAIRAJ

Tube Products of India Ltd., Avadi

Problems of Production Planning & Control

The aim of this article is to acquaint the reader with the most important problems, functions, opportunities and outstanding characteristics of the department of Production Planning and Control in a factory.

PRODUCTION Planning and Control are no substitutes for on-the-job training, but it should make on-the-job training more meaningful by providing a framework of broad concepts which can be added to and elaborated upon.

Education and understanding are now required for almost every job and are therefore at a premium. As industry becomes more complex, the need for specialization grows, but the need for co-ordination and team work also becomes more pressing. Decisions made in one section affect all the others more directly and vitally than ever before. A basic knowledge of the needs and problems of other sections helps people make decisions more correctly and intelligently. In other words, improved methods of production and selling demand improved synchronisation in every part of the system.

The Production Control Department regulates and implements the flow of raw materials to the manufacturing and finishing departments and the flow of finished goods to the customer. It co-ordinates the activities of the various units of production and determines the level at which each should operate in order to satisfy the demand. It must decide how much and what should be produced by anticipating demand and it

must plan the assembly of the necessary raw materials in the proper quantity at the right time.

The schedules which determine the operations of the manufacturing unit must be worked out with exacting care by the Production Control Department. The items which are to be manufactured in each schedule are decided upon by keeping close check of the inventory of the stock required for finishing. When an item gets below a certain point it is put on the next schedule so that the supply can be replenished. Production Control must arrange to keep enough stock to fill almost all the orders which the finishing department receives, but it cannot afford to do this by keeping too large an inventory. When the Production Control Department has drawn the manufacturing schedule in tentative form and checked the raw material supply, the order in which they are to be made must be figured out. The Product Engineering branch and the Supervisors of the manufacturing department study it and make the changes they consider necessary.

Variations in Demand

The activities of the finishing department are regulated by Production Control according to current demand. From week to week the number of orders received for each item and the total demand may vary considerably. These variations in demand have to be compensated for by the following methods:

(a) Shifting workers from section to section.

(b) Increasing or decreasing the labour force.

(c) Increasing or decreasing the number of hours each worker puts in.

To a certain extent it is possible for Production Control to even out the fluctuations in demand. During lean periods the finished stock of some standard items which are fairly sure to be sold eventually can be increased beyond the point which current demand requires. For the most part, however, the orders received from customers must determine the weekly production of the Finishing plant. Unfortunately customers cannot be persuaded to plan their orders a year in advance for our convenience. We are at the mercy of market fluctuations. There are three types of orders received by the Finishing Department: **standard, rush** and **emergency**. Depending on the work load at the time and the type of commodity, it takes the Finishing Department a certain time to fill a standard order. A rush order is filled somewhat faster than the standard. Most emergency orders are completed in a few days, sometimes in a few hours.

Production Control decides when it should be possible for the Finishing Department to complete an order and sets a schedule for completion on the basis of current backlog.

When a plan is made out for the week it is impossible to know how many emergency orders will have to be handled. The emergency orders which must be completed during the week often do not arrive until that week. This means that in preparing the plan for the work to be done in the Finishing Department a guess must be made as to the volume of emergency orders for the coming week. Emergency orders make accurate planning of work difficult and are, therefore, more expensive to process.

The amount of paperwork involved in keeping track of inventories is considerable, but it must be done accurately so that intelligent plans can be made. Each year a physical count of all inventories is made and checked against the records to ensure accuracy. The Production Control Department is not only concerned with planning and paper work; it also receives raw materials, stores them, delivers them to the proper places in the plant when needed and ships them to customers.

The department has also the job of processing those vital documents, the customers' orders, hundreds of which come every day. They are handled as expeditiously as possible by the Order-processing section which keeps its fingers on the pulse-beat of the business by recording daily the value of the orders received. Acknowledgements must be sent out on all orders and promise dates set on the basis of the work load at the time and availability of the commodity.

Speed is essential, but accuracy is vital. Even a typing error as to quantity, description, price, etc., could be very costly.

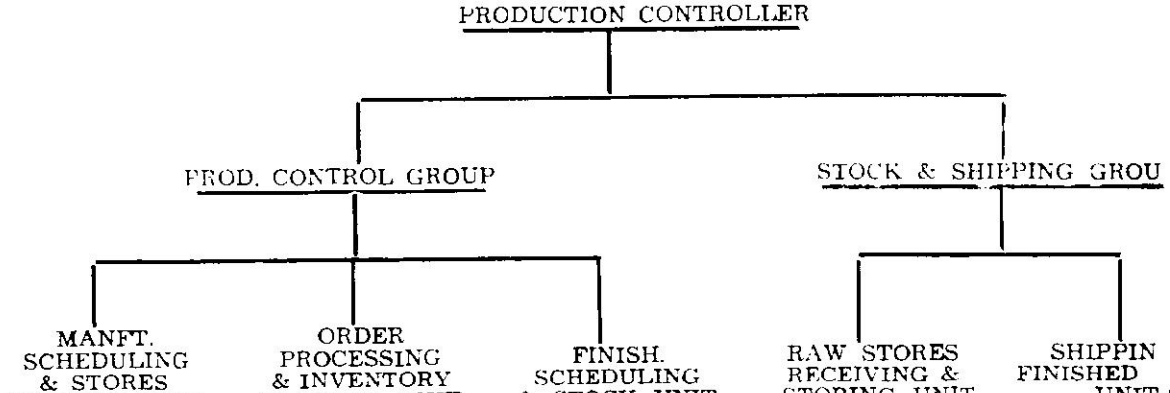
The installation of Production Control methods is generally indicated by the following symptoms:

1. Inability to quote accurate delivery dates
2. Arrears in delivery
3. Inefficiency in the shops.

The foreman or supervisor of the manufacturing department decides upon the exact methods of production when he receives, in the shop, his order or schedule. Because of the foreman's experience it would be unwise to take this work from him: furthermore it would be impossible to decide on the precise methods of production at an earlier stage without impairing the flexibility in methods which the foreman needs to get the best out of the machines and labour at his disposal. On the other hand, for the purpose of preparing quotations, it is necessary to have a general idea of the manner in which the job should be handled.

One might say that it is the object of Production Control to *find and follow the narrow winding path which runs between insufficient supplies and excessive inventory.* In a way it acts as a nerve centre which receives impulses from all parts of the plant. It evaluates these impulses, co-ordinates the movements of the limbs, and sends the required fuel to keep each one going.

Organisation Chart of Production Planning & Control



PK TIKKU

Assistant Engineer, Mancherial Cement Works, Bombay

Scope of Application of PPC Techniques

PRODUCTION Planning and Control techniques can be applied to achieve increased productivity, effective cost control, optimum plant utilisation and efficient organization.

The important point to note is that the PPC (Production Planning and Control) techniques should not be blindly copied: an intelligent and practical approach should be made, for applying them in as many ways as possible and at as many places in the Department/Factory/Organization as is feasible.

PPC methods are not necessarily restricted to large units engaged in mass production. They can also be profitably applied to any type of organised group activity. The principles can all well be applied to many of our industries by suitable adaptation.

Henry Fayol, considered to be the father of what we now call Production Planning, first evolved his Programme of Action in 1908. In course of time his principles have been developed, and the scope enlarged, but the basic elements that he considered important then, still remain fundamental: Unity, Continuity, Flexibility and Precision. These have not lost their significance, but many more have been added to the list, as detailed below.

We must first clearly understand the purpose of Production Planning and Control. A general survey is essential before

PPC can be effective. Budgeting, forecasting, sequencing of operations and plant layout, methods to implement these and their importance and effects, should be considered carefully. Study of materials, classifications, standardisation and procurement; economic lot size and its determination, correct machine loading and its effect upon costs; Preventive Maintenance and Control of downtime etc., should then be taken up. With these aids, a complete picture of the various forces, static and dynamic, which operate upon the balance sheet of a company are available. Primary steps to organize and control the expenditure, by way of scheduling, routing and despatching should be taken up. Correct routing will go a long way in effecting savings in all industries. They are particularly of importance in our country where there has been a tradition of surplus and easily available skilled and semi-skilled manpower, on account of unemployment in the past. Now that the circumstances have changed, because of its being a sellers' market, still, however, savings in manhours, materials etc., can be substantial, if routing and scheduling are given due importance. Despatching, that is the various ways of doing follow-up, is necessary, and its importance cannot be overstated in our present day circumstances where much of the progress depends upon, besides other things, follow-up at the right moment and in the right quarters.

It is not necessary that PPC be applied to only the final output of a factory. Each section in a factory or even a smaller unit than that can be taken up for study, and a thorough analysis can be made for planned and controlled output. The four steps in which this can be achieved are:

1. Preliminary study, collection of facts, analysis and formulation of the line of approach.
2. Evolution of organization and the inter-relationship of the various factors/functions necessary to implement a changed and planned method. This implies theoretically the procedure of working with an eye on the possible reactions, favourable and unfavourable.
3. The actual introduction of the new process/method, plant, etc.
4. Modifications necessary to overcome the difficulties that arise, keeping in mind the ultimate objectives which are to be achieved.
5. Correct evaluation.

In our country where traditions/customs are vastly different from those in the Western countries, it is neither possible nor wise blindly to copy without proper adaptation the solutions that they have evolved for their problems. Let us

Nobody Reads...

Writing in the *Saturday Review*, Mr Reynolds Girdler has referred to the Vice-president for Public Relations and Advertising of Sinclair Oil lamenting the futility of some "...89,000,000, countless hours of gruelling and exasperating..." that are involved in the delivery of 18,000,000 copies of corporate annual reports to the stockholders of 6,000 public-held companies in the USA.

Mr Girdler has cited studies by the Opinion Research Corporation and the Controllers Institute to show the low readership of annual reports. Suggestions advanced by him to improve the situation include: (1) acceptance of competent readership studies; (2) rejection of the traditional form and language of today's report; (3) designation of writers, journalists; and communication experts as judges of what should be included; and (4) engagement of successful magazine writers.

take an example. We have in our industries a system of Privilege/Casual/Sick leave, which will be inimical to the fixation of jobs for each one of the office clerks. All of a sudden and without intimation a man disappears on 'leave', and all his work remains in arrears. This problem is not there in the Western countries because they have the system of annual holiday when the plants are shut down for 2-3 weeks and this ensures continuous attendance of people throughout the year. The health standards also are high there, so that very few people would go on sick leave as compared to the frequency of absence due to sickness in India.

This is one example to illustrate that we have to evolve our own methods to tackle our problem of low productivity by keeping in mind both the basic PPC techniques and the circumstances that exist here. Also, since we are only implementing these advanced techniques now, it may be necessary to go on making modifications and improvements by continuous studies, till the plant or factory reaches an optimum working stage. Even in this respect, we cannot afford to leave things as they are; we have to keep them under continuous observation for harmonious working and for further possible modifications, which may become useful after a while, due to changed circumstances.

The PPC techniques are not new. The housewife has been practising them in day-to-day affairs of the house, from time immemorial. Each individual, be he an executive, administrator, industrialist or a *mazdoor* (labourer), has to plan his work for least exertion and to ensure continuity of a favourable future. It is for tomorrow that things need planning today.

WENDELL B FORD

George Fry & Associates, Inc.
Manila

Industrial Budgets and Their Preparation

THE WHOLE process of budgetary control is dependent on two important features which should be kept in mind.

1. The budget is not the result of an exact mathematical computation. It is the aggregate of many opinions or judgments and frequently these are compromises of conflicting opinions, prejudices, ambitions and experiences of fallible human beings. All opinions expressed in the budget are the forecast of what **will happen** under **stated circumstances.** At best, these opinions exist because the responsible persons have become experts in the area involved, and this by virtue of being well informed of performance during the recent past. Hence, all budgeted amounts are the expressions of well informed and competent persons on whose opinions reliance is placed.

2. Budgets and budgetary control has, as its essence, the art of communication. This is a two-way process. The synthesis of budgetary detail into an effective whole involves the art of accurately communicating all the basic budget data, from those **who know,** to those **who decide** policies and plans. This is followed by the need effectively to communicate the adopted policies, from those who decided, to all the operating personnel **who are responsible** for producing the desired result. The importance of this process of communication is to prevent or correct misunderstandings, false premises, inadequate knowledge.

prejudice, inattention, or apathy (any of which would weaken the effectiveness of the budget).

In the following illustrations there are no inferences regarding the relative importance of functions.

The selection of two for illustration was made simply because the principles to be discussed are easily illustrated with those functions. In actual practice, each of the two used as illustrations, as well as those not illustrated, would be much expanded in both the amount of detail and the treatment of the detail.

Preparation of Budget

The following notes are related to Chart Number One, which is attached.

NOTE A

Chart number one is intended to be an illustration of the way in which an industrial "flexible" operating budget may be put together. Amounts are inserted but have no significance except to assist in tracing data from one record to another. For the purpose of use in this discussion these amounts may be considered as average monthly amounts although in practice the budget is usually prepared for one year.

It is often a practice, in preparing such a budget, to have a Budget Committee, composed of "second tier" executives and the Budget Director who may be the Chief Accountant. Such a committee would be responsible to the President or the Executive Committee for the validity and relevance of the budget.

All budget data will be prepared by the Budget Director in collaboration with the individual who is responsible for the expenses and who will concur with the amounts adopted or report his disagreement to the committee.

All budget data will be arranged to conform with the existing accounting scheme (or to agreed changes) in order to make possible periodic comparison of actual performances to planned expenditures.

In this illustration, it is assumed that a "standard" cost system is in use and, for the sake of simplicity in presentation no inventory changes occur.

It is also assumed that the Budget Committee has agreed that the budget should represent the operating plan for a year based on the sales department's forecast of the quantities they can sell at the agreed prices.

Selling prices are usually set with reference to competition, market conditions, promotions, profit margins or other factors. Here the prices are assumed to have been established and in current use.

Since there are no inventory changes planned, the production programme coincides with the units of sales.

Obviously an actual industrial budget would have much more detail than is shown here. And, in many industries, there is the seasonal variation of sales. Such variations as seasonality are omitted from this illustration.

NOTE B

The sales forecast is reviewed with the production department to be sure that the quantities adopted can be more with the existing manufacturing facilities. In actual practice, this review will include consideration of such operating matters as number of shifts, overtime, and manpower.

The determination of operating ratio or relative use of facilities may be in terms of machine-hours or some other function.

Modification of the Sales Forecast might be made if production problems indicated the wisdom of changes. In this case the Sales Forecast is considered to be acceptable.

NOTE C

After the Sales Forecast has been reviewed to determine its acceptability, from the production point of view, it is submitted to the Budget Committee for approval and issuance.

NOTE D

The Budget Committee will consider and include, in its budget instructions, subjects such as impending regulatory, economic, financial or social changes and internal operating matters such as increases or decreases in inventories, proposed changes in facilities, methods, organization, personnel, pay rates, and prices.

NOTE E

The Budget Committee will issue the basic budget and any related instructions to each division head who will collaborate with his staff and the Budget Director in preparing a budget for the expenses necessary to operate related instructions in conformance with the basic budget.

Since this budget is a "Flexible" budget of which the purpose is to determine the amount which **should** be spent at whatever circumstances of manufacture or sales exist, the budgeted expenses are divided into:

1. Those expenses which may be expected to be of about the same amount regardless of how much is produced or sold, and
2. Those expenses which will increase, or decrease as production or sale increases or decreases.

These two types of expenses are called "Fixed" and "Variable" respectively and the amounts of each are separately stated. Some expenses do appear to be not wholly fixed or directly variable with respect to a base. Budgeting techniques have been developed to resolve the problems which arise from such expenses as are seasonal or so-called semi-variable or step variable. These do not need consideration in this brief discussion.

NOTE F

The expense to be incurred for marketing effort is determined in relation to the results expected. Commissions should be a function of sales value. Travel may well be also. Salaries may be the same regardless of moderate variations of activity. Advertising expense may be a planned or even an appropriate amount. In all, some expenses will be expected to vary with sales volume, (variable) and others to be constant (fixed).

The Selling Expense budget will be useful, not to determine how much should be spent in the twelve months to come, regardless of performance, but rather to determine how much should be spent in any month in the next year, whether the sales volume is more or less than the average monthly amount planned. The way in which this is used is explained in subsequent notes.

NOTE G

The budget for the Manufacturing Cost is somewhat more complex in its preparation. The form shown is illustrative of a procedure and not intended as the actual routine.

Associated with the budget are the Product Cost Sheets. Manufacturing costs are customarily separated into Direct Costs and Overhead Costs which are described as follows:

Direct Costs are those which can be quantitatively determined for a unit of each separate product. They are, by nature, "variable" since the amount is determinable for a unit of product. Usually, but not always, they are of two types: Material and Labour. Direct Material may include Raw Material (from which the product is made) or certain production supplies as containers or packing supplies. Direct Labour will include any kind of labour if it is determinable, without proration, for a unit of product.

Overhead Costs will include all the manufacturing cost elements which are not directly determinable per unit of product and which therefore must be prorated to the products by some acceptable device.

Here we have used the device of prorating the amounts of expenses to productive departments on three bases. For example, supervision may be prorated on the amount of Direct Labour in each department while depreciation on buildings may be prorated in the amount of floor space each department occupies.

The total amount of overhead is determined by departments and then the amount applicable to each product is based on the machine-hours used in each department, by a unit of product. Other devices and routines for distributing overhead are commonly adopted.

In practice, the amounts of Direct Material and Direct Labour are computed for a unit of product and so stated on a Product Cost Sheet. For these, the amount in the basic budget is computed by multiplying the unit cost by the number of units in the basic budget.

Overhead Costs are determined in the opposite sequence since the amounts are determined in the budget schedule first and the cost per unit computed by dividing the total budgeted costs by the quantity of machine-hours (or other denominator) in the basic budget.

Thus the basic budget and the Product Cost Sheets (standard product costs) become inseparably tied together.

NOTE H

To avoid the distraction of too much detail, other functional budgets are omitted. These will include Administrative, General and Capital costs and there can be as many or as few of these separately stated functions as the needs for control justify. Whatever they are, the treatment is similar to that shown for Selling and Production.

NOTE I

After all functional budgets are prepared they are reviewed by the Budget Committee, changed or approved and used to determine the operating profit resulting from the operating plan for the ensuing year.

It may be wise to reflect on the purpose of the budget at this stage. Here for the first time, is disclosed the expected results in terms of profit for the operation as planned. This is **a much-to-be-desired moment when management may ask itself:**

1. Are the results satisfactory and shall we proceed on this plan?
2. Are the results not satisfactory and what shall we do to alter our plans now before it is too late, so that we can produce satisfactory results?

Then, here is the golden opportunity to revise our programme and avoid unsatisfactory results—a smarter course of action than to see in *history* the poor results of inadequate planning.

NOTE J

The basic budget, as prepared, does not represent the authorized amount of expenditure since it would be quite unlikely for the exact conditions of the basic budget to be met. This basic budget serves a more valuable purpose since it becomes the foundation for planning the proper expenditures in the immediate future under any probable conditions and the measure for judging past performance under whatever conditions did exist.

Uses of Budgets

It should be observed, initially, that responsible executives do not have to examine all such figures as are shown on the attached charts and schedule to receive the benefits of budgeting. Those figures are set forth to illustrate a procedure which may be followed by the clerical staff. The man who uses budgetary control would have

given to him, in a condensed form, the information which he feels is beneficial and helpful in making management decisions or in explaining the condition, affecting profit which needs corrective action.

A well established device used in measuring industrial performance is the concept of "variance". While this term has some very specific meanings in mathematical and statistical studies, "variance" as used to interpret industrial operations is simply the difference between a planned result and actual performance.

One very important characteristic of variances as used here is that of plus and minus quantities. Favourable variances are plus quantities and increase profits. Unfavourable variances are minus quantities and decrease profits.

Hence, the amount of a variance between the planned result and actual performance may be analysed by cause, favourable and/or unfavourable, which may be added, to account for the total. For example:

Planned Profit	100,000	
Actual Profit	90,000	
Variance (Unfavourable)	10,000	
ANALYSIS OF VARIANCE		
Due to higher selling prices	25,000	plus quantity
Due to reduced production	(30,000)	a minus quantity
Due to product mix	(5,000)	a minus quantity
Total Variance	10,000	a net minus quantity

There is another concept useful in accounting for a variance in profits. It is the idea that we, as a manufacturer, pass along to our customers our manufacturing costs. In effect those people, to whom we sell, will pay our manufacturing costs. This is especially meaningful with respect to Fixed Costs.

If our total Fixed Expense is P 50,000 and we plan to make 100,000 units, we plan to pass along P 0.50 per unit and if we sell 100,000 units we do pass along P 50,000.

However, if we make and sell 120,000 units, we pass along P50,000 of Fixed Expense. If we actually spend P50,000 as we should since this is a Fixed Expense (eliminating any complications of spending too much or too little), we pass along to our customers P 10,000 more than we spent or we have a gain of P 10,000 because of the extra amount of Production and Sales. This gain is known sometimes as a "variance due to volume and assortment".

Industrial budgets and associated standard product costs may be used for control by men in various capacities, with respect to various responsibilities and in different ways. Here, two important uses will be illustrated. Top management is interested in how much profit is being made and what contributes to the increase or decrease in profits. He may note the following information:

Sales	Planned Results	Actual Results	Variance Favourable (Unfavourable)
	(Pesos)	(Pesos)	(Pesos)
Cost of Goods Sold	209,000	202,600	(6,400)
Gross Profit	135,500	137,900	(2,400)
Selling Expense	73,500	64,700	(8,800)
Net Profit	7,100	7,641	(541)
	66,400	57,059	(9,341)

Here it is shown that we made P 9,341 less profit than we planned and we want to know why, for corrective action to be taken.

The analysis of this unfavourable variance is as follows:

EXPLANATION OF VARIANCE IN PROFIT

		Variances favourable (Unfavourable) (Pesos)
CAUSED BY SALES		
Increase in volume of Sales (from 110,000 units to 116,000 units)		2,470
Decrease in Selling Prices (Product C from 2.00 to 1.80)		(12,700)
(Product D from 1.50 to 1.45)		
Total caused by Sales		(10,230)
CAUSED BY MANUFACTURING, ADMINISTRATIVE AND GENERAL EXPENSE		
Increase in Quantity Produced*	740	
Excess Spending :		
Used too much Raw Material	(1,800)	
Paid too high rates for Direct Labour	(372)	
Spent too much for Selling Expense	(171)	
Saving in Spending: Used less Direct Labour Hours	1,322	
Spent less for Overhead	1,170	
(This could be detailed)		
Total caused by Mfg. Adm. & Gen'l Expense	889	889
Total Variance		(9,341)

* This really was the result of increased sales and may be considered as a reduction of variance due to sales.

In actual practice, the form of presentation and the content would be changed to suit the needs of the individuals using the report.

In addition to this more or less general analysis of the factors which have an influence on profit, there are uses of budgetary control of more detailed nature. For example usually overhead costs must be constantly under scrutiny to avoid excessive spending. Analysing the above saving in overhead, P 1,170, the following comes to light:

	Budgeted Expenses	Actual Expenses	Variance Favourable (Unfavourable)
	Pesos	Pesos	Pesos
Supervision	6,500	6,900	(400)
Misc. Indirect Labour	8,200	7,400	800
Factory Supplies	3,100	2,500	600
Power	2,220	2,050	170
Repairs	6,000	5,700	300
Material Handling	7,150	7,900	(750)
Depreciation	8,500	8,500	—
Engineering	4,000	3,700	300
Miscellaneous	2,000	1,850	150
	47,670	46,500	1,170

The Factory Superintendent may report that he added a man to supervision with the result that they were able to reduce the Miscellaneous Indirect Labour and Factory Supplies which effected a net saving of P 1,000. However a conveyor broke and material had to be moved by hand, costing P 750 in excess of the standard amount. The foregoing illustrations show some of the uses of budgetary control in providing management with information necessary for control. Obviously these illustrations do not include the presentation of all kinds of budgets nor the whole story of operations

covered by this particular type of budgets.

To describe and discuss adequately the philosophies techniques and routines of budgeting requires serious study and the use of one of the many excellent textbooks on the subject.

However, for the reader interested in the mathematical process of computing the variances in the analysis of profit, there are included, as Chart Number Two and Schedule I, the data and the computations which explain the procedures. The computations may appear complex to the non-accountant. However, in actual practice the routine is easily learned and readily carried out by any one trained in the subject. In computing the variances there is often some difficulty for the beginner to be sure of the nature of the variance—i.e., whether it is a plus or a minus quantity. The following table will help to follow the computations of variances. However, the student of Budgetary Control should be able to visualize the nature of the variance and also be familiar enough with the subject to derive such tables rather than to depend on them.

SCHEDULE I

	Code	Illustrative Amount
Basic Budget:	B	——
Standard Amount:	S	P 16
Monthly Budget: (for actual condition)	M	P 13
Actual Amount:	A	P 15

In the case of sales (since "Sales" is a plus amount)

Total Variance (from planned):	A — B
Due to prices:	A — B
Due to Volume:	S — B

In the case of Expenses (since "Expenses" are minus amounts)

Total variance (from Monthly Budget):	S—A
Due to spending:	
if Fixed Expenses are involved	M—A
if Fixed Expenses are not involved	S—A
Due to Volume	S—M

For Example:

Using the illustrative amounts (above) the variance for Expenses will be:

Due to spending	M—A or 13—15	equals +3
Due to volume	S—M or 16—13	equals —2
Total Variance	S—A or 16—15	equals +1

In the following Variance calculations, code letters are used to assist in relating each calculation to the equations given above.

Increase in Volume of Sales.

		Pesos	Code
Actual quantities sold (computed at standard prices)		215,300	S
Planned Sales (Basic Budget)	minus	209,000	B
Increase in Sales	—	6,300	
This increase in Sales was accompanied by collateral increases as follows:			
— in standard Cost of Sales		3,460	
— in standard Selling Expense		370	
Total Increases in Cost which reduce profit		(3,830)	
Making a net increase due to volume of sales which is a Favourable Variance		2,470	

Decrease in Selling Prices

Actual quantities sold at actual selling prices		202,600	A
Actual quantities at standard prices	minus	215,300	S
Decrease in Sales value because selling price is less than planned (which is an Unfavourable Variance)		(12,700)	

Increase in Quantity Produced

Standard Fixed Overhead, the standard cost of Fixed Overhead for actual production		27,740	S
Budget Fixed Overhead	minus	27,000	M
Fixed Overhead absorbed in costs in excess of planned amount which is a Favourable Variance		740	

Excess Spending, too much Raw Material

Standard quantity of Raw Material for actual production at standard price		63,200	M

invested would continue to earn a low return. In other words, the time and energy of a Management Engineer whose services are specially employed with the objective of reducing costs and improving methods would be wasted. Is not implementation, therefore, as important as, if not more than, the study itself?

Once a decision to implement is taken, the next immediate question is 'Who is to initiate and carry out implementation?' Under practical circumstances, this can be as bothersome as 'belling the cat'. The answer to it is: the responsibility of implementation is Line Manager's. A Line Manager must not only initiate action, but also—and this is more important—actively and wholeheartedly participate in the implementation programme to ensure that the objectives of the study are achieved. In fact, the moment a study of a department is undertaken, the departmental Line Manager automatically, as it were, assumes the responsibility of implementation.

How to Proceed?—Ten Commandments

A Line Manager need not be frightened of this additional responsibility because implementation can be a lot easy if he follows the ten commandments given below:

(i) Study the Management Engineer's report thoroughly.

(ii) List the points needing clarification or modification, points of disagreement and points where the Line Manager could himself suggest further improvements.

(iii) Discuss these with the Management Engineer at an early opportunity.

(iv) Ascertain the usefulness of proposals before taking them up for implemention.

(v) Prepare the departmental staff for the changes that would be brought about by implementation.

(vi) Follow the plan of implementation prepared by the Management Engineer.

(vii) Review the progress of implementation periodically.

(viii) Apprise the immediate superior of the progress.

(ix) Even after implementation is completed, review the working from time to time to ensure effectiveness of proposals.

(x) Be ready to solve problems, if any, resulting from implementation, and seek the Management Engineer's assistance only when necessary.

These aphorisms may now be analysed in some detail.

Study of the Report

A Management Engineer should write his report in simple language so that it is easily understood by a Line Manager. The Line Manager should study the report objectively. Even if the working of his department is criticised in the report, he should take the criticism in its true spirit and remember that the proposals are aimed at bringing about improvement in his department's working, on account of which he too stands to gain in the end.

The study of the report should be thorough and critical. The Line Manager should understand the implications of each proposal and equip himself for any queries (from the staff) that may arise during or after implementation. He should examine the practicability of the proposals and be able to visualize their effects. Any difficulties regarding implementation or modifications to simplify implementation or reasons why proposals are not acceptable or aspects needing clarification or further study should be noted down for discussion with the Management Engineer.

Discussion with Management Engineer

The discussion with the Management Engineer should be threadbare. All points should be clarified and the implications understood to smoothen implementation. Study of the report and discussions should

be completed as quickly as possible to expedite implementation and to derive the benefits of proposals at the earliest. Early discussion will leave enough time for re-examining, if necessary, any particular aspect. At the end of the discussion the Line Manager must feel confident and convinced about the practicability and utility of proposals before taking them up for implementation. Remember, a correction made at the 'blue-print' stage itself yields richer dividends than at the 'erection' stage.

Preparing Department Staff

Man resists change. If it comes to him unawares he reacts violently. Some changes naturally accompany implementation; hence it pays to take into confidence the people concerned with the changes and to explain to them the resulting benefits. This creates a favourable atmosphere for receiving the changes. Cooperation comes forth and brings about in them a sense of participation. This is a very important factor in an implementation project, for **no system works by itself;** man makes it work!

Changes may be communicated by

(i) addressing all concerned collectively where aspects of common interest could be dealt with and/or

(ii) talking individually to such persons as would be particularly affected by the changes.

At such meetings suggestions from participants should be invited and doubts clarified. It paves the way to successful implementation.

Plan for Implementation

Whether a study is short or long, simple or complex, a definite plan for implementation is a prerequisite. Depending upon the complexity of the study, the number of proposals and their interdependency, the plan could be on the lines of a simple 'Gantt Chart' or a 'PERT Network'. In

A Parkinsonian Observation on Journals...

"If medical progress is to be measured solely in terms of published work, the number of journals in existence will be a source of satisfaction and pride", says FB Schick writing on 'Internal Law in Outer Space' in the Bulletin of the Atomic Scientists.

He adds: "It must be remembered, however, that each journal provides work for a council, an editorial staff and board, several editors and sub-editors, numerous reviewers, and writers, no doubt, of additional dialogue. The time spent in research is actually reduced by the manhours devoted to academic journalism. And if all concerned were to read each others' journals (as would seem essential, to prevent duplication) they would clearly have time for nothing else. It is interesting to reflect, finally, that the few people who do research of any significance usually keep each other informed by private correspondence. This being so, we can scarcely avoid the conclusion that actual progress must vary inversely with the number of journals published. I know of one university library which receives some 33,000 journals each year, and can scarcely find the staff to get them all entered and catalogued. That is, to me, a sobering thought."

any case, the Management Engineer would be the person competent to prepare it in consultation with the Line Manager. While doing so, each proposal should be listed, the target date set for its completion and the person responsible for executing it named. This will simplify follow-up and enable pinpointing of responsibilities.

It is advantageous to give priority to 'non personal' proposals (i.e. those which do not affect or involve persons, e.g. inventory control, filing system) for implementation. Benefits resulting from the help establish confidence of the staff in the utility of proposals and ensure smooth implementation of other proposals involving staff.

Reviewing of Progress

It is essential that the Line Manager periodically reviews the progress of implementation, both during and after implementation. Such reviews will help him to

(a) take suitable timely action for controlling work and

(b) apprise his immediate superior of the achievements of implementation as the latter would be interested in knowing the benefit derived from the study as against the expenditure incurred on it.

The post-implementation review can be done by exercising checks regularly or at random. Such reviews will enable him to control in time the tendency among the staff of slipping back into former less efficient methods of work.

Keeping himself informed of 'what' is happening in his department and 'how' it happens can considerably strengthen a Line Manager's self-confidence.

Problems of an administrative nature arising during or after implementation should be solved by the Line Manager himself. No reference should be made to the Management Engineer, as the latter functions only in an advisory capacity and has no administrative or executive authority. Allowing a Management Engineer to interfere with the department's 'internal' problems can give rise to very undesirable situations, and as such should always be avoided. However, on technical problems or clarifications, the line manager should consult the Management Engineer.

Depending upon the nature of study and the volume of work involved, the Line Manager could associate the Management Engineer either on full time or part-time basis to provide assistance in implementation. It is advisable to associate the Management Engineer with implementation work to the extent necessary. Being the person most conversant with the proposals evolved, the Management Engineer can provide valuable guidance.

If the services of external management consultants (and not those of a Management Engineer from within the organisation) are employed for the study, it is advisable to settle in advance the question regarding implementation also. In order to get the best results, it is desirable to associate during implementation the consultant that conducted the study. His services could be hired either on full or part-time basis depending upon the nature and volume of work. Bringing in a fresh consultant will mean additional cost, time and labour.

So far we have discussed mainly the Line Manager's role. What then is the Management Engineer's role in implementation?

Management Engineer has an equally important role to play. He can, by virtue of his knowledge and study, guide the Line Manager effectively and solve all his queries pertaining to technical aspects of the study. He can, by his tactful approach, smoothen implementation and by his intellectual ability coupled with humility, win the con-

fidence of the people with whom he has to work. All said and done, he must remember well not to misuse his liberty of access to the department under a study and interfere with its 'domestic affairs'.

Trade Union Participation

A proper understanding between the Line Manager (Management), labour/staff (Union) and the Management Engineer and an objective approach on the part of all can lead to remarkable achievements. Implementation is comparatively easier where 'Management' is 'stronger' than 'Union' or where Management-Labour relations are harmonious. But if it is the other way round, it can often create vexing situations. In such cases 'bargaining power' is the material factor. If implementation is desired to be smooth, it is generally advisable to associate 'Union' to a suitable extent depending upon the particular aspect of implementation and little progress. On the other hand, their association is likely to instil a 'sense of participation' and create an atmosphere of mutual confidence. The Management, Union and the Management Engineer could thus march hand in hand towards the common goal of prosperity through higher productivity.

Last but not the least, if an implementation project is to succeed, it has to be timed carefully, taking into consideration some of the following factors.

Introduction of Changes

People resent frequent changes in working methods, workplaces, work allocations, which not only upset morale but also adversely affect efficiency. Changes should, therefore, be introduced only when they have a decided overall advantage, considered from all angles. They should preferably be tried out on a small scale prior to their full scale introduction.

It is advisable to avoid introduction of changes in working methods or reduction in staff strength nearabout the end of a financial year. Training of staff in new methods usually takes time and depleted staff finds an initial difficulty in coping with work. This may delay or upset the year-closing work, the blame for which may conveniently be cast either upon the 'proposals' or their 'proposer', the Management Engineer. However, proposals introduced during 'slack' time will show desired results.

Severe summer can make people's life miserable, and if implementation is done under such conditions, it is likely to meet with less success, unless some steps are taken to improve working conditions.

If the staff Union has already a list of unsettled demands, it might be rather 'adventurous' to take up implementation without proper negotiations or consideration of their demands.

Some Typical Experiences

It would not be out of place to generalise some of the important points from my own experience of implementation.

If staff is not well prepared to receive changes, if communication is not clear and if there is lack of confidence, an implementation project, despite its brilliant proposals, may not be successful. Proposed changes affecting staff should, therefore, be explained properly and adequate training in the proposed methods should be given to them. In spite of this, if complaints of high workload arise later, the working methods and actual work volumes should be re-examined. A re-examination may reveal that the staff do not follow the proposed methods or their work volumes are based on their own 'impressions' and not on statistical facts. A Line Manager, who is not carried away by such 'impressions' but bases his decisions on 'facts', will be able to tackle such situations successfully. This approach will not only win him confidence of the staff but also help in curbing recurrence of complaints based on 'impressions'.

These are also commonly met with during an implementation programme. However, they could be tackled better through sincere discussions, objective negotiations, and even practical demonstrations, if necessary, of the proposed methods by the Management Engineer. Disciplinary action may have to be taken only as a last resort when all other alternatives fail. Suitable incentive schemes could be a good inducement to staff, provided they are worked out scientifically.

Behaviour of Line Managers

One comes across a variety of Line Managers: the 'unconcerned' type, the 'semi-enthusiastic' type, the 'over-enthusiastic' type, the 'impatient' type and so on. A Management Engineer must tackle all of them tactfully.

The 'unconcerned' type least bothers whether a study or implementation is done or not. Such a Line Manager comes to grief only at the end of a financial year when he finds that the performance of his department was of a very unsatisfactory level.

The response of the 'semi-enthusiastic' type to implementation is lukewarm. He does not take enough interest in it, but participates only half-heartedly.

The 'over-enthusiastic' type can also be detrimental so far as implementation is concerned. He tries to transfer his executive authority to the Management Engineer for implementation, probably with the honest intention of expediting work, but least realising that such an attitude can create staff problems.

Fire Safety of Jute Mills

The Indian Standards Institution has prepared a draft Indian Standard Code of Practice for Fire Safety of Industrial Buildings, which covers the essential requirements for the fire safety of jute spinning and weaving mills, and jute rope carpet-making factories.

Fire breaks out frequently in jute mills' manufacturing and processing sections, as the jute fibre is highly combustible. The fire may be caused principally due to frictional sparks, hot bearings, or failure of electrical equipment. Although all sections of the mill buildings are equally susceptible, the incidents of fire most often take place in batching, carding, and sack-sewing sections.

Frequency of fire break-outs in jute mills and jute godowns will be appreciably minimised, if pre-determined safety measures are adopted in the construction of mill building, installation of machinery, and in storage-godowns.

The draft standard is being circulated for eliciting technical comments which will be considered before finalising the draft as an Indian Standard.

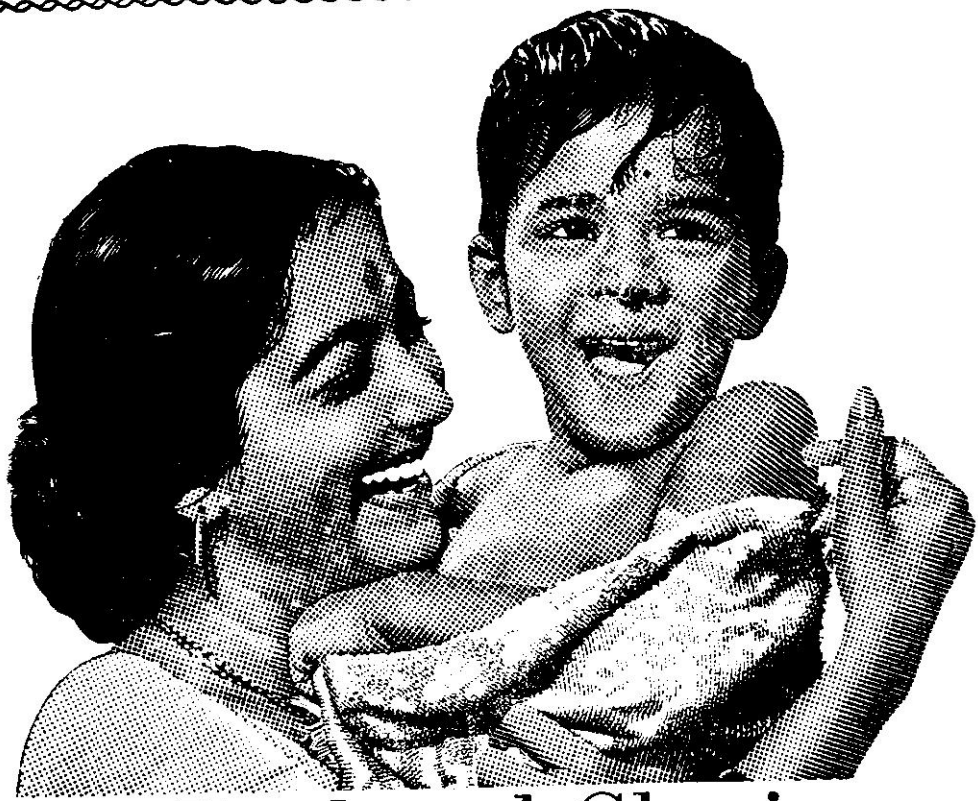
The 'impatient' type wants results immediately. He pesters the Management Engineer without appreciating that proposals dealing with workloads, staff strength and training staff in improved methods are time-consuming.

One way of correcting these defects in Line Managers—particularly the first and the second type—is to offer them some sort of an incentive to induce them to take interest in and shoulder the responsibility of implementation and ensure its successful completion. The third and the fourth type need some counselling for change of attitude.

Need for Human Touch

If asked to choose between Line Managers—the one who locks himself up in his cabin from 10 a.m. to 5 p.m. and the one who frequently darts in and out, smilingly chats with or gives a deserving pat to his men—I for one would any way prefer to have the latter as my boss. And it is true, I believe, of people at all levels. A Line Manager should know his men well, understand and solve their difficulties in respect of work and treat them as 'individuals'. He should judiciously appreciate or criticize their performance as the occasion may demand. In other words a Line Manager who is at once a guide, friend and philosopher to his staff, will certainly lead his team well. If this holds good for 'routine' work, so should it for 'implementation' work.

From what has been said so far, it will be appreciated that if 'implementation without tears' is to be achieved, the project must be planned properly, manned suitably and timed correctly. And to accomplish this goal, the Line Manager, the Management Engineer and the 'Trade Union' must all play their respective roles.



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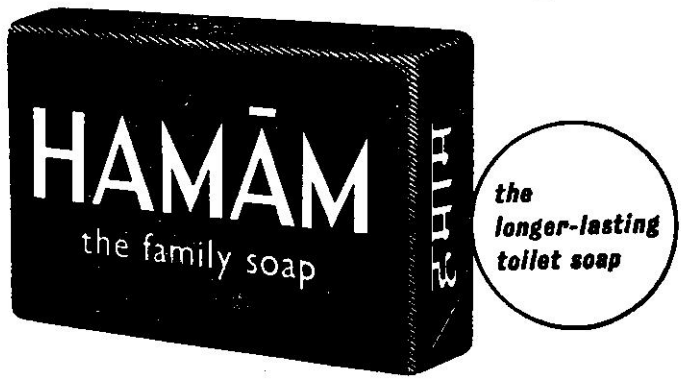

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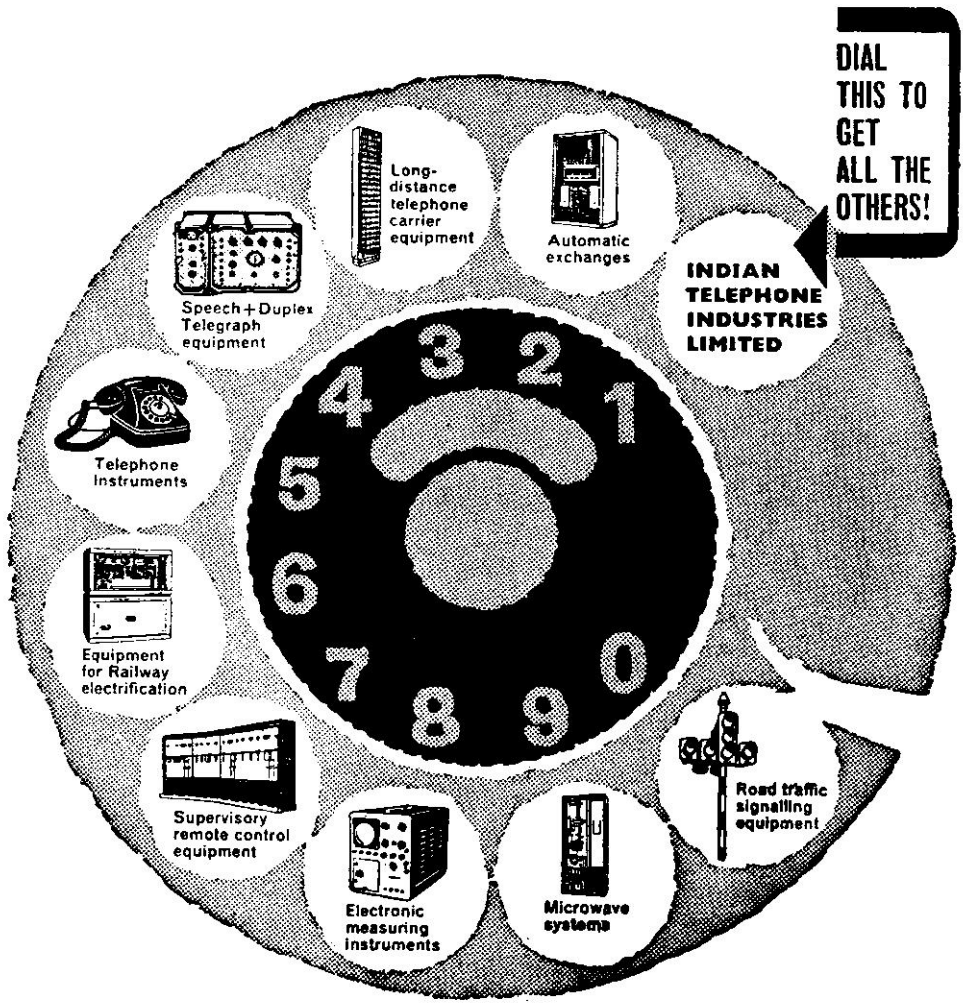

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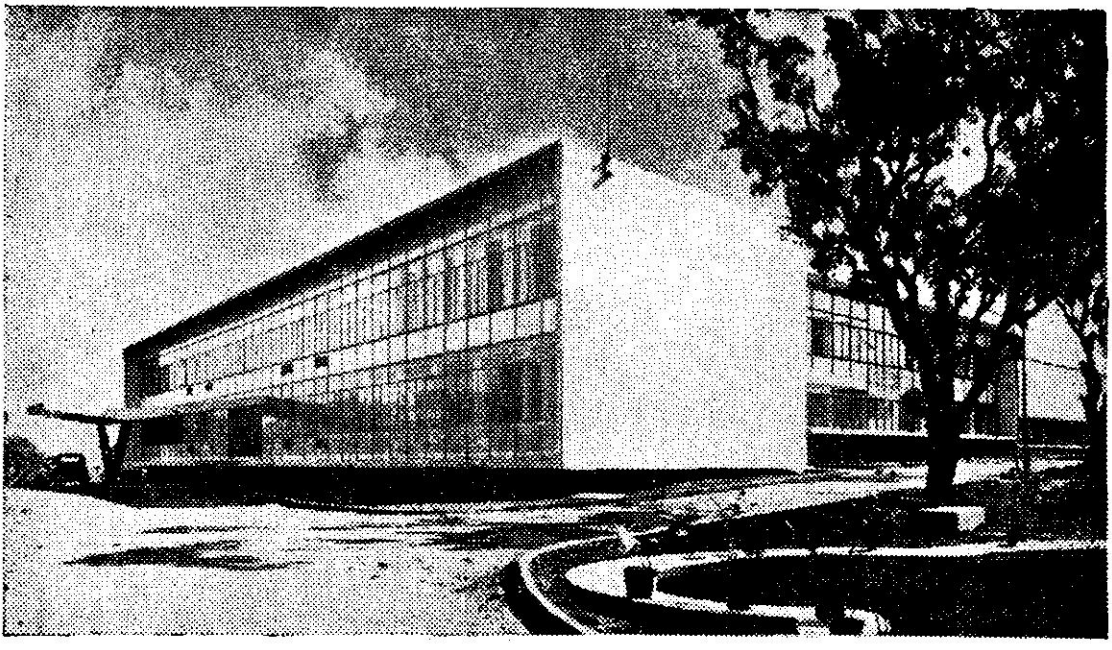

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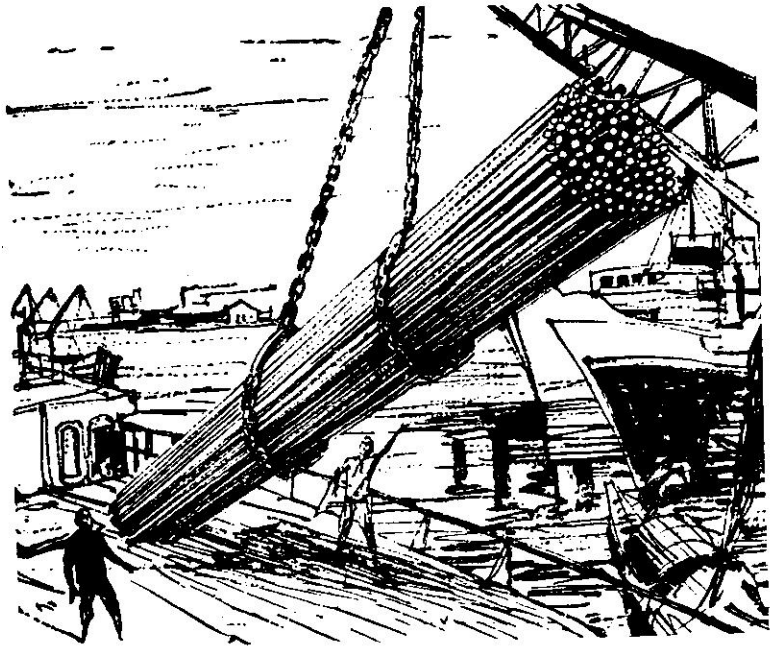

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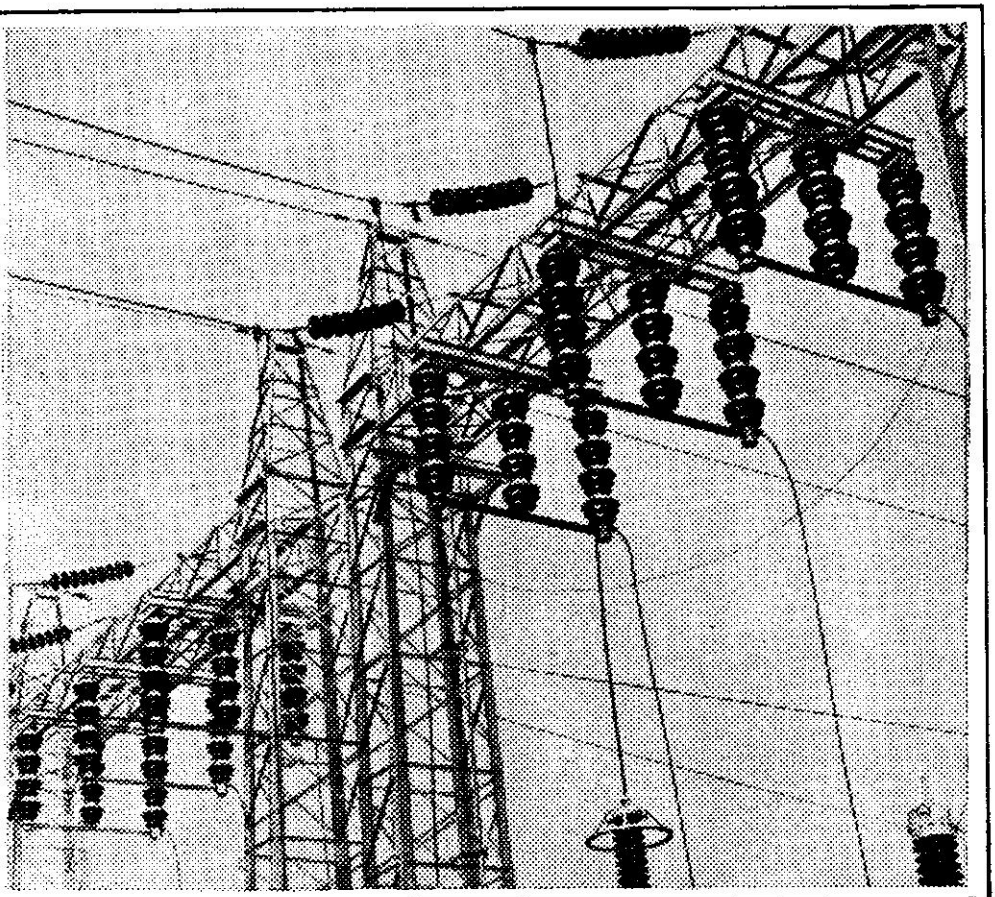

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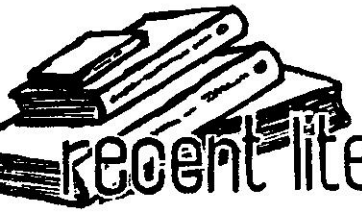

recent literature on productivity

Economic Development

FOREIGN TRADE AND ECONOMIC DEVELOPMENT OF UNDERDEVELOPED COUNTRIES: Ignacy Sachs, Asia Publishing House, Bombay, 1965, pp. 136, Rs. 15.00.

The author who had earlier published a book on the Patterns of Public Sector in Underdeveloped Economies, is the Director of the Centre of Research on Underdeveloped Economies, Warsaw, Poland. This book (which is a prize winner) studies representative economic models with a view to identify the role and significance of foreign trade in the economic growth of underdeveloped countries. The author is a high academician, and the book he has produced is remarkable for its penetrating and progressive analysis. Nevertheless, the reader is throughout conscious of political overtones; and the author has taken upon himself the task of filling up a gap: "... the task seems worth taking up since only a few works are available which analyse the present crisis in the international capitalistic division of labour from the Marxist standpoint. This colours the entire presentation and analysis, though one may say that in the broader conclusions, the true academician stands out rather remarkably well, but the broad framework within which discussion takes place is conditioned by the author's consciousness of "the network of international trade as a triangle with the socialist, capitalist and underdeveloped countries at each of its respective apexes..." and the author's broad conclusion that the salvation of underdeveloped countries lies in developing trade between themselves, as also with the socialist countries. With regard to the capitalist countries, the approach must be to keep clear of their politics, but nevertheless to exploit them fully through obtaining the maximum economic aid and using the consequent enhanced import potential to

bolster up the overall rate of economic growth. This, in common sense terms, is the strategy suggested by the author for underdeveloped countries, to make the best of both the worlds, though in actual point of fact, reading between the lines, the author's analysis is somewhat pessimistic in the sense of leaving a feeling that the underdeveloped countries are most unlikely to get the better of both the worlds; they may actually get the worst of it unless they are politically prepared, for "the international division of labour will **in some measure** be determined by the changing balance of political power . . . in the world. In fact the substance of the author's thesis is that politics is the determining factor in economic affairs; and ". . . only social and political changes can provide the means of decreasing the gap between the potentialities of mankind and its present situation when at least a billion people starve, another billion people eat too little and armaments absorb the equivalent of the total national incomes of all underdeveloped countries . . ."

Impact on Agriculture

Reading between the lines again, in the author's opinion it is most unlikely that there is going to be any radical change in this state of affairs in the coming future ". . . Considering that the impact of technical progress on agriculture is likely to be rather slow, technical progress and creation of modern industries will, in all probability, not revolutionize the existing division of labour between industrial countries and primary producers . . ."

This book has been written in a manner as though it was specially intended for us. It begins with a quotation drawn from Sri Morarji Desai (the then Finance Minister) who had at that time made a strong statement regarding the imperative need for the Western Powers to liberalise their foreign trade policies; and there is a preface that the author has specially written for the Indian edition: "I believe that it might be interesting for the Indian reader to learn how these problems are approached in a socialist country like Poland."

In discussing the external obstacles to growth also, the reference is to India: ". . . Actually, the worse the prospects for the foreign trade of a given country, the more urgently it needs—even though it suffers from lack of foreign exchange—to import large amounts of machinery and equipment in order to create a basic industry of its own . . . Quite frequently they are so anxious to ensure an adequate volume of imports of capital goods that they fall into the trap of accepting direct investments of private foreign capital . . ." Obviously this is quite a bit of advice given to us in the context of the present situation.

Then the author proceeds to the choice of a proper development strategy. A rather promising vista is opened out to us: ". . . we have to stress once again the contrast between the present poverty of the Middle World and the potential affluence it could enjoy, once certain conditions are fulfilled . . . " The actual detailed analysis, however, leads on to a somewhat pessimistic conclusion in sharp contrast to the opening statement quoted above.

In the theoretical exposition which follows, the author makes a very powerful onslaught on the theory of comparative costs, which has so far (and successfully) sought to freeze the traditional pattern of international trade. The analysis is, however, somewhat unacademic in its contempt for the theories of international trade. The author is particularly harsh on the theories of the Western economists which consider foreign trade as an 'engine of growth'. Actually in substance the whole book supports this thesis and the author, in no uncertain terms, comes to the conclusion that foreign trade can become a really powerful engine of growth, provided we know how to play

the game. It is true that foreign trade in some underdeveloped countries has led to a marked increase in 'conspicuous consumption' and that the profits of business have become "so large that they do not try to foster productivity by means of productive investment", but this is only part of the truth and it is possible by a planned direction of investment and a control of foreign trade, such as we have, to achieve a higher rate of economic growth. All that the author's advice amounts to is that we should pursue these policies with greater earnestness and thoroughness and close the gaps that antisocial forces have created for their own advantage.

The theoretical analysis is followed by a statistical appraisal in which the author has divided the various underdeveloped countries into five groups; and we are the

first in the last category, with "a continuous fall of the country's share in the world exports" (in company with Brazil, Argentina, Egypt and Chile). This chapter on statistical appraisal is probably the best throughout the whole book.

Referring to import substitution, the author says: "It is not the case of starting import substitution in some branches of industry, but that of adapting the whole national economy to unfavourable conditions on the world markets by means of a radical transformation of agriculture, tapping the natural resources, and, finally, building a large-scale manufacturing industry. Thus, the matter at stake is the choice of such a development strategy which would make the underdeveloped countries less vulnerable to the influences of foreign trade."

Right Policy

The author's opinion is that there is not much that the developing countries can do to improve the situation in foreign trade; and, therefore, the only right policy is a determined internal mobilization of resources, transformation of agriculture, and industrialization. "The speed and the ultimate effects of such measures will depend on the boldness of institutional and social solutions adopted."

On the foreign trade account, the author's conclusions in this chapter on the prospects of international trade up to 1980 are rather pessimistic. "All the factors which account for such a poor performance are of a rather permanent character." In order to have a sizable impact on the growth rate, the assistance from foreign countries would have to be increased 17 times over the present level of aid. "This points to the need for a considerable expansion of trade with the socialist countries as well as the intra-trade between developing countries."

Of course the developed countries of the West can help, for what they give would in any case "constitute a very small proportion of the income of developed countries . . . armaments absorb 120 billion dollars every year, and 5 per cent of this sum could give a very effective assistance to the underdeveloped countries. If this sum were made available, it would increase their capacity to import by almost 20 per cent. The programme of Development Decade adopted by the United Nations postulates the attaining of net transfer of capital amounting to one per cent of their national incomes. Such a sum would double the underdeveloped countries' capacity to invest."

The only hope the author holds out is that the competition between the two social systems—the capitalist and the socialist—might lead to policies of increased assistance to the underdeveloped world, but only universal disarmament could magnify the volume of such assistance.

The author then proceeds to discuss seriously the development strategy for an import-sensitive economy such as ours. He does admit very clearly the transformation function fulfilled by foreign trade. This transformation function can be maximised by a concentrated utilisation of the additional import capacity directly or indirectly for development purposes. The author here makes a diversion to the need for a proper regional allocation of scarce resources.

Foreign Trade

In discussing the strategy regarding foreign trade the author expresses himself against any policy based on autarchy: ". . . the developing country should not lose any opportunity to expand exports or to take advantage, in the most rational way possible, of the international division of labour . . . the strategy under consideration aims at expanding foreign trade to the utmost limit (making it reach the 'ceiling' set by exogenous factors) . . ." The author's formula works on to the maximization of the capacity to import and its most profit-

able and rational utilisation and on the other, the maximization of the rate of growth with a given capacity to import—and he rapidly comes to the same basic policies which we have in fact been pursuing for a long time. "The only way to expand the capacity to import is by stepping up the exports, which can be ensured either by increasing the traditional exports or by promoting the sales of new products." In both the cases, to increase the volume of exports, the underdeveloped country has to seek new markets. "In practical terms, however, the real issue is that of increasing the volume of trade with the socialist countries and intensifying the intra-trade between developing countries themselves."

Regarding new markets and new commodities, the author makes an interesting suggestion of embarking on export-oriented, capital-intensive mining projects with a high import-component, only when no alternative exists for more rewarding import-substituting investments. We have already been doing this, particularly in respect of iron ore.

The author then discusses whether it is possible for underdeveloped countries to copy Japan's performance in the inter-war period, namely to dump cheap quality goods on a mass scale in practically any market that happened to be available. The

Need for Exploitation of Basic Metallic Mineral Resources

A grim and realistic picture of our mineral industry was drawn by Dr Dara P Antia, President, Mining, Geological and Metallurgical Institute, speaking recently at the Diamond Jubilee Dinner of the Institute.

He said: "Almost after two decades of Independence, the problems of our mineral industry has increased instead of diminishing, and the solution of many problems has either not been found, or in trying to find out solutions more problems have been created to the detriment of the industry. Internationally our mineral position may be considered more vulnerable today than it was 20 years ago."

He put the blame for this situation primarily on our lopsided ideas of priorities. During the last 20 years great emphasis had been placed on the exploitation of iron ore, manganese, mica, titanium, bauxite, etc., but very little had been done to exploit whatever resources we had of basic metallic minerals, such as copper, lead, zinc, and tin, on which all the engineering, power generation, defence, and other vital industries depended. The known and available deposits were being neglected. The folly of such a policy was clearly demonstrated during the last emergency when the country found itself completely deprived of imported sources of these metallic minerals. This resulted in the complete stoppage of many vital industries, causing a serious threat to our economy and security. The danger of such a calamity repeating itself remained, as we were still dependent on the import of these metals, he added.

prospects for this, of course, appear to be rather dim.

The author's conclusion may now be summarised in his own words: "... a marked increase of exports of industrial consumer goods from the developing to developed countries would be possible only if the latter decided, for political reasons, to help the underdeveloped economies by opening markets for their exports... ...Neither can the Middle World count on a considerable expansion of industrial consumer goods to socialist countries... ...the only prospective market for rapidly expanding sales of industrial goods is that of the developing countries themselves... **...it is neither technical factors nor the uncompetitive prices that curb expansion of trade, but obstacles of a political nature...**"

So we come back again to the same old political and economic terms: a very rigid discipline of foreign trade, developing trade with socialist countries to the extent possible, getting the maximum concession from Western developed countries and trying to develop the intra-regional trade among the underdeveloped countries themselves.

Summing up, this book reaches an unusual height of acute analysis in its purely theoretical exposition. In terms of its statistical analysis also, the book is of high quality. In terms of political and economic advice, however, it does not offer the underdeveloped countries anything that is really very original. It all really amounts to sharp political bargaining; and if so, we shall do the best we can... In the context of Devaluation, the book acquires a certain topical importance, for a certain strategy must be adopted, if we are to get the best of Devaluation; and in terms of strategy, the book is a good one. It is particularly valuable for making the economy really productive over a long period: hence this long review in this journal.

Analysis of Social Processes

THE ART OF JUDGMENT: Sir Geoffrey Vickers, Chapman & Hall, London, 1965, pp. 242, 25s net.

As an essay in the analysis of social processes this is about the profoundest study published in recent years. The main title —The Art of Judgment—is, of course, somewhat misleading, for while the reader will feel greatly intrigued and enlightened by Sir Geoffrey's comments on the art of policy-making—which should have been the main title—he may not find his art of judgment very greatly enhanced. This is not in any way to detract from the value of the publication which is marked by unusual depth and perspicacity. Few in fact would be better qualified than the author in writing the type of book that he has. "I have spent my life in practising the law, and helping to administer public and private affairs; and I have thus had opportunity to observe and take part in the making of policy..." No wonder, Sir Geoffrey has acquired a rather unusual understanding of modern social processes, and a still more unusual capacity for philosophising in a somewhat Platonic sense.

The book, again, is marked by an unusual balance and conscientiousness such as only come to a man of great maturity. "So it may be inevitable that we should sometimes expect far more of our governors and even of ourselves than is in fact open to them or to us, and suffer, in consequence, unnecessary agonies of fury or guilt; and should sometimes expect far too little and thus allow a high human function to be abdicated..."

One thing for which we ought to be particularly grateful to the author is in what, in his opinion, is the historic role of the intellect as a powerful social force, even a possible conditioner of human nature

itself. "...it is clearly true that both science and philosophy, by the concepts of human nature which they use and propagate, can powerfully affect men's views of themselves, their possibilities, and their limitations and may thus alter what human nature effectively is... A too restricted view of human nature,... even though only briefly ascendant, can significantly alter the expectations, and hence the behaviour of men and societies, and may thus provide its own bogus validation. This is always a danger, not least today; and this book is a contribution to what, I hope, will be a never-ending resistance movement..."

Apart from this, the book provides an extremely rich intellectual fare in itself, particularly in the realm of public affairs. In terms of analysis again, the manner in which the author has almost succeeded in incorporating the element of time in political and social analysis is really a unique achievement: "...Few would deny today that time is a dimension of the space in which we objectively and subjectively live..."

Really Charming

The book may be a little difficult for the busy policy-maker to read. But it is very interestingly written, and some of the *obiter dicta* are really charming: "...Rats, it is true, maintain their metabolic balance ...by a series of excursions after food, each of which is a goal-seeking; and some humans similarly maintain their solvency by periodic excursions after money.... Throughout most of its domain, the civil service has, for good and ill, developed a climate which might prove even dangerously chilling to empire-builders..." A public corporation struggling to make ends meet becomes just as preoccupied with its profit and loss account as an insolvent shopkeeper... We not only grow old and die; we no longer learn fast enough... the levers of power can be handled only by those who sit in the appropriate seats; even those seated above them in the hierarchy are as impotent as outsiders or subordinates to displace the operator's hands by their own... Public bodies seldom have the experience of feeling rich and irresponsible; their designers are at pains to protect them from so dangerous a stimulus... It has been said that academic minds argue to a conclusion, business minds to a decision; in fact, both types of mind, if they are competent, argue to both and know the difference..."

Productivity Analysis

INDUSTRIAL PRODUCTIVITY AND ECONOMIC GROWTH: Dr BB Lal, Chaitanya Publishing House, Allahabad, 1965, pp. 391, Rs. 20.

This is a rather ambitious book, and a little difficult for us to review because the author has drawn extensively upon NPC publications, particularly the *Productivity* Journal which has been quoted on many pages, and in the context of many arguments. Further, he has devoted a number of pages to the NPC itself, and its involvement in the processes of economic growth.

In his *Foreword*, Dr Agarwala has pinpointed Dr Lal's principal thesis: "...industrialisation *per se* may not be a meaningful quantity unless it is associated with rising productivity or reduced cost per unit of output... The great merit of Dr Lal's book is that he not merely talks of these things in a general way, but goes into the technology of rising industrial productivity and explains how productivity can be measured, and how it can actually be augmented..."

The reading of the book justifies what Dr Agarwala has said. In fact, it is really a whole treatise on Indian Economics written from the productivity standpoint. The *Introduction* indicates the broad coverage of the book: "...The wasteful character of

our agricultural, industrial, institutional and commercial production, the defective organisation of our market mechanism suffering from inadequate and expensive facilities of credit, transport, communications and power, and the very large absolute size of our population with a poor percentage of adequately productive working population obliged to satisfy ever-increasing wants in the wake of Independence, Five-year Plans, and 'demonstration effects' are the basic productivity-retarding difficulties of our economy . . ."

Apparently, this hardly excludes anything from the author's analysis, and he has also brought in planning and monetary management: ". . . Rational employment of production factors necessitates coordinated macro-micro economic planning via a responsive monetary management in association with awareness of the need to cut down both social and monetary costs . . ."

What productivity would ultimately mean to the social economy is also clearly indicated: ". . . Productivity-geared industrialisation alone can lead to creation of a healthy investment climate, fuller employment conditions, and a progressive socio-economic order . . ."

Quoting again, nobody would differ from the author in his judgement of our comparative lack of productivity: ". . . The enormity of the productivity problems in the Indian economy can be realised from the fact that practically all the classes of our population are very wasteful at their workplace when compared with their counterparts in the industrially advanced West . . ."

The major defect of the book is that it is overloaded with facts and figures. There is a rather curious mixture of economic analysis and productivity techniques, but while that does enhance the value of the publication from the point of view of an inter-disciplinarian, it does, in the overall impact, create a somewhat confusing picture.

This is not to underrate the real value of the book to intellectuals, industrial managements, and policy-makers. For the first time, it must be said that many facts and figures relevant to productivity analysis and economic growth have been brought within a single conspectus. The reading of the author is enormous: probably he has left nothing untouched. In fact, the feeling really is that the author has spread himself over too large a canvas. However, it must be said to his credit that he has brought the traditional productivity techniques within the general framework of economic analysis, particularly Growth Economics.

Considering the modern pricing of books, the price of this publication is really modest. The printing, however, is not high class, and one really does not understand why for a publication of this character and value, such awfully poor paper has been used.

Working of AIR

BROADCASTING IN INDIA: GC Awasthy, Allied Publishers Pvt. Ltd., Bombay, 1965, pp. 269, Rs. 18.00.

In view of the current controversy regarding AIR, this is a very timely publication in which the author gives his own personal experiences of AIR for over 15 years. It is, however, a little difficult to review this book, because, both in form and substance, the subjective element is preponderant and colours the entire presentation of practically all the issues (big as also small) regarding the history of broadcasting in India. The writer rightly says: "It is a personal testament—a testimony of my own experience and an assessment of the working of AIR." Having worked in that organisation from 1945 to 1960, the author left it "in deep despair . . . The completion

of this book has been for me a kind of catharsis."

The book, despite its extreme subjectivity, does fill in a vacuum. The author is, however, conscious of the unavoidable deficiencies in his presentation on account of lack of access to official records. There is, therefore, no question of comparison to such works as those of Prof. Asa Briggs on the BBC. Prof. Briggs had at his disposal not only all the official documents of BBC, but also Lord Reith's own personal diaries!

Utilisation of Laboratory Research

(Continued from page 172)

offered, however well put in practical shape, but a complete association. I know that this can be done only in some selected cases but that is the way in which deeper conviction can be carried, and should be carried, particularly in those cases in which the stakes are high or the multiplier effect would be the largest.

The questions are:

1. Are we really personally and emotionally interested in rapid utilisation of research?
2. Are our marketing techniques suitable?
3. Is there persistence enough?
4. Is the offer made at a suitable stage, in suitable form and detail, to appropriate concerned people—the chosen few?
5. What is being offered—food to the hungry, medicine to the sick, or an overcoat in tropical weather?
6. Who is the researcher?
7. Who sets research in motion?
8. Why particular research?
9. Is the product good?

In spite of these deficiencies Mr GC Awasthy has made an outstanding contribution to the literature on AIR. It is, of course, as he says, a critical narrative of the development of AIR, its programmes, policies and ambitions and failures. In making this claim, Mr Awasthy is more than justified. The book is extremely readable but for certain avoidable printing errors. In the very preface itself the word 'verities' has become 'varieties': "the book makes no claim to have established any eternal varieties about broadcasting in India." The author means eternal verities. Despite these mistakes, however, it would pay the reader to go through this highly informative publication; and the policy-maker (on Broadcasting) would benefit enormously.

INDUSTRIAL TIMES (Special Number on Productivity), Vol. VIII, No. 11, 1966, Bombay.

This is a grateful review, for, by the publication of this special number on Productivity, the **Industrial Times** has placed us under an obligation. The publication is also timely as it comes in the wake of the IPY. The Editor deserves to be complimented both on the selection of the articles as also of the authors. The NPC, with its distinguished Chairman and Executive Director, figures a good deal—with Dr PS Lokanathan's article, "Accent on Productivity", and Brig. K Pennathur's piece, "Work Study as a Tool of Increasing Productivity". Both these articles would adorn any journal, and should not be missed by any reader. This, however, is not all, because the issue contains a large volume of readable material on Motivation, Organisational Efficiency, Management Control, Materials Management, Value Analysis, Job Evaluation, etc. All this is an extremely rich material, and worth reading in the context of the dictum of the **Industrial Times**—"In a shortage-ridden economy Productivity should be the watchword."

Editor's Correspondence

Israeli Example

. . . I wish to thank you for the great honour you did me by publishing my letter in the Special Issue on Agricultural Productivity . . . Our Agricultural Section is by now part of the new Institute of Engineering and Productivity in Agriculture, which, after some 'run-in' difficulties, has started to function quite well. These difficulties were overcome mainly by dividing our activity into five different fields, viz., 1. All jobs up to harvesting time; 2. Harvesting, mainly fruits and vegetables; 3. Preparation for marketing (sorting, grading, packing, etc.,); 4. Marketing; and 5. Processing. These are looked after by five departments, though there is also a section for the testing of machines and equipment.

As for myself, I am a member of the staff of the harvesting department, and go on dealing with similar jobs as in the Productivity Institute . . .— I WOLF, **Institute of Engineering & Productivity in Agriculture, Israel.**

June 14, 1966

Course Material

. . . It has been an established practice that the study notes released in the course of management development programmes, seminars, symposia, etc., organised by the Productivity Councils, Management Associations, etc., are made available only to participants of such programmes or seminars. As a normal procedure to be followed in this regard, this practice is perfectly in order, but, as a part of observance of India Productivity Year-1966, the

matter deserves to be considered from the following aspects:

(i) Is not the percentage of participants actually availing of the study notes by attending the programmes or seminars (as compared with such personnel who desire to avail of these notes but cannot participate in the programme) meagre?

(ii) If our planned objective is to inculcate productivity consciousness in the maximum number of people throughout the country, will not the meagre dissemination of knowledge, as shown in item (i), be too inadequate to serve the desired objective?

(iii) If these study notes are made available against some reasonable payment to interested personnel, who, for some reason or other, are unable to avail of actual participation in the programmes or seminars, will it not contribute to greater dissemination of knowledge regarding productivity techniques to facilitate attainment of the cherished objective?

(iv) Has the publication, and consequent availability on sale, of books, guides, notes, on academic subjects taught at the schools and colleges resulted in reducing the number of students attending these institutions? If not, how can the availability of the management course material, against payment, affect the number of participants attending such courses?

If the above views are acceptable, and the course material is made available to those interested, against reasonable payment, it will positively contribute to a wider dissemination of productivity consciousness throughout the country, for which IPY-1966 is being celebrated—RD KULKARNI, **Chief Accountant, Kopargaon Sahakari Sakhar Karkhana Ltd., Gautamnagar, Ahmednagar.**

June 15, 1966.

Human Relations

... *Logon Ke Sath Kaise Nibhayen* marks an important addition to the field of Hindi publications.

Human relations is the backbone of social existence, and I hope this publication, dealing with this important aspect, would contribute towards better relations. I compliment the NPC for this useful effort. I shall certainly do all that I can to popularise this publication, and recommend it to the various organisations—BN BHASKAR, **President, Delhi Productivity Council, New Delhi.**

June 15, 1966

IFC Centre

... I am pleased to inform you that a Centre for Inter-Firm Comparison has been established here in collaboration with the Ahmedabad Management Association.

I find that you had brought out a special issue of PRODUCTIVITY on Inter-Firm Comparison. In it you have given some interesting features about Inter-Firm Comparison together with articles on the subject from authorities like Mr Ingham. This issue has rather served me as a reference book.

In your comments, you had also mentioned:

(1) Some study groups had been set up by the National Productivity Council for 5 major industries — cement, bicycles, electric motors and transformers, jute and rayon. I shall be pleased to know, if you could help me in getting a broad picture of the methodology and approach adopted in making Inter-Firm Comparisons. Please let me know if the reports published by these groups are available.

(2) You had a programme to invite Mr Ingham to India to give talks on the

subject. I am interested in knowing if the idea is still alive.

(3) I would like to contact the British Centre for Inter-Firm Comparison too, to seek their cooperation, know about their experience and obtain case studies or study reports they may have published.

(4) The work done by OECD in this direction will also be of interest to us. It would be of interest to us to know the fields of study they have touched upon, and reports etc., published by them—NK JAIN. **Group for Operational Studies, Ahmedabad Textile Industries Research Association.**

EDITOR'S REPLY

(1) The Reports on Cement and Jute have been published. A few copies are available at Rs. 5 and Rs. 10 per copy respectively.

(2) The idea of inviting Mr Ingham is still on the cards. It is difficult to say when it would materialise.

(3) The address of the British Centre of IFC is Inter-Firm Comparison Ltd., Management House, 80 Fitter Lane, London, E.C.-4.

(4) OECD (Organisation for Economic Cooperation and Development) publishes a regular journal called *Productivity Measurement Review*, which contains a number of interesting articles on IFC theory as well as case studies.

Farm Management

... I am sure you will be pleased to hear that the Kerala State Productivity Council has started an intensive application programme on Farm Management at Palghat. The participants consist of the progressive farmers of Palghat District. About 85 farmers of the District and Government Officers attended the inaugural function.

This, to my knowledge, is the first whole-time intensive training programme on Agricultural Productivity and in particular paddy cultivation, organised in India. The programme envisages intensive theoretical discussions on effective paddy cultivation including selection of seeds, fertiliser and use of pesticides as also application of productivity and management principles to farming. Being the first programme of its kind, I am sure you would give this activity the importance and publicity it deserves. —A DEVARAJAN, **Kerala State Productivity Council, Ernakulam.**

IPY–1966

...It is heartening to note that the current year is being celebrated as the India Productivity Year throughout the country and accordingly various courses, programmes, seminars and conferences in larger numbers, are being organised by the Productivity Councils, Management Associations, Chambers of Commerce, etc., at the national as also regional levels, to develop productivity consciousness amongst the citizens of India. It need not be stressed here that the above objective of developing productivity consciousness in the country can be taken to have been really fulfilled, only if it is effectively impressed on the minds of the majority of the Indian population which lives in rural areas. It is true that such gigantic work cannot be achieved within the course of a short span of one year. What is important to note, in this connection, is that it requires to be carefully watched and pursued, that seeds of this idea are scattered, multiplied and properly sown in all the nooks and corners of India, by all possible modes of publicity.

If the celebrations of the 'IPY-1966' are to serve their desired purpose effectively, a nation-wide educational campaign will have

to be launched right from the national level downwards, at all rungs of the ladder, bringing home to all the rural and urban population the dire necessity and urgency of developing productivity consciousness, which, while serving their own interest, will ultimately contribute to the national weal and welfare. In addition to this general campaign to be launched as above, all sorts of encouragement and help require to be given to all those who are keen to study the advanced productivity and management techniques which will ultimately be used by them for a national cause.

Will these modest views be approved by all concerned with the celebrations of 'IPY-1966' and by brother-readers of the journal? —RD KULKARNI, **Chief Accountant, Kopargaon Sahakari Sakhar Karkhana Ltd., P.O. Kolpewadi, Dist. Ahmednagar (Maharashtra).**

March 30, 1966.

Owing to heavy rush of material, the feature on what the Radio and Electrical Manufacturing Co. Ltd., of Bangalore, had been able to achieve in the field of import substitution has been held over for the next issue.—*Ed.*

Leadership

. . . I would like to congratulate you on the IPY-1966 Issue of *Productivity* (Vol. VII, No. 1), and specially on the way in which you reproduced "Leadership". I think it is very well done . . . —MK RUSTOMJI, Tata Engineering and Locomotive Co. Ltd., Jamshedpur.

Questions from A Reader

1) What are the difficulties experienced in developing productivity consciousness at different levels of the Indian Economy, and how can they be effectively overcome?

2) What are the various means that are adopted in India for exploiting the material and manpower resources to the optimum? The propositions may preferably be demonstrated by reference to facts.

—RD Kulkarni, Ahmednagar

Readers of PRODUCTIVITY are invited to answer these rather exciting questions—EDITOR

"... the rat in the maze and the judge on the bench display differences (as well as similarities) of behaviour which cannot at present be contained within a single conceptual framework. No doubt, even judges might sometimes behave in every way like rats; but rats never behave in every respect like judges..."—SIR GEOFFREY VICKERS in *The Art of Judgement*.

"...*Nationalism is largely bogus. In the new nations of our time innumerable peasants and labourers must have found themselves being cut down from five square meals a week to three in order to provide unnecessary airlines, military forces that can only be used against them and nobody else, great conference halls, and official yachts and the rest* ..."—JB PRIESTLEY in the *New Statesman*.

"...I have had occasion to read files in India which go back to Lord Curzon, British Viceroy in India (1899–1905), and in the same connexion I have read current files on governmental subjects. The language, style, format, the absence of any urgency, the Olympian detachment of the bureaucratic writers — separated by six decades — all are charmingly identical. Charming— if the Indian case were not so desperate..." —LELAND HAZARD in the *Indian Express*.

"...*By and large, the average people of India are so good that they are easily satisfied merely with kind treatment*..."—MORARJI DESAI, *Chairman, Administrative Reforms Commission* (at Bangalore).

"...the purpose of appointing committees in India has traditionally been not to initiate action, but to produce reports that gather dust and serve as ornamentation for secretariat shelves..."—*The Capital* (Ditcher's Diary).

Winston (Churchill) said to me, "You see, old cock, you can cook the Budget, but you can't cook the balance of payments..." —LORD BUTLER (quoted in *The Statesman*).

"...Nearly Rs. 10-lakh worth of imported equipment meant for the Sabarigiri Hydro-electric project in Kerala has been rendered useless because of the authorities' failure to store them properly ..."—Report in *The Statesman*.

"...*Dairy farming is almost a neglected industry in India... In Orissa once, seeing cows that were extremely small in size, I inquired about their milk yield, and the villagers said it was about a pound per day. On my expressing surprise at this low yield they told me that cattle was kept only for the dung which was used as manure, or for breeding calves*..."—KN KATJU (in an article in *The Statesman*).

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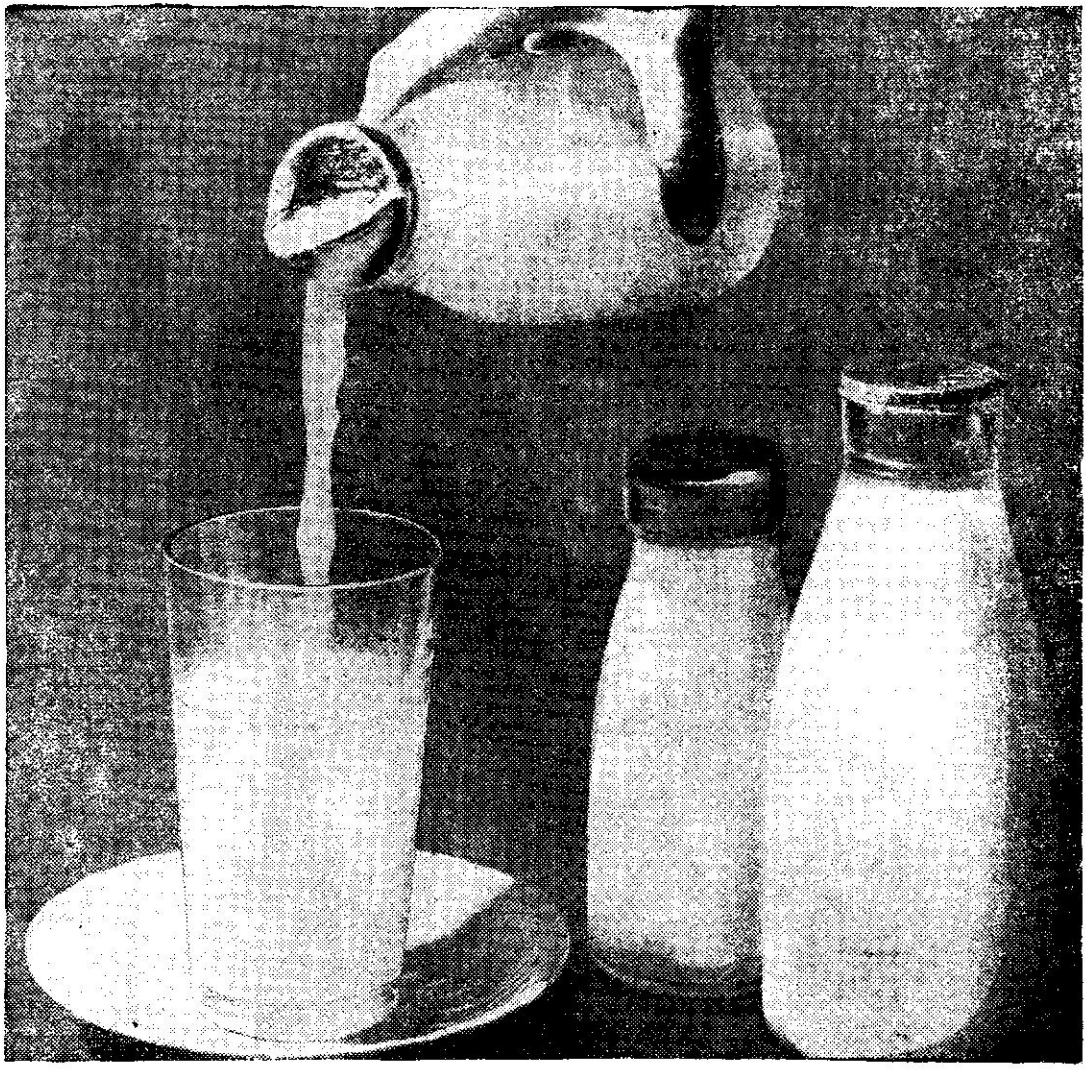

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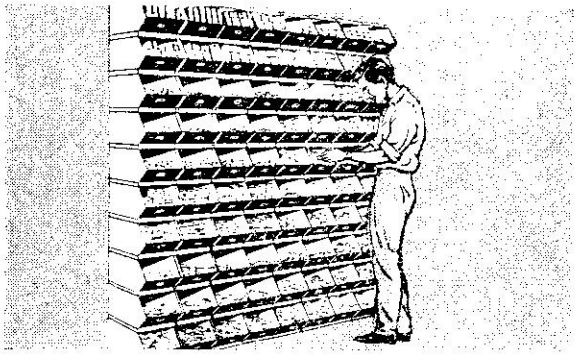

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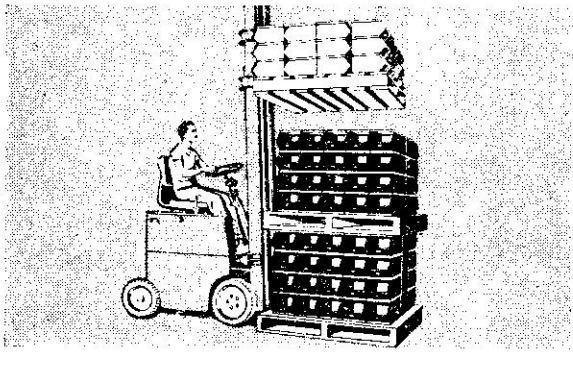

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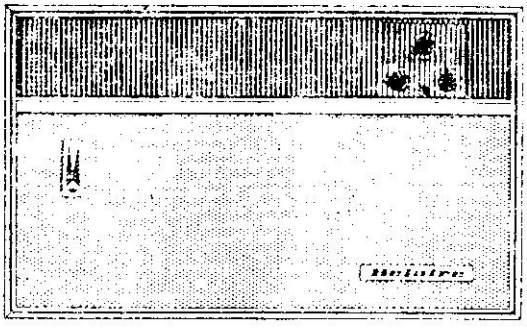

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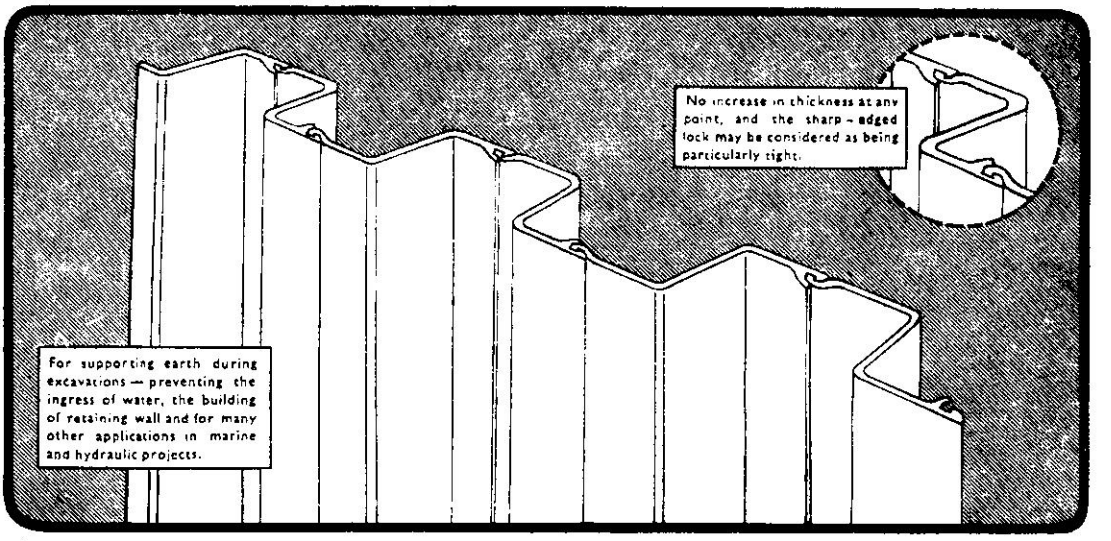

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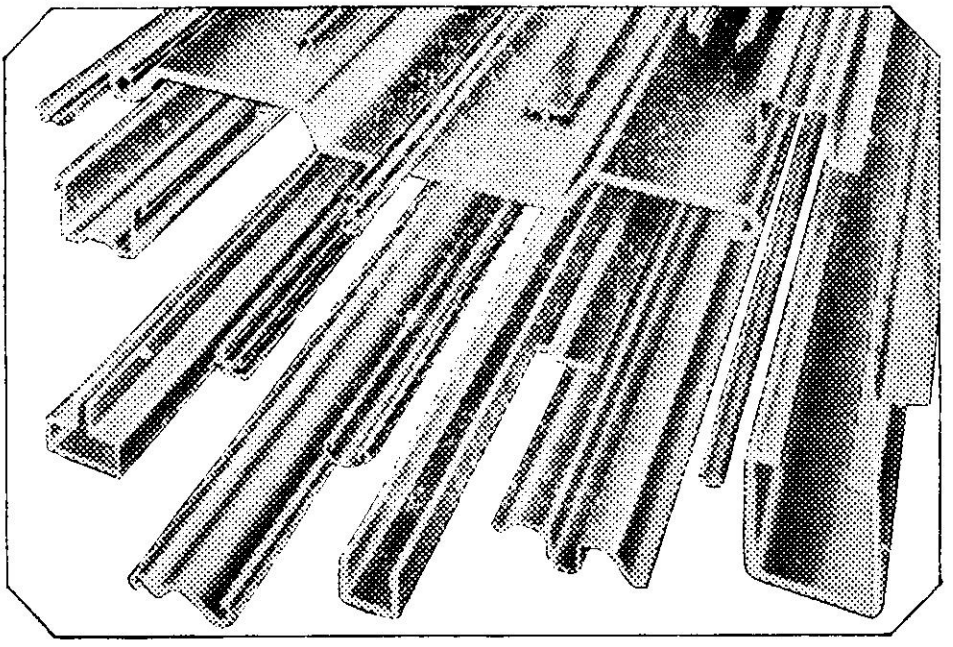

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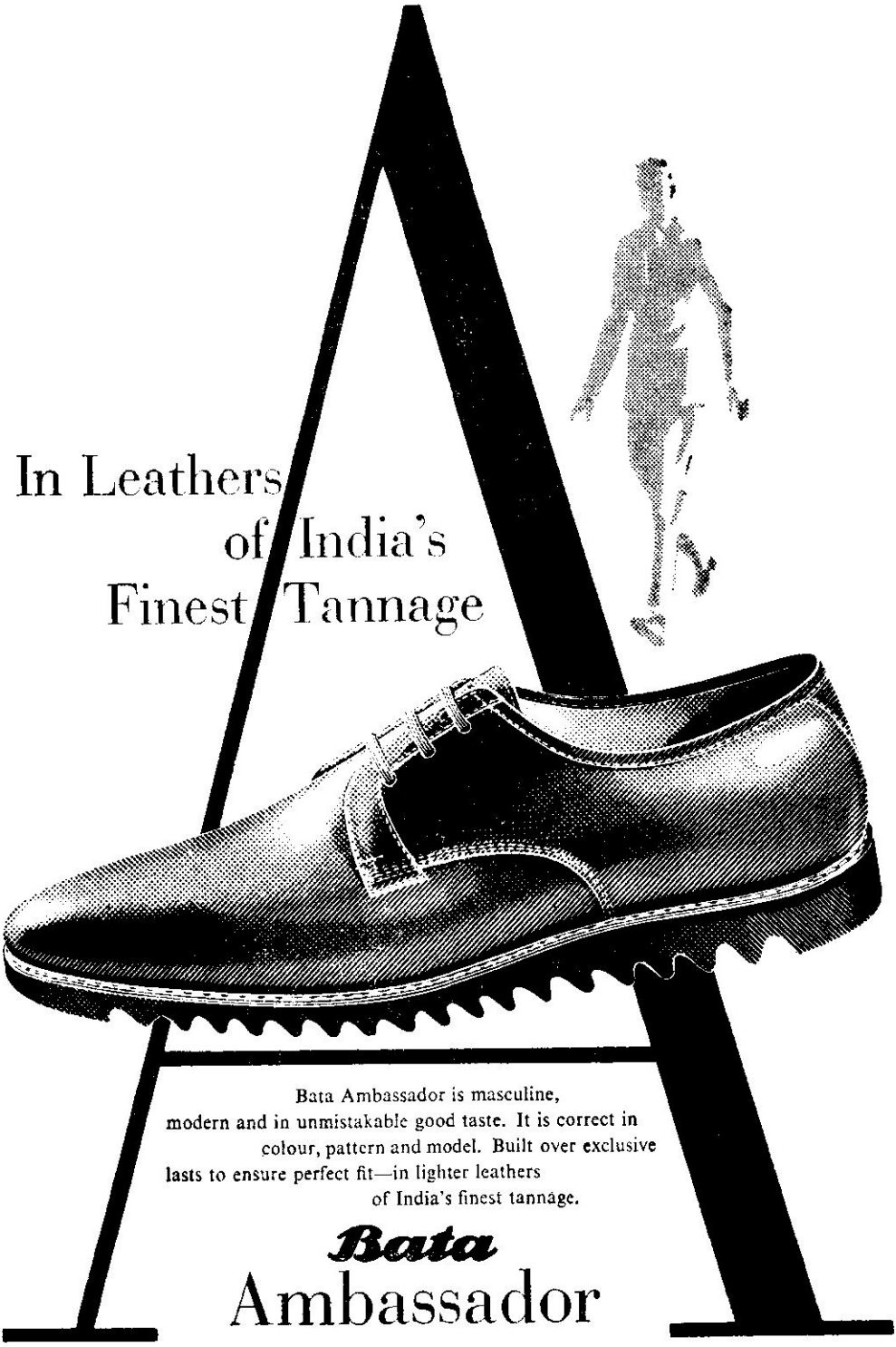
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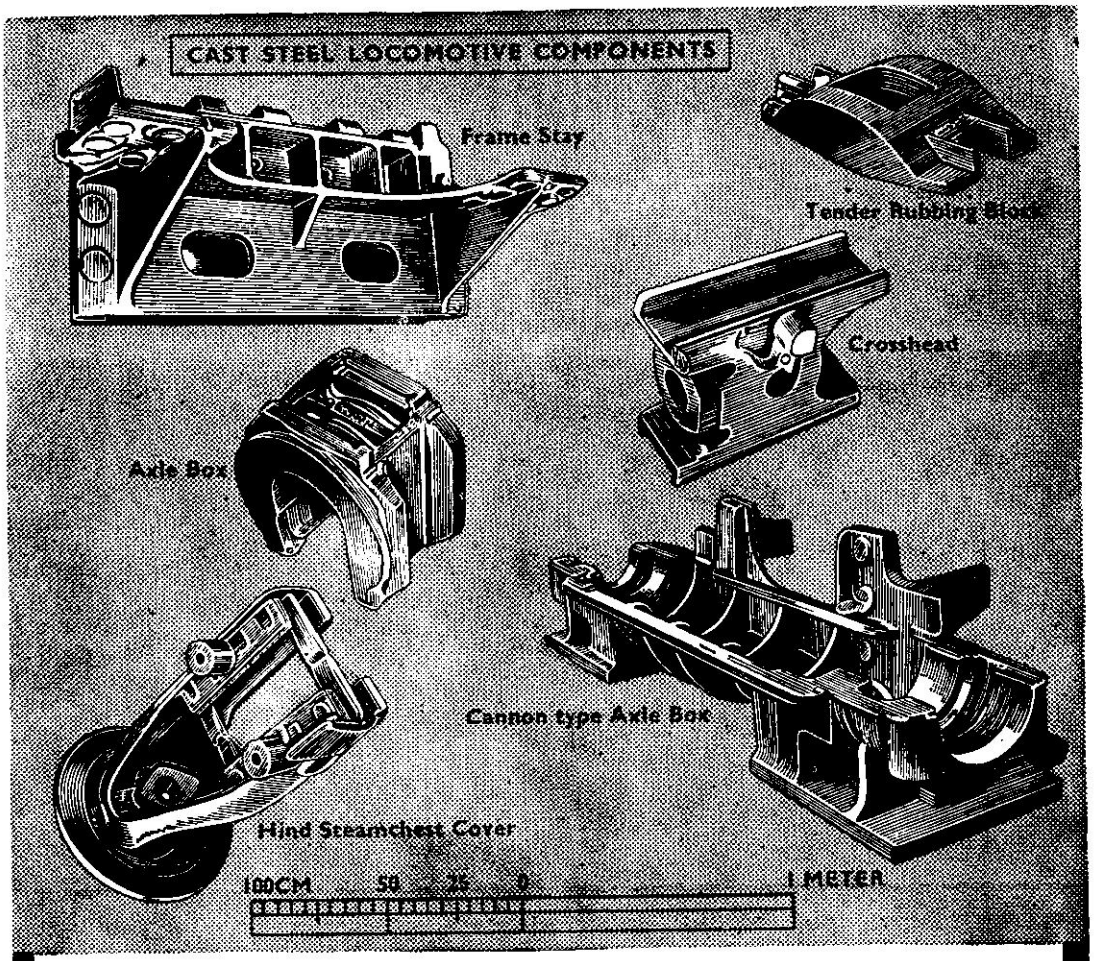

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