THE MOTIVATION OF MIDDLE MANAGEMENT IN THE NORTH DERBYSHIRE AREA OF THE NATIONAL COAL BOARD

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SYNOPSIS

This research into management motivation, in the National Coal Board, indicates motivation differences between identifiable groups. The motivation factors established by Professor F. Herzberg are used as the bases of comparison of groups composed on the basis of age, salary level, organisational level, professional training and number of dependents.

The technique of Management by Objectives is applied by the organisation as a motivational tool, and its value is assessed.

A review of the subject literature is made, including academic and research based theories. In addition a review is made of practical applications of "job enrichment".

The research was carried out in an Area organisation of the National Coal Board, using a structured interview technique involving the completion of a standard questionnaire, leading to a quantified reply for each individual. Statistical hypothesis testing is used to determine significant differences between the groups.

The research concludes that all the motivators and hygiene factors specified by Herzberg are represented amongst the personnel examined, but in varying strengths. Knowledge of these variances can provide guidance when seeking to motivate personnel. For example; the under 45 year olds are most susceptible to the advancement, possibility of growth and achievement motivators; the older personnel are more responsive to the recognition of achievement and work itself.

As far as the use of "MBO" is concerned, appraisal interviews are not giving rise to many significant dissatisfactions, nor are they stimulating motivation to work. The potential contribution of the technique is being lost.

Success criteria for the research are specified in the introduction of the work, and subsequently examined.

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A. INTRODUCTION

1. Definition of the Subject

The principal subject area involved in this project is that of motivation. Some people work harder than others, some less hard. Why is this? Are some people idle by nature, whilst others cannot prevent themselves from working? Alternatively are there underlying causes which account for these differences?

In comparatively recent times the behavioural sciences have been developed. The fundamental assumption lying behind behavioural science research is that, except for certain automatic behaviour, (e.g. breathing, blinking, etc.), all behaviour is caused. People respond to certain stimuli in different ways. It may be more accurate to say that, in general, people respond similarly to similar stimuli, but the strength of reaction varies with the individual, considerably influenced by his personal characteristics and previous learning.

The concept of motivation refers to this reaction strength, implying that underlying behaviour one finds a "push", or a "motive", or "want", or "need", or "drive".

The three principle theorists in the field of motivation are Maslow, Herzberg and Vroom. (REFS. 1, 2, 3 & 4). Whilst the works of all three have much to commend them, the author has singled out, for practical use, those of Frederick Herzberg.

Herzberg and others (REF. 5) have performed considerable practical research in support of the original hypothesis. In general, research has been concentrated on professional people rather than the shop floor. For this reason, plus an intuitive appreciation of the value of the theory, the author feels that Herzberg's findings are particularly applicable to this research.

This project does not seek to validate Herzberg's findings but, rather, accepts them and utilises them to form a basis for research.

In recent years "Management by Objectives" has emerged as one of the most popular techniques employed by organisations to improve management effectiveness. The aim of the technique is to better "fit" the goals of the individual with those of the organisation, to make them more compatible. In so doing, it is considered that the individual's work for the organisation better fulfils its needs, and the increased satisfaction for the individual, from doing a better job, further increases his motivation to work.

As far as this project is concerned it is not possible to perform an "attitude to work" survey, before and after the introduction of MBO, because the technique has been in use for some time in the organisation investigated. As a "second best" measure the research seeks to determine the attitudes of individuals to MBO. The assumption is made that the population investigated is capable of appreciating tangible benefits of the techniques, in terms of improved work performance. Therefore their attitudes to the use of such techniques should provide a measure of the value of MBO.

In common with all organisations there are considerable differences in circumstances of individuals (e.g. age, pay, job, dependents and training). An attempt is made to analyse results so as to identify significant motivational differences with individual's cicumstances.

2. Scope and Significance

All organisations are composed of people, who perform the functions necessary for it to remain a viable entity. No organisation operates in isolation; all are affected by their external environment. In some way, all organisations have competitors. Their performance must be close to that of their competitors if they are to survive.

Performance is a function of technology, opportunity and human endeavour. The latter makes up the dynamic element of performance, for without it, technology cannot advance and opportunities are missed. Thus, an individual's motivation to work is a vital element in the success of any

organisation. In so far as an organisation's employees are as motivated as those of its competitors, the organisation will survive. In so far as their motivation is greater they will prosper.

For some time, companies in the U.S.A. have been interested in the application of motivation theory, and this interest is growing in the U.K. Any company that ignores the available knowledge in this field is running a high risk of failure. The chances are that competitors, armed with superior knowledge, will make advances, and thus cause the contraction and ultimate extinction of the organisation.

Management makes up the nervous system of the corporate body. Without an efficient nervous system, the entity experiences difficulty in unified efforts, and is unlikely to survive in the face of superior opposition. The motivation of management then, is particularly important to a firm's well-being.

At present few organisations would claim to be particularly successful in motivating management. Success tends to be random, and more associated with fortune than planning and control. There is considerable scope for a deliberate and professional approach to motivation, based on the findings of behavioural science.

3. Objectives

a) The principal objectives of the research are, to reach useful conclusions on an aspect of the collaborating establishments organisation, and to provide a beneficial training, to the author, in the solution of practical management problems. The research should form a sound basis for the drafting of this thesis, designed to satisfy the requirements of the C.N.A.A. for the degree of Master of Philosophy.

b) The specific objectives are:-

i) To suggest ways in which the organisation researched,, can improve the motivation to work of its employees, allowing for individual

differences.

ii) To determine the value of the existing formal technique, Management by Objectives, as a means of improving the motivation to work of employees.

c) Success criteria :-

i) Positive practical suggestions are concluded from the research.

ii) Significant differences in motivation needs of individuals, with differing circumstances, are detected.

iii) Acceptance of the thesis by the C.N.A.A. as satisfying their standards for the award of the degree of Master of Philosophy.

iv) Implementation of the findings by the collaborating establishment.

v) Improvement in the author's performance at work upon completion of the research.

4. Constraints

In order that the research can proceed and responses be forthcoming, it is necessary that the method and questions be acceptable to all participants. Inevitably this constrains the range of questions and methods that can be employed.

The author has limited knowledge and experience of the subject area involved and this is a major constraint on the research, even though specialist knowledge is available in the Management Studies Department of Sheffield Polytechnic. It is probable that superior knowledge and techniques are available than those used, but this is of no moment if they are not unearthed by the author.

The findings of Herzberg on the work motivation of other work groups are accepted for use. Ideally the motivator/hygiene factors for the organisation sampled should have been determined independently, using Herzberg's method. The acceptance of his range of factors limits responses

to them. It is possible that other factors are responsible for the motivation and demotivation of the work group examined.

The management stratum selected is limited in size to the North Derbyshire Area of the N.C.B. The result is that sample sizes available for research are relatively small.

5. General Information

a) Organisation examined

The organisation examined is the North Derbyshire Area of the National Coal Board, with headquarters at Bolsover, near Chesterfield. The Area is one of 13 employed by the N.C.B. in its coal production sector. On average Areas are designed to have a production capacity of approximately 9 million tons per annum of coal at a productivity rate of approximately 45 cwts. per man per shift. The North Derbyshire Area currently has a budgetted capacity of 7.8 million tons per annum, at a productivity rate of 60.2 cwts. per man per shift. The Area's favourable productivity record is offset by the relatively low proceeds received for its products. The Area is working a relatively old coalfield and is reduced to production from poorer quality seams of coal than were formerly available.

In recent years the Area's production capacity has reduced through closure of exhausted collieries. Output is currently stable, but must continue to decline in 4 - 5 years time. The effects of closures, and the fact that most collieries have short lives compared with those in neighbouring Areas has resulted in the average age of employees being relatively high.

There are twelve operating collieries in the Area producing annual tonnages ranging from 250,000 to 1,500,000 plus, with manpower complements from, approximately, 300 to 2,000.

Historically the organisation relies on autocratic leadership, but is making great efforts to develop more participation in order to improve the commitment of employees to its objectives, and thus improve performance.

Conditions of employment of staff are relatively good and have shown improvement in recent years. In most cases they are comparable with those provided in other local industries.

A map of the Area, showing the locations of production and other facilities is produced as Appendix I. As can be appreciated, despite its large overall geographical size, operations are concentrated in a compact area, centred on Bolsover. Some of the communication problems, formerly associated with operations in the Ilkeston/Heanor area have been eliminated by colliery closures for exhaustion of reserves.

A formal organisation chart for the Area is presented in Appendix II.

b) Personnel Selected

The personnel selected for investigations are all heads of department sections at Area level, or department heads at colliery level. These segments of middle management are selected for their activities being relatively functional, as opposed to general supervisory or policy setting. They are directly responsible for the performance of tangible tasks, and their work efforts directly and immediately affect the performance of the organisation.

All section heads of departments are interviewed (a total of 22), but only departmental heads at two collieries (a total of 11).

B. PROJECT SELECTION

1. Constraints

a) The prime influence on the selection of the subject for the project is the author's opinion that he could most benefit from the tackling of a problem in an area in which he has little or no previous experience. This opinion is reinforced by the belief that the principle objective with respect to a research project for a M. Phil. award, should be the improvement of the researcher's work performance. There seems little practical value in pursuing a problem area in which the author can gain experience in the course of his usual job.

b) The subject area selected, however, should not be so far divorced from the author's operating field as to be of extremely low practical value in the future. The implication of this seems to be that the subject should be of a general nature, common to all segments of the organisation.

c) If a problem is to be meaningful, its solution should be of practical value to the organisation. Text book problems are unlikely to elicit the maximum co-operation of the organisation and individual participants. Maximum co-operation is only likely to be forthcoming where participants perceive benefits that may accrue to them from the research. In addition, a text book study could not provide the author with the personal satisfaction for which he feels a need. The expenditure of so much time and effort should lead to knowledge of some practical value.

Summarising these points into three principle criteria for selection:-

Criterion 1; The problem should be a subject area in which the author's previous experience has been limited.

Criterion 2; The subject should be of a general management nature, in an area not too remote from those in which the author is likely to be involved in his work situation.

Criterion 3; The solving of the problem should be perceived as having some practical utility to the organisation.

2. Alternatives

The three criteria specified above eliminate problems of a technical engineering, production control or planning nature. Possible subject areas are therefore:-

a) Marketing management

b) Financial management

c) Personnel management

The decision of the general subject area among these three alternatives is largely a matter for personal preference, for the organisation faces a number of significant problems in all of them. Lord Robens (Ref. 6), however, identifies the principle problem area facing the coal industry, (and indeed industry in general), as that of "human engineering". The potential work performance improvements are greater from this area, than from likely technical advances. In addition capital expenditure to achieve such improvements is likely to be minimal. Indeed if advances in this area are achieved, then advances in other fields should follow as a natural consequence.

3. Specific Problem Area

Having selected personnel management as the general subject to be investigated, it remains to identify a specific problem area and, beyond that, a problem per se.

In the opinion of Tom Lupton (Ref. 7), if personnel management is to survive as anything other than an administrative aid to management, it must apply the findings of behavioural science to the industrial situation.

For many years cash incentives, or threats of sanctions have been used in attempts to improve work performance. The success, or otherwise, of such methods is open to debate, but there is considerable evidence to suggest that the effects of such methods tend to be short lived, and expensive in terms of finance and supervisory effort.

One answer to improving work performance, which lies within the influence of managers is the creation of a working environment, both physical and mental, in which the individual desires to work, without the need for cash incentives or threats.

An individual may be highly motivated to work and be highly productive, but if his efforts are not directed towards key objectives of the organisation, then much effort will, in effect, be dissipated. Therefore, not only is the problem of inciting work activity, but also one of directing any resultant activity towards organisational goals. The N.C.B. has accepted M.B.O. as a management tool to achieve this latter point.

Properly applied, M.B.O. techniques are likely to increase the motivation of participants, by creating greater involvement of individuals in organisation affairs. A more significant contribution, however, is likely to be the improvement in effectiveness of work activity, by improvement of the direction of work efforts.

The problems selected to satisfy, as near as possible, all requirements is "the motivation of managers", or more specifically "the determination of the principle factors in the motivation (or demotivation) of managers within the North Derbyshire Area of the National Coal Board".

c. LITERATURE REVIEW

1. Introduction

Motivation is probably, potentially, the area of behavioural science in which the application of current theories could most benefit work organisations and their employees. A motive, by definition, as a determinant of behaviour, is a factor that incites the organism into voluntary action, (as opposed to involuntary or reflex actions).

With the increasing size of organisations, and increasing specialisation, it is common to find individuals with drab, uninteresting jobs, whose main preoccupations appear to be the end of the working day and monetary reward at the end of the working week. Not only does the individual suffer, but so does the organisation from reduced work performances.

Motivation is a term which implies three things; need, the objectives or goal to satisfy that need, and the behaviour required to achieve the goal. In the last 20 - 30 years a number of notable psychologists and management thinkers have made contributions to the understanding of motivation. Foremost among them are Maslow, Herzberg and Vroom. Other significant contributions have been made by McGregor, Argyris, Lawler and Porter, Opsahl and Dunnette, Likert.

This review attempts to outline the ideas of the foremost thinkers, and to reconcile their individual contributions. Further reviews of the literature concerning research based in this field and industrial experiences. are presented.

2. Theories

a) "Scientific Management" - (Ref: 24)

Around the turn of the century, F.W. Taylor (Ref: 25) was influential in the founding of the "scientific management" movement.

His principles involved the scientific evaluation of the movements to perform a given task, in order to determine "the one best way". Having

determined the "one best way" he proposed piecework incentives as a means to motivating employees to perform.

Scientific management emphasises three characteristics of a successful work organisation; efficienty, standardisation of jobs, and discipline and hierarchial authority.

Its principles have been developed to cover tool design and plant layout. However, "the conception of man is not far removed from that of an automaton, whose performance can be improved by the application of logical engineering principles and simple economic incentives." (Ref: 24, pp 16)

Experience has shown that scientific management does not always work. The problem is the human factor, "that complex, elusive, emotional, social, and sometimes non-rational being, whose behaviours comprise the substance of the organisation." It is apparent that there is a discrepancy between the traditional theory and the actual behaviour of organisations; between the way organisations should work and the way they do work. The Hawthorne research (Ref: 26) made it clear that socio-psychological principles of behaviour appertain to the work situation.

b) Abraham H. Maslow - "The Hierarchy of Needs" -(Ref: 1)

Probably the most widely accepted theory of human needs is that of Abraham Maslow, who developed a hierarchial structure. Maslow says that the human being is not born with a complete set of needs. Like any other animal, he is dominated at birth by the need to survive. He must eat, drink, rest and defecate. Until these needs are relatively well met and no longer require all a man's energies, the second and higher order of needs, the safety needs, assume no importance. Safety needs include security and order in the environment as well as the physical security of the individual. The young child spends a great deal of time asking questions in an attempt to categorise and give structure to the environment around him.

Once he feels safe, and perceives a coherent structure in his environment, the third, and again higher level of need will begin to preoccupy him. This is the need for love and "belongingness", for intense and affectionate relationships with other individuals, and for membership of groups whose beliefs and attitudes he can share.

When this need is being satisfied the esteem need can emerge, increasing the individual's appetite for success, self respect, and the respect of others.

When survival is assured, when the world begins to make sense, when love and comradeship have been found and he is conscious of his own worth, the individual is free to express his own potential, and to exercise his capabilities. The need to "self actualise" is the most mature need of all. (See Appendix 4 for Maslow's hierarchy of needs).

Maslow says that certain needs take precedence over others if both are unsatisfied at the same time. For example, "the ambitious man who is lost in the desert pays attention to his thirst, not his ambition". (Ref: 11, p.26).

The lower order needs are the prime determinants of behaviour where higher ones are also present. When lower order needs are satisfied higher ones may become behaviour determinants.

Man is a perpetually needful animal. The satisfaction of these needs is not totally mutually exclusive, but there is a tendency for this. At any one point in time a person is usually partially satisfied and partially unsatisfied in all of his needs. The hierarchy is, however, usually observable in an increasing percentage of non-satisfaction as we go up the hierarchy.

In general, needs only emerge when more prepotent needs have been gratified. Needs cease to play an active determining role as soon as they are gratified - a satisfied need is not a motivator. "The perfectly healthy, normal, fortunate man has no sex needs or hunger needs, or needs for safety, or for love, or for prestige, or self esteem, except in moments of quickly

passing threat."

In Western societies, the physical needs tend to be readily satisfied and job security is becoming less of a pre-occupation with employees. It can, therefore, be expected that higher order needs (social, esteem, and self fulfilment) are, and will increasingly become, important in determining the strategy that managers adopt towards their employees.

c) Frederick Herzberg - "The Motivation-Hygiene Theory" - (Refs: 2, 3)

Herzberg's investigations into industrial mental health, have resulted in the formulation of a general theory of mental health, and a specific application to job attitudes that have bearing on aspects of industrial work behaviour.

The Motivation-Hygiene theory of job attitudes began with a depth interview study of more than two hundred engineers and accountants, representing Pittsburgh industry (Ref: 2) The respondents were asked about events they had experienced at work, which had resulted in, either their feeling exceptionally happy or exceptionally unhappy, with their jobs.

Review and analysis of the results suggested that the factors involved in producing job satisfaction are separate and distinct from those factors leading to job dissatisfaction. Since different factors have to be considered for satisfaction and dissatisfaction, it follows that the two feelings are not the obverse of one another. The opposite of job satisfaction is no job satisfaction not job dissatisfaction.

Appendix 5 reproduces the comparison of satisfiers and dissatisfiers as presented in Ref: 2. The factors on the right describe man's relationship to what he does (job content). Those on the left describe the situation in which he performs (job context) The satisfiers relate to what a man does, whilst dissatisfiers relate to the situation in which he does it.

In Appendix 5(b), the length of each box represents the frequency of occurrence of the factor. The width of the box indicates the duration

of the feeling of satisfaction or dissatisfaction. A short duration of feeling may be not more than two weeks, whilst a long one may last a number of years.

Herzberg calls these two distinct sets of factors, affecting human behaviour, motivation and hygiene factors.

Improvement in the job context serves primarily, to alleviate continued dissatisfaction and contributes only minimally to job satisfaction. Contextual factors are environmental and essentially preventative, and for this reason Herzberg termed them "hygiene" factors on the medical analogy.

Content factors play a major role in generating satisfaction and, when they are present in a job its performance tends to be improved. For this reason Herzberg termed them "motivators".

Motivators are derived from the nature of the job, from within the job. Hygiene factors are distinct from the job itself, that is they come from without. This content/context relationship is illustrated in Appendix 6.

The motivation factors refer to the psychological needs of the individual which, when satisfied, lead to positive work performance. When unsatisfied they have little effect on performance. There are six such factors: ACHIEVEMENT, RECOGNITION OF ACHIEVEMENT, ADVANCEMENT, RESPONSIBILITY, WORK ITSELF, POSSIBILITY OF GROWTH.

Hygiene factors serve to reduce work performance when unsatisfied. When satisfied they have little effect on normal performance levels. These factors include: COMPANY POLICY & ADMINISTRATION, SUPERVISION, INTERPERSONAL RELATIONS WITH SUPERIORS, PEERS AND SUBORDINATES, STATUS, REMUNERATION, SECURITY, PERSONAL LIFE, WORKING CONDITIONS.

An illustration of the effect of motivators and hygiene factors on work performance is to be seen in Appendix 7.

Of the ten hygiene factors listed, "company policy & administration" is the single most important factor in determining bad feelings about a job. Of the motivators, "responsibility", "work itself" and "advancement"

have the most lasting effects on job attitudes. "Achievement", and "recognition" are the most frequent causes of job satisfaction.

The significance of this theory can be seen in the traditional approach to industrial relations, which have stressed the importance of "hygiene". Whilst such attention to hygiene is important, for without it the organisation suffers from unhappy personnel, the error lies in assuming that prevention will unleash positive attitudes and return increased productivity, lower absence, etc. One deduction of the theory is that the effect of improved hygiene lasts for only a short time. Man's hygiene needs are recurrent and ultimately know no bounds.

To be more specific concerning the meaning of the factors listed by Herzberg, the following explanations are presented.

Achievement; e.g. successful completion of a job, solution of a problem, vindication and seeing the results of one's work. The greater the demand on the individual's ability the greater the satisfaction and motivation effect of success.

Recognition of achievement; The recognising body may be almost anyone; a supervisor, a colleague, a client, a friend or even the general public. It is important, however, that recognition be perceived as being sincere.

Work itself; The intrinsic interest derived from a job can have positive motivating effects. The richer the interest derived from a job, the greater the effects.

Responsibility; Factors relating to responsibility and authority are included in this category. A wide gap between authority and responsibility is indicative of poor management, and may be included under the hygiene factor "company policy and administration".

Advancement; This factor includes informal as well as formal promotions within the organisation. It includes the reward of an employee with a position or job that he aspires to, which does not necessarily involve

elevation in the hierardical structure of the organisation (i.e. promotion).

Possibility of growth: This is a factor derived from a job which necessitates that job providing scope for future advancement towards personal goals. For example a job may provide for education and training, thereby enlarging the abilities of the individual, and making him eligible for a job which he previously could not have been considered.

Supervision: This factor is particularly concerned with the competence or incompetence of a supervisor, and the fairness or unfairness of supervision.

Company policy and administration: This category includes the suitability and fairness of company policies as perceived by the employee. It is concerned with the adequacy of the organisation and management, particularly where personnel policies are involved.

Working conditions: This category is concerned with the physical working conditions, the amount of work, and the facilities available for work. To eliminate the effect of this factor on performance does not necessitate a superb working environment and the best tools, etc., but rather that the conditions be as good as management could be reasonably expected to provide.

Interpersonal relations: The state of personal relationships experienced with peers, subordinates and superiors can significantly depress performance where unsatisfactory. Whilst management can influence all three types of relationship, management policy can particularly affect the subordinate/superior relationship.

Status: This category refers to any matter concerned with status in an individual's attitude to his work. Whilst the need for status may vary with individuals, all hold in common personal notions of their position

in the organisation. Where this notion is formally, or informally, perceived as being changed, then performance can be affected negatively.

Job security: Anything concerned with the security of employment is included. This factor includes situations where, even though security of employment is guaranteed, the individual's standing in the company hierarchy may be threatened. Feelings of impermanence or instability can lead to negative performance reactions.

Salary: Feelings of inequity or lack of reward for work performance or unfulfilled expectation can lead to reduced performances. All aspects of remuneration, such as company car, travel allowances, free meals and other perquisites are included along with straight monetary rewards. Whilst "carrots" may lead to short term increases in performance, they are not permanent in their motivational effects, and repeatedly large doses of "carrot" become necessary to maintain stimulation.

Personal Life: Where any aspect of a job interferes adversely with and individual's personal life this may be reflected in reduced work performance. For example, where work demands keep the individual away from home or make him so tired as to be unable to attend social events, or where tiredness leads to arguments and anti-social behaviour.

Herzberg's research was designed to test the hypothesis that man has two sets of needs; a need as an animal to avoid pain and survive, and his need to grow psychologically. Results suggest that hygiene factors are associated with job dissatisfaction because of a need to avoid unpleasantness (c.f. pain); they fail to provide for positive satisfactors because they do not possess the characteristics necessary for giving an individual a sense of growth. Motivators are associated with job satisfaction in that they provide for the basic need for psychological growth, "Growth" depends upon achievement in tasks that have meaning to the individual.

Hygiene factors may also be termed maintenance factors which better describes their utility in maintaining, at best, normal levels of work motivation. As in engineering, poor "maintenance" results in "breakdowns", improved "maintenance" reduces the number of "breakdowns" and, thereby, improves output, but only to normal levels. Innovation and improvement of techniques and equipment are necessary to boost performance further. The alternative is to motivate the work force using "motivators".

d) Victor H. Vroom - "The Path-Goal Hypothesis" (Refs: 4 & 21)

Vroom's work is an extension of proposals originally made by Lewin (Ref. 44), which he named as "Field Theory"

Vroom defines motivation as "a process governing choices made by persons or lower organisms amongst alternative forms of voluntary activities".

He hypothesises that if one can see that achievement of a company goal, (a first level outcome), helps to achieve a personal goal (a second level outcome), then one is likely to be highly motivated to work for company goals.

He proposes four concepts to account for motivation differences; valency, expectancy, instrumentality, and force.

"Valency" is the strength of an individual's desire for a particular outcome, and is positive when he prefers achieving the outcome to <u>not</u> achieving it.

"Instrumentality" is the extent to which a first level outcome is seen as leading to a second level outcome.

"Expectancy" is the degree to which he believes an outcome to be probable. It can be described in terms of its strength; certainty that an action leads to the outcome gives an expectancy of 1; certainty that it will not so lead gives an expectancy of 0.

Valencies and expectancies combine in making a choice between alternative courses for action. The concept of "force" is used to describe

the connection between valency and expectancy. It is assumed that a person's behaviour is a result of a field of forces, each of which has direction and magnitude. People choose from amongst alternative actions corresponding to the greatest positive force. According to Vroom, force is a function of valency and expectancy, i.e. $F = f(\pounds . V . E)$

Where F = force; V = Valency; E = Expectancy

It should be noted that an action with high valency will not be attempted if its expectancy is zero, because there will be no resulting "force".

For example, a person may have an extremely strong desire for promotion, (high valency), but be absolutely certain that he cannot achieve it, (zero expectancy). Therefore, his desire for promotion does not affect the actions that he takes in his work.

The higher the expectancy, the greater the effect of valency on the force generated. Thus, in the above example, if the person had a 99% expectancy of his ability to achieve promotion, then the majority of his actions will be influenced by his desire for it.

Vroom's hypothesis has considerable standing amongst eminent management psychologists. Lewin & Vroom have attempted to develop a set of concepts which allow accurate description of individual cases within the framework of original laws. The issue of individual differences in motivation does, however, arise as a problem.

The hypothesis has the advantage that the component determinants of work effort are identified in such a way that a measured, scientific approach can be readily applied to validation researches.

A possible disadvantage is that the concepts may be difficult to understand quickly and may appear academic and nebulous to the busy practising manager.

e) C. Argyris - "Immaturity-Maturity Theory" - (Ref: 16)

This theory makes the analogy of the maturing child with a person in a new work situation. It implies that everybody starts a job in an immature state. The new, inexperienced man tends to be passive, dependent on others for guidance and assistance, has very limited skills, has erratic and shallow interests, takes a short term view of life, feels subordinate even to equals, and has a lack of awareness of himself. Given sufficient opportunity and freedom of actions, the individual matures so as to become active in his attitudes, independent, in possession of a range of skills and deeper, stronger interests. He also develops a longer term view, feels equal or even superior to others, and an awareness and control over self.

His development from immaturity to maturity depends very largely on the restrictions imposed on him by the organisation. In highly restrictive organisations, employees tend to behave like immature people, and a theory X approach seems the only way to get them to perform. Conversely, in a free but demanding work environment, the individual matures and responds to a theory Y approach (Ref.; 16).

The process of improving motivation takes time. An overnight change of management approach from "Theory X" to "Theory Y" is unlikely to bring overnight improvements in results. In fact, results may be adverse initially, as people unused to responsibility and used to direction adjust to the changed circumstance, and progress from immaturity to maturity.

g) Douglas M. McGregor - "Theory X and Theory Y" - (Ref: 15)

McGrēgor distinguishes between two types of attitudes and beliefs that have implications for the motivation of employees. The propositions and beliefs expressed by "Theory X" determine the majority of conventional management structures and managerial policies.

Theory X:-

a) Work is inherently distasteful to people.

b) People are not ambitious, have little desire for responsibility and prefer to be directed.

c) People have little capacity for creativity in solving organisational problems.

d) Motivation occurs only at the physiological and security levels.

e) People must be closely controlled and often coerced to achieve organisational objectives.

Management, guided by the above assumptions, conceives of a range of possible approaches between two extremes, "hard" or "soft". In the "hard" approach worker behaviour is controlled by coercion, close supervision, and rules and regulations. In the "soft" approach management is permissive, satisfying worker demands, developing harmony. The idea being to make workers malleable and open to management direction. Both extreme approaches have their problems. The former leads to counter forces in the form of militancy, restricted output, antagonism and sabotage. The latter to abdication of management, and indifferent performance, with individuals taking advantage of permissive bosses. The currently popular theme of "firm but fair" is an attempt to compromise between the two extremes.

The emergent findings of the social sciences tend to challenge the Theory X set of beliefs. Whilst industrial behaviour is often observed to be in line with Theory X conceptions, social scientists believe that this behaviour is not a consequence of man's inherent nature but, rather, a consequence of the nature of industrial organisations and management philosophy.

Further the nature of industrial organisations and management philosophy is a function of industrial and social history.

Considering the theory of motivation "the hierarchy of needs" expressed by Maslow, modern Western society has progressed beyond the time when the lower order needs (physiological & safety) were determinants of behaviour. In less affluent times the means of satisfying these needs could be provided or with-held by management. This method known as "the carrot and stick" approach, is effective in controlling behaviour only so long as the individual is struggling for subsistence.

The satisfaction of low order needs has deprived management of the ability to use as motivators the devices on which conventional theory relies:- rewards, incentives or threats. Management by direction and control, whether "hard", "soft" or "firm but fair", fails today to provide effedtive motivation of human effort because such methods are ineffective in motivating people whose physiological and safety needs are reasonably satisfied and whose social, ego and self fulfilment needs are predominant.

"Theory Y" is a set of assumptions, postulated by McGregor, about human nature which provide a basis for an alternative management approach.

McGregor states his "theory Y" assumptions as:-

1. Management is responsible for organising the elements of productive enterprise - money, materials, equipment, people - in the interest of economic ends.

2. People are <u>not</u> by nature passive or resistant to organisational needs. They have become so as a result of experience in organisations.

3. The motivation, the potential for development, the capacity for assuming responsibility, the readiness to direct behaviour toward organisational goals are all present in people. Management does not put them there. It is a responsibility of management to make it possible for people to recognise and develop these human characteristics for themselves.

4. The essential task of management is to arrange organisational conditions and methods of operation so that people can achieve their own goals best by directing their own efforts toward organisational objectives."

These assumptions are fundamentally in contradiction of traditional management beliefs. The adoption of management policies in line with "theory Y" necessitates a change in the role of management from direction and control, to encouragement, guidance and self control of employees. McGregor does not advocate an overnight change for any organisation but, rather a gradual shift in management's emphasis. In this way "shock" effects of the change, on individuals long conditioned to direction, can be avoided. The change should be likened to the change in a child from total dependence to independence. A child must be allowed to grow up slowly and at his own speed; likewise for a maturing organisation.

g) Rensis Likert - "New Patterns of Management" - (Ref: 23)

Likert points out that whilst the principles of "Scientific Management" have lead to substantial improvements in industrial efficiency, they have done so at the expense of the individual as a human being. The fundamental cause of the adverse reactions produced by scientific management is the assumption that all persons are simple economic men; that it is only necessary to buy his time for him to perform willingly as instructed.

Behavioural research provide considerable understanding of the forces affecting human behaviour in the work situation, and the manner in which these forces can be used to reinforce rather than conflict with one another. In certain circumstances the application of scientific management leads to situations where the motivation to "not work" is greater than the motivation to work.

Likert proposes that "all attempts to influence the behaviour of subordinates in an organisation should be of such a nature that there is a maximum probability that the subordinates will react favourably". He goes

on to state the following principle: "Any attempt to produce a change in an organisation will work best when the people whose behaviour needs changing want themselves to change. An attempted change, therefore, will work better when management creates a situation in which people can see the possibility and desirability of change and even initiate the change, rather than merely being ordered to change." Thus persons will work harder when they can see the opportunity to do so and can recognise the desirability of doing so.

Likert identifies supervision as the key to changing the organisation in such a way as to promote positive work attitudes and thence motivation. He proposes that supervisors should be encouraged to discuss operations with their subordinates and to share responsibilities and decision making with them In a word he advocates "involvement" of employees in the planning and control of operations, thereby establishing management control by the more palatable means of individual and working group self control. "This principle indicates that an organisation will perform more effectively when it functions as a network of integrated and co-ordinated teams, each of which has a high team spirit, high performance goals related to its part of the total job, favourable attitudes toward its supervision and management, and confidence and trust in them. These teams are knit into an integrated and co-ordinated organisation by supervisors, managers and staff, who hold overlapping memberships in two or more teams or groups." (Ref: 20, pp 373)

Likert proposes that the key to improvement in organisational performance derives from the adoption of his organisational principle of "overlapping" work groups,

Motivation improvement derives from "involvement" and group team spirit, and cohesion of purpose is achieved by "overlapping" of group membership. Improved two way communication as a result of change of supervisory style permits co-ordination of individual groups to achieve the overall organisational objectives. Thus the motivational advantages of small involved working groups, are utilised. At the same time, efforts are directed towards

overall, as opposed to divergent group objectives.

Likert states that (Ref: 20 pp 374) "The available research findings indicate . . . that high group loyalty, coupled with high production goals in the work group, result in high productivity, accompanied by high job satisfaction and a feeling of working under little pressure".

Significantly, Likert does not decry the importance of the economic motive in improving work performance, but, rather, seeks to put it in perspective as only one of a number of important factors in determining performance. All motives yielding co-operative and favourable attitudes should be utilised fully. The powerful motivational forces stemming from the economic motive can be blunted, or neutralised, by conflicting group goals and attitudes, which may restrict the quantity or quality of output. Participation and involvement are his suggested method of rationalising group and company objectives, and thereby getting full benefit from technology and "scientific management".

h) Motivation by Monetary Reward

It is generally agreed that money is the major mechanism for rewarding and modifying behaviour in industry, but little is known about how it works. Whilst the relevant literature is voluminous, much more has been written than is actually known and supported by fundamental research.

Frederick Taylor was largely responsible for the interest in money as a motivational tool, but his concept of man as a simple economic being was brought into doubt by the Western Electric studies of Elton Mayo (Ref: 2o). These studies stressed man's ego and social needs, and factors other than pay were emphasised as the reasons why men work. Whilst much credance is given to these findings, in practice money remains the single most dominant means used to modify human behaviour at work.

Various theoretical speculations have been advanced to account for the behavioural effects of money. For Brown (Ref: 28) money is a means of reducing anxiety, an association of lack of money with deprivation and threats to security. This suggestion is not in conflict with Herzberg's

proposal (Ref: 3) that money serves to reduce or avoid feelings of unfairness, and hence dissatisfaction, but does not itself create feelings of satisfaction. Brown and Herzberg's propositions support the view that money is primarily a means of satisfying the lower order needs as identified by Maslow.

Gellerman (Ref: 29) suggests that "a man's reaction to money summarises his biography to date; his early economic environment, his competence training, the various non-financial motives that he has acquired, and his current financial status." A more general proposition is that the motivational effect of money varies widely depending upon the job situation, the historical background of the job, and the individual employees' life experience.

Incentive payments can meet with a wide variation of success in motivating a work force. Incentives can be applied on an individual or a group basis depending upon the situation. Individual incentives can be socially devisive in a work group, and thereby lead to negative motivational effects. Equally, Campbell (Ref: 30) has produced evidence to suggest that individual output decreases as the size of the working group increases, and that this is a result of workers having less knowledge of the relationship between their individual effort and consequent reward. Georgeopoulos et al (Ref: 22) found that workers who perceived high productivity as a means to increased earnings performed most effectively. They empahsised, however, the importance of the workers' clear understanding of the relationship between performance and reward.

Whyte (Ref: 31) found that there are three other sources of reward, other than money itself, in a piecework situation; more interest in work, escape from management pressure, and more control over one's own time.

Equitable payment theory: Adams (Ref: 32), Homans (Ref: 33), Jaques (Ref: 34) and others (Refs: 35, 36, 37) have independently advanced similar theories on the concept of "equitable payment". This notion proposes that employees seek an equitable return for their work contribution. Any significant inequity between their perceived reward and contribution results

in a psychological tension, The tension produced is in proportion to the perceived inequity, and there is a resultant drive, to restore "equity", which is proportional in strength to the tension produced. A simplified expression of the theory is:-

$$\frac{\text{Work Ouput}}{\text{Compensation}} = 1$$

Where compensation is a sum of all job dependent rewards and may include pay, status, job interest, personal relations and other factors, individually weighted according to their perceived importance.

This theory gives a useful concept to explain the variations in work input, related to any changes in "compensation" within the total work situation. It indicates that company policy should be directed to increase perceived "compensation", thereby inducing individuals to increase output to restore equilibrium.

Jaques empahsised the importance of relative equitable payment. He supports the view that an equitable payment system should be a differential one, but that the differentials must be perceived by employees to be equitable if dissatisfactions are to be avoided. The trend in recent years to increased knowledge of the earnings of others, gives greater importance to this view.

Opsahl and Dunnette (Ref. 27) suggest an explanation for the fact that many surveys of people's feelings about money have indicated that they rank pay quite low in the important features of their job; a finding that is in conflict with the behaviours of many individuals in industry, who are quite significantly influenced by opportunities to obtain extra monies. Protestant ethics hold that the selfish craving for money is antisocial, and people can dissipate their feelings of guilt, deriving from their prizing money highly, by assigning it a relatively low position in their stated value hierarchy. This view can serve to reconcile the widely held, intuitive, view (of money as the

predominant motivating force in the work situation), with the evidence suggested by various researchers (including Herzberg) for its secondary role amongst relatively affluent workers. If we accept that research based findings are likely to be more reliable than intuitively held ones, then we cannot be too ready to dismiss the suggestion that pay, whilst a significant factor, is not necessarily the predominant one, in explaining why people work.

3. The Job Enrichment Concept

The rationalisation of work, particularly manual work, has been a continuing trend since the work of Gilbreth and others, in America, sixty years ago. There is little doubt that specialisation and simplification of work has been an important reason for the increases in productivity, and in standards of living enjoyed by all industrialised countries over this period. Nevertheless over the past forty years, many writers have suggested that work rationalisation may have certain detrimental effects.

Such authors argue, and it has become increasingly accepted, that highly rationalised work is incapable of providing any satisfaction for the worker who, as a result, tolerates rather than enjoys his work. It is suggested that lack of job satisfaction is detrimental to productivity. Enrichment of jobs has, therefore, been advocated in place of continued job rationalisation.

Unions and managements, for many years have been, and are, predominantly interested in matters of "hygiene". Most arguments arise concerning pay, security of employment, effects of work on personal life, (unsocial hours), status and supervision. Rarely do arguments arise concerning lack of responsibility, recognition of achievement, opportunity for advancement, etc. These are less tangible and, traditionally, a union's function is to improve the conditions of service of the individual.

There is a parallel here with "Women's Liberation". The fact that wives may be well fed, shod and otherwise well cared for physically, does not guarantee their mental state of well being. Similarly with people in the work situation.

The significance of Herzberg's argument to industrial relations can be seen in the fact that often industrial conflict is to be found in jobs where work is highly specialised and repetitive. Where little demandis made on the individual's abilities other than to perform simple repetitive tasks. Hence the traditional militancy of the car industry. Whilst the underlying problem may well be one of lack of motivation, the arguments manifest themselves around hygiene, (pay, canteen conditions, overbearing supervisors).

The idea of job enrichment has become associated with the name of Herzberg. In fact, both the concept and practise of job enrichment predate him and, ironically, he rejected the idea as impractical in his original book (Ref: 2). He has subsequently become a convert to what his followers, disciples and interpreters have found in his work, and his original research effectively, and dramatically highlights the case for job enrichment, should it be feasible.

Job enrichment refers to the restructuring of jobs to increase responsibility, and mental demands so that, for instance, operators are taking decisions that were formerly the prerogative of supervisors. If the content of an employee's job holds no interest for him, then he can hardly be expected to take an interest in it. If it provides no scope for responsibility, then he cannot be expected to act responsibly. If it provides him with little or no control or influence over his actions and environment, then he will seek to recover some control in ways that may be damaging to the enterprise; by restrictive practices, restriction of ouput, and taking satisfaction from sabotaging and defeating procedures through which management seeks to exercise control over him. If his job holds no interest for him, then it is hardly surprising if he regards his work, and everything associated with it, with hostility and resignation; an aspect of his life to be endured in order that he can begin to live outside work.

The importance of hygiene factors should not be underestimated.

On the contrary, pay for instance is manifestly important in any employee's mind. However, in the absence of intrinsic interest from the job itself, other factors such as pay, take on greater importance. For example, in jobs where the intrinsic interest is high (e.g. nursing), pay only becomes a problem when, as has happened, it becomes so poor as to make standards of living intolerable.

If pay is low, or the system of payment is unjust, if working conditions are dirty, unsafe and uncomfortable; if personal relationships are poor, etc., then dissatisfaction is likely to result, reducing work performance. Removing such sources of dissatisfaction succeeds only in raising motivation and performance from the low level to which they have been depressed, to a neutral level of instrumental compliance.

Employees have a right to expect working conditions to be as safe, clean and human as possible. If they are not, then they are properly aggrieved. If the source of grievance is removed, then it is properly taken for granted. Thus, in situations of ideal physical and social working conditions, the best that can be expected is that employees will be relatively content and will do what is required of them without resentment, though without interest and involvement.

To raise interest, involvement, motivations and performance above this level it is necessary to provide jobs that are rich in recognition, responsibility, advancement and interest. Where such rewards are not naturally generated by the jobs, then it is necessary to restructure them to inject interest and meaning by job enrichment. (Ref. 38)

Job enrichment should be distinguished from two other concepts; job rotation and job enlargement. Both may be part of a programme of job enrichment, but cannot, themselves, go far enough to fully satisfy the requirements demanded by job enrichment.

Job rotation refers to the practice of changing people from one job to another within a work group so that, although the individual jobs

remain devoid of interest and personal demands, at least they experience some variety and relief from the routine, in doing a number of different jobs.

Job enlargement refers to the horizontal extension of jobs, so that, although the individual tasks require no greater skill, the employee experiences some variety in his work.

4. Industrial Experiences of Job Enrichment

The persuasive arguments for job enrichment have induced a number of companies to attempt to apply its principles. The experience has been wide in terms of job and industry type, and success has similarly been varied.

a) Volvo (Ref. 39)

Labour turnover at Volvo's, at its worst, was 52%. During the industrial unrest which swept Sweden in 1969, management concluded that the labour force's attitude was the weakest part of their organisation, and that the assembly line method of building cars could be improved on. At this time labour turnover was running at 33% per annum, and one in seven of employees were employed as cover for absenteeism.

Volvo Management consider that much of industrial unrest and absenteeism is associated with the monotony and impersonal nature of traditional assembly line work. They decided to build a new factory at Kalmar, in Sweden, planned to enter production during 1974.

In this new factory, traditional assembly line work, where individual perform simple repetitive tasks, is to be abandoned. The 600 employees are to be divided into small work teams of 15 to 25 men each. Each team is to be responsible for the assembly of a complete section of a car, and are to organise how the work is done and by whom. Teams are to be encouraged to rotate jobs in order that each member becomes familiar with every aspect of the team's operation. Each team is to be autonomous and allowed to control its own work pace.

In addition to enriching jobs, by providing more scope for motivation factors, 'hygiene' has also been carefully considered in the design of the new factory. For instance each team's work area is to face an outer wall which is to be extensively glazed, and is to have its own entrance, changing room and rest area.

It is hoped that the experiment will achieve a greater sense of identification with the product, a happier working environment, and improve job satisfaction by introducing elements of job interest and responsibility. The objective, hopefully, is to reduce costs by reducing turnover and absenteeism and at the same time improving production efficiency.

Volvo already have practical experience of job enrichment at Lundby, a plant which employs 1,000 men. Here the experiment has been carried further, by involving work teams in regular meetings with their supervisor and management to discuss job problems, job improvements, and the working environment.

b) Philips (Ref. 38)

The nature of the work performed by Philip's employees was fragmented, being that typical of assembly lines. Tasks were simple and repetitive, with a high degree of supervision. Quality control was a separate function from production and, in general, management was authoritarian in style.

Philip's management recognised that changing educational and social values had changed the needs, capacities, and expectations of the work force. These were incongruent with the jobs and tasks offered by the company.

The company policy of decentralised management meant that a standard programme of change was impractical and inconsistent. The initial stage of the exercise was aimed at improved 'hygiene' and was consistently applied across the whole organisation (noise reduction, better ventilation, better

canteens, and better social facilities) The intention of this stage being to demonstrate management's interest in improving working conditions.

The second stage was directed at job enrichment proper. The decentralisation policy meant that a wide variety of initiatives were taken, varying from simple job rotation to sincere attempts at job enrichment in its fullest sense.

Examples of job enrichment include one in which 100 operatives on a traditional assembly line with 5-10 second job cycles were reorgansied into small, relatively autonomous product teams. The groups took over many of the responsibilities of supervisors, inspectors, maintenance and service departments, and organised their own deployment to suit the individual differences of the group members. The results were marked in terms of the quantity and quality of output.

Overall, some initiatives resulted in striking improvements in quality and output, as well as increased job satisfaction as expressed in terms of labour turnover, absenteeism and attitudes towards management. Others produced disappointing results.

Philip's concluded that the degree of change possible is related to the influence of the most senior man interested. They experienced most problems amongst middle management and supervisors, which was to be expected since the schemes, usually, involved a reduction of supervisory and management staff. The problems arose principally with placement of those individuals who were unsuitable for "sideways promotions".

c) Paul/Robertson Studies of I.C.I. (Ref. 38 & 40)

These studies involved a number of occupational groups: - sales representatives, experimental officers, production and engineering foremen, design engineers, draughtsmen, toolsetters, process operators, fitters and operatives.

In each case, small experimental groups were set up, and jobs were restructured to inject more responsibility, descretion and autonomy. The changes in performance and job satisfaction were measured and related to those of the control groups, who were subject to no change, but selected to match the experimental groups in both composition and circumstances.

The changes in people's jobs were expressed in terms of opportunities rather than demands. The boundaries of the jobs were made flexible and it was always possible for the individual to continue to do the job that he had always done and to ignore the new task opportunities. Thus the changes allowed for a variation in response from the individuals according to their differences.

The study concluded that : it is rare to encounter a job where some enrichment is not practicable; the findings are applicable to all employees, but potential gains from performance improvements on the shop floor are greatest.

In all cases the performance of the experimental groups exceeded those of the corresponding control groups, thereby indicating the motivating potential of job enrichment.

d) A.T. & T (Ref. 38)

This series of studies, in the American Telephone and Telegraph Company, was similar to those of Paul & Robertson at I.C.I.

One example of job enrichment was in the process of wiring up the telecommunications frames. Three separate stages were involved in the original organisation; taking orders and design specifications, frame wiring, and circuit testing.

The change involved integrating the separate job components. Firstly, the wiring and testing processes were integrated and the responsibility for the completed work given to the new work group. Later the group was put in contact with the customer and performed the full range of tasks, from

receipt of order to delivery of goods.

This was a remarkably successful application. Previously the wiring team had been a source of much trouble - low output, 50% missed completion dates, faulty work, and a catalogue of grievances expressed through the trade union. After the change, orders were met on time, faulty work was virtually eliminated, and the number of grievances fell sharply.

e) Petrochemical Operatives (Ref. 38)

In this case job enrichment was not consciously pursued, but was spontaneously brought about through the pursuit of other objectives.

The company was pursuing productivity increases via collective bargaining with the employees. The agreement sought a reduction in manning, greater flexibility in the range of tasks carried out, a simplification of the grading system, a reduction in seniority rules, a stable 40 hour week with no overtime or additional payments. The men, in exchange, received staff conditions of employment, with a salary, full pay when sick, and an end to clocking in. The agreement carried a no redundancy guarantee.

Initially there was fierce resistance to the agreement, occasioned largely by feelings of insecurity, and it was only concluded when the men achieved the major share of the savings that would accrue.

Nine months after the agreements' implementation there had been a complete change. A majority favoured the agreement and their attitudes toward it were in direct opposition to those originally expressed (See App. 8)

The reasons consciously expressed by the employees for their satisfaction with the agreement, 9 months after its introduction, indicate the predominant role of motivation in providing the satisfaction. The significant contribution of "more pay" cannot be ignored however.

It is important to impress that this case was not a job enrichment exercise, and in no way could results be said to be affected by the researchers zeal for job enrichment. Job enrichment was spontaneous and incidental to an agreement between management and men, the primary

objectives of which were reduced manning and greater flexibility in deployment.

f) The Nylon Spinners (Ref. 41)

This case refers to an agreement reached at I.C.I's nylon spinning plant at Gloucester.

The technology of the industry is more akin to assembly line work than the continuous process work of the oil refining industry. 80% of the workers had felt the job to be monotonous before the agreement, and complained of going home tired and listless (as a result of monotony, not hard work).

The workers appeared to be overwhelmingly 'hygiene seekers'. The initial attraction of the agreement reached was increased pay, but a major factor in the agreement was that workers were closely involved in the design of the changes made. The principle changes were aimed at reorganising jobs in order to improve efficiency and interest, and the exercise was consciously designed to bring about job enrichment.

The original situation, of simple jobs performed by closely supervised individuals, was changed for one where work groups were made responsible for a group of machines, and a supervisory level was eliminated.

A drop of 25% in manning was eventually achieved without any painful encounters. Management noted how the work groups devised intricate patterns of job sharing and rotation, which kept both themselves and machines working in ways that would have been impossible to impose from above.

75% of the workers, after the change, felt more satisfied with their job and found it more interesting. Prior to the change, few had thought that any improvement, other than increased pay, would accrue from the agreement.

5. Accounting for Individual Difference (Ref. 45)

The weakness in the Job Enrichment concept as expressed by such as Herzberg is in the sweeping generality of its assumptions. Hulin (Ref. 45) indicates that a wide range of behavioural response to job enrichment has been experienced. He suggests that variations in response can be related to individual difference within the following framework:-

"a) Work role outcomes are valued to the extent that such outcomes meet the needs, aspirations or desires of the worker.

b) All workers do not have the same needs, aspirations and desires.

c) To the extent that jobs can be engineered so as to provide for the needs, aspirations and desires of individuals, these jobs will be satisfying for these individuals.

d) Workers will adopt a particular work role if the adoption of such a roll will lead to desired outcomes."

These statements indicate that any individual may be motivated by more than one job characteristic, and that individuals can differ greatly in terms of what job characteristics are motivating them. Hulin suggests that jobs should be designed from the viewpoint that individuals are motivated by different job characteristics, and that motivation is a complicated problem which cannot be solved by job enrichment alone.

6. The Role of "Management by Objectives" in Job Enrichment

The organisation researched uses "MBO" as a tool for stimulating management's performance, and this technique is, therefore, discussed here.

Drucker's philosophy (Ref. 10) for improving management performance is to encourage people to control their own work to a large extent, by involving them in objective setting for their key tasks. In this way people "drive" themselves, and the setting of high, but achievable targets, tends to be a natural derivative.

Essentially, the system involves each unit of an organisation in the setting of its particular objectives within the boundaries of an overall company objective. When the objectives are agreed the key tasks necessary to their achievement are identified, and departments and individuals set their own performance targets consistent with their key tasks. This simple description does the technique an injustice, because it does not convey the underlying philosophy. Even as described here, "MBO" is an excellent communications device for conveying the company's direction and purpose, and the contribution required of each of its parts. The trouble is that if the philosophy is misunderstood it becomes a device for telling people what they must achieve without regard to circumstances, and thus easily degenerates into management by results.

Applied with an understanding of human needs, particularly the need to achieve, "MBO" is one of the best vehicles for stimulating management performance.

The setting of clear objectives provides specific criteria against which achievement can be measured. Therefore "MBO" is likely to encourage feelings of achievement and the encouragement to performance that goes with it. Similarly, the organisation must recognise achievement. The danger occurs when objectives are set impossibly high. Although, as pointed out by Drucker, objectives should be high to "build motivation", they must also be realistically achievable. It is unlikely that a significant number of employees will wholly achieve objectives set at the upper limits of "achievability", and this point should be recognised by the individual and his boss when reviewing performance.

The philosophy of "MBO" implies a greater degree of self determination for the individual in his work situation. Greater autonomy should result in greater satisfaction with the job itself. Hence "MBO" can contribute to the "work itself" motivator.

Greater autonomy implies greater responsibility of individuals for their performance. Provided that sufficient authority accompanies this enhanced responsibility, and that adequate resources are available for performance, then "MBO" should contribute to the "responsibility" motivator.

By setting criteria against which individual's performance can be judged, the technique facilitates the selection of successful managers for promotion. Provided that this is not carried to the point where individuals are promoted to their level of incompetence, then the organisation and individual benefit. In addition, by making it clear that promotion can be "earned" by performance not "blue eyes", then individuals should respond to the "advancement" motivator.

The improvement in two-way communication between the man and his boss, that accompanies the implementation of "MBO" facilitates the identification of significant hygiene factors. Appropriate action to satisfy, or at least minimise the detrimental effects of hygiene factors is then possible. Expenditure of effort and money in their satisfaction is minimised by more accurate identification, and the consequent elimination of the necessity to act on "hunch".

7. Discussion and Conclusions

In the employment situation management controls some of the goals, (money, security, status, etc) sought by the employee, and defines the behaviour, (in terms of job performance), that is expected of the employee if he is to achieve these goals. But the employee is almost invariably striving for satisfaction of more than one need at a time, and his behaviour is directed to providing maximum possible satisfaction of all his needs.

Thus, in order to motivate a man, it is essential to create a situation, or to provide incentives, which will allow him to maximise the

satisfaction of, not one or a few, but all of his needs. The first step is to understand the kinds of need he has.

Maslow's hierarchy of needs is probably the most widely accepted theory of human needs. The normal human adult is subject to all five levels of needs identified by Maslow. This individual goes to work with all five levels of need and will attempt to satisfy them all, given opportunity, at work or through work. In order to motivate them, a manager must be prepared to acknowledge the existence of all five levels.

Herzberg has provided a good understanding of how these needs operate in a work situation. Putting Maslow and Herzberg together, it is clear that the hygiene factors are the industrial expression of the first three levels of the need hierarchy, and the motivators are the upper two. The real importance of Herzberg's research is not that it demonstrates the existence of all five levels of need in a work situation, but that it provides insight into how they operate, and where changes have to be made if we are to motivate employees.

In the past, very little formal attention was paid to motivators as a means of influencing employee's performance and attitudes. This is perhaps because the absence of motivators in a job does not produce complaint - only apathy, and lack of interest and initiative. These are all too easily attributable to the "personality" of the employee, and all to frequently lead to his being written off as lazy or irresponsible. It is very difficult to behave responsibly if you do not have any responsibility or to know the satisfaction of achievement if you are given no opportunity to fail. If managers want more than just a fair days work, if they want workers' commitment, enthusiasm and initiative, they must be prepared to pass on responsibility, and assume that it will be accepted responsibly.

Most modern theories assume the potential commitment of employees, reachable via trust, involvement and responsibility. McGregor's

"Theory Y" fundamentally contradicts traditional management beliefs, and indicates a change in the role of management from direction and control, to encouragement, guidance and self control of employees.

Likert's work has shown that, in certain circumstances, the application of scientific management leads to situations where the motivation to "not work" is greater than that to work. He recommends more self direction and control of working groups and individual employees, following a changing role of supervision. His argument carries considerable esteem. Participation is a vital part of a modern organisation, where behaviour is not controlled by the survival need, but rather by ego and self fulfillment needs.

Argyris attempts to account partially for individual difference. Again, he recommends a management policy of encouraging self control and direction. A work environment which does not unduly restrict employees behaviour, leads to a mature, responsible work force capable of more initiative, requiring a minimum of management assistance or direction. He warns that the short term results, of a change to a more liberal management style, are likely to be adverse. Patience is required, whilst the organisation matures and adjusts to the changed circumstances.

Lewin and Vroom have attempted to develop a set of concepts which allow for individual differences. Whilst these concepts may attract academics, they may be difficult to understand quickly to those who wish to apply them practically. This theory is consequently of less practical attraction, than the ideas of others such as McGregor and Herzberg which are more readily understood and translatable into practical actions.

Herzberg's theory for motivation hinges on the link between work satisfaction (or dissatisfaction), and performance. This link, although intuitively held to exist was not tested by him ih his original work. Practical applications of job enrichment have lead to some measure

of confirmation of such a link, as indicated by performance improvements following deliberate actions designed to increase work satisfaction.

The implications of Maslow's theory for modern Western society (where people, in general, are well housed, fed, secure, loved and are able to find esteem), is that the only remaining unsatisfied need is that of "self actualisation". Organisation should, therefore, allow greater individual freedom of action, permitting them to delineate their own jobs in line with their abilities and needs. The alternative seems to be a society where lower order needs are deliberately thwarted, and where gratification is linked to work performance. Manifestly the creation of this type of society is outwith the manager's control, and foreign to the principles of Western culture. The manager must operate in the social environment appertaining at any specific time.

Experience has shown that financial incentives, whilst they can be effective, often create as many problems as they solve and are not the only means of motivating a work force. They seem, at best, to be of short term effect, with the job enrichment concept providing the potential of long term, and continuous, performance improvements.

The value of job enrichment has been demonstrated in a number of industrial applications, but continues to be regarded with suspicion by traditionalists.

Hulin has indicated the need to recognise the significance of individual difference in motivation. In particular he has emphasized the effects of socio-demographic variables. The research pursued in this projects seeks to identify differences in motivation factors between individuals. Proposals for individual difference include:- age, rank, earnings, professional training, and domestic circumstances.

The experimentally derived findings of F. Herzberg identify useful motivation factors, and this research uses them as the basis for motivation assessment.

D. METHODS

1. Questionnaire Design

Questionnaire design is a fine art, but there are rules of thumb that may be followed:-

The most common errors arise in connection with the types of question asked, the form and wording of the questions, the sequencing of the questions, and the lay out of the questionnaire.

(a) The Type of Question Asked

The most common errors are the inclusion of unanswerable questions and the exclusions of questions that should be answered. Each question should be checked to see that it is necessary for the research objectives, although one or two unnecessary questions may be included to start the interview on a good basis. For a written questionnaire, multiple choice and yes/no questions should be used rather than open-ended ones.

(b) Form and Wording

One usually has the option of closed or open ended questions. The choice between them affects the thoughtfulness of responses, the costs of interviewing, and the quality of the subsequent analysis. The designer should strive for simple, direct, unbiased and unambiguous wording.

(c) Sequence of Questions

The lead questions should create interest. Open ended questions are usually better here. Difficult or personal questions should be used towards the end of the interview in order not to provoke an emotional reaction that may bias the answers given to subsequent questions. The body of neutral questions should be asked in as logical an order as possible, to avoid confusion. Classification data on the individual are usually asked for last, because they tend to be less interesting and of a personal nature.

(d) Layout of the Questionnaire

Questionnaires to be seen by the respondent should have an

attractive and professional appearance. They should provide sufficient room for ease of answering by respondents, and analysis by editors.

The questionnaire used in this research is designed in consideration of these criteria and, as far as possible, attempts to satisfy them.

2. Statistical Hypothesis Testing (Refs. 17, 18, 19)

Statistics is a branch of scientific methodology. It deals with the collection, classification, description, and interpretation of data obtained by the conduct of surveys and experiments. Its essential purpose is to draw inferences about the numerical properties of populations. The term 'population' is here used in its statistical sense, which is more general than that of every day language, and is used to describe the total number of people, things or measurements under scrutiny. The statistician is concerned with properties that are descriptive of the group or aggregation itself, rather than properties of particular members.

Usually a 'population' is too large to make the investigation of all its individual parts practicable, and a sample of the whole 'population' is investigated instead. Inferences are then made about the whole population based upon the results of the investigations on the sample.

Significance, or hypothesis testing, allows an investigator to take account of sampling errors when making inferences from sample results about the whole population. Characteristically these methods are used when two samples are taken from two populations, in order to see whether the two populations differ. It is extremely unlikely that statistics from two groups of samples will prove to be identical. This does not necessarily mean, however, that the two populations represented are different. Chance can play a part and must be accounted for. The error that can arise by chance between the statistics of the sample and those of the whole population is called the sampling error. If the difference between two sample means is so large compared with the sampling errors that it could not reasonably be attributed to the chance effects of those errors, it is said to be statistically significant

A number of significance tests are available, but that known as "chi square" (χ^2) is selected for this work. This test is not as precise as some others. Since the nature of responses to questions is very subjective, in that attempts have been made to score subjective judgments, it is not applicable to use a more precise test. Such a test could well be rendered meaningless in view of the proximate nature of the results obtained. The actual test applied is a modified version of the standard "chi square" test, in that the expected value used is taken to be the mean of the values from both samples.

3. Choice of Data Collection Procedure

(a) Type of Data

Research data collection tends to consume a great deal of time and it is not unusual to find that it already exists from some previous research. Data of this type is known as sedondary data. In this instance no trace could be found of any suitable existing data. Therefore, it became necessary to collect data for the first time - primary data.

(b) Alternative Methods

In general, primary data can be obtained in three ways, i.e. observation, experiments or surveys.

(i) Observation:

Observation of behaviour may take place using T.V. or cine cameras, or the naked eye. It avoids the problem of biased response in the observed, but does not avoid bias in the observer.

The method is costly and unsuited to attitude research. It reveals little tangible information about the observed's state of mind or motives. It is, therefore, unsuitable for this research.

(ii) Experiments:

One of the major weaknesses of the observation method is that there is little or no control over the behaviour or environment being

observed. Behaviour is observed in its natural setting with all the unique and uncontrollable factors that may attend it.

The experimental method consists of introducing selected stimuli into a controlled environment and systematically varying them, and observing responses. The purpose of control is to eliminate competing hypothesis which might also explain the observed phenomena.

This method is impractical for use in the circumstances attending this research, inexperience in psychological/behaviour interpretation of the author, lack of facilities and opportunity to conduct such experiments, need to cause minimum disruption to normal work of the organisation, doubts that meaningful results can be obtained in such an artificial situation.

(iii) Surveys

The most common method used is that of surveys. Compared with other techniques it yields a broader range of information and is effective for a greater number of research problems. The design of the survey method is the major step in any survey. If design is wrong, then all results are meaningless.

(b) Design of Survey

The researcher must decide amongst survey methods, research instruments and sampling plans. Decisions amongst these three elements constitute his research strategy.

(i) Survey methods

There are three principle types of survey method, telephone interview, mail questionnaire, and personal interview. Each has advantages and disadvantages over the other two.

Telephone interviews produce a greater rate of response than mail questionnaires, but a less rate than for personal interviews. They are, however, less time consuming than the latter. They have the same advantages over a mail questionnaire as a personal interview in that some freedom of

questioning and pursuit in depth of specific points is possible. In addition it is possible to ensure that all interviewers interpret questions in the same way. The disadvantages of telephone interviews are that they are limited to people within convenient reach of a phone, and may suffer from bias with people who dislike using phones, and the interviews tend to be limited to a short duration, as people are often reluctant to hold lengthy telephone conversations.

The mail questionnaire is the best way to reach people who would not give personal interviews or who might be biased by interviewers, and is the least expensive method. It has the disadvantage of requiring very carefully worded questions to avoid misinterpretation, and responses tend to be slow with a high failure rate overall.

The personal interview is the most versatile of the three methods. The interviewer can ask a greater variety of questions and can supplement the interview with personal observations. In research where personal feelings are involved it is a better way of creating trust between the researcher and participant, which is especially important where anonymity is important. Where questions asked may be subjected to a considerable range of different interpretations, it is possible to enlarge on questions to ensure that a common meaning is imparted to all interviewers. The cost of personal interviewing tends to be high in terms of the skill training, and skill required of the interviewer, especially where unstructured interviews are performed. This problem is reduced when a structured interview technique is used, where questions are pre-determined, and require definite answers, which cannot be subject to interviewer bias in interpretation.

At first the author wished to use a mail questionnaire to survey a wide sample of the population involved, to include individuals, i.e. N.C.B. Areas other than North Derbyshire. This was to be followed by a smaller

sample of personal interviews, at which the author would pursue factors identified by the mail questionnaire. It proved impossible to obtain authority to extend the research beyond the North Derbyshire Area. The method subsequently selected was a structured personal interview.

(ii) Research Instruments

The research instrument is chiefly influenced by the type of information sought and the method by which it is to be gathered. A short questionnaire is most appropriate for a telephone interview, whilst a one or two page, attractively printed questionnaire is more appropriate for mailing. A long objective questionnaire or a set of psychological tests may be used in personal interviewing.

The instrument selected was a six page answer pamphlet for a two page questionnaire. Questions were kept separate from answers, being verbally imparted by the author.

(iii) Sampling Plans

A sampling plan answers three questions: Who is to be surveyed? How many are to be surveyed? How are they to be selected.

In general, the larger the sample the more reliable is the information, but samples of only 1% of the population can give reliable results with a good sampling procedure. Furthermore, the research objective may not be to determine accurate information, but merely to discern trends and general attitudes and often small samples will suffice. This applies in this instance, where it is desired to discern such trends and attitudes, from an estimated sample of 25-40 (depending upon response).

To make an accurate estimation of population characteristics, a random sample should be drawn. Everybody, in the total population, should have an equal chance of being selected for the survey. Ultimately random sampling tends to be more costly than other methods. First of all a source of names and locations for the whole population must be found, and a

sample extracted therefrom by a random sampling technique. The interviewer must be prepared to travel anywhere to find the chosen subjects, and to call back many times, if necessary, to ensure that all chosen subjects are interviewed.

Quota sampling is a more suitable technique for the purposes here involved, because it is less costly in terms of time and effort, and is sufficiently accurate for these purposes. Where research is undertaken on a fixed time-table with limited resources, it is better to expend most of the available time and effort on better questionnaire design. Bias from the latter source can be far more meaningful than that from a non-random sample.

(d) Chosen Data Collection Procedure

The procedure chosen for data collection is as follows:-

(i) A survey using structured personal interviews.

(ii) Responses to questions to be written by the respondent on a standard reply sheet, designed for the purpose. An example of such a reply sheet is shown in Appendix 9.

(iii) The administration of the procedure to be designed so as to provide anonymity to individual responses.

(e) Mechanics of Implementation of Data Collection Procedure

The procedure to be followed is as follows:-

(i) Introductory letter from Area Director to proposed participants. The letter emphasises that participation in the project is voluntary, and that the information provided will be recorded and processed in such a way as to ensure anonymity of respondents.

(ii) Arrangement of interviews by Mr. D.J. Allsop, Head of Recruitment and Training, between willing participants and the author.

(iii) Structured personal interviews conducted with the author posing the questions, and the interviewer entering his replies on the

standard questionnaire reply sheets (Appendix 9)

(iv) The completed questionnaire reply sheets to be forwarded with no reference to identity, to Mr. Allsop.

(v) All replies returned to be retained by Mr. Allsop until all received, thereupon they are to be passed on to the author for analysis.

(iv) The questionnaire used to be identical and not to include questions directly relating to the interviewees identity.

This procedure was faithfully followed, and anonymity of responses was successfully achieved.

4. Agreement of Data Collection Procedure

The procedure chosen, and the mechanics of implementation had to be agreed with two bodies, firstly with the North Derbyshire Area of the N.C.B. and, secondly, with the trade union representing the population from which the sample was to be drawn.

(a) With North Derbyshire Area

The original research proposals involved a widely distributed questionnaire, followed by a limited number of depth interviews, based upon the findings of the preceding questionnaires.

In order to obtain a sufficiently large sample on which to base a mail questionnaire, it is desirable to extend enquiries beyond North Derbyshire. Permission for this was sought but refused by the Area Director. No specific reason was given.

The questionnaire as originally designed, involved responses from an employee and his boss. This approach would have allowed a cross check of interpersonal feelings, an estimate of the subordinates actual exhibited motivation in terms of a rank order, and cross checks on factors involved in the interview with the employee.

Such a study could have provided valuable knowledge of the extent to which hygiene factors and motivations felt by subordinates are justified

by actual circumstances. The estimate of motivation rank order would give some idea of whether motivations or hygiene factors are currently operative in the individuals work situation.

The "boss" section of this proposed questionnaire is exhibited in Appendix 10. The system devised for response was such that subordinate and "boss" replies would arrive in the same envelope, but in such a way that neither would see the others reply. In addition it would also be impossible to identify individuals once again anonymity was achieved.

The Area Director expressed his disapproval of this technique. "I am not happy about the concept of control that you wish to establish by asking an official's superior to comment on his 'motivation characteristics'". In view of this, this part of the research was subsequently dropped, and the author resolved to rely wholly on the direct responses of individuals concerned.

Agreement was, subsequently reached, with the North Derbyshire Area to conduct a series of personal interviews, using a structured questionnaire with selected individuals, with the provision that agreement must be reached with the trade union (British Association of Colliery Management) concerned.

(b) With the British Association of Colliery Management

B.A.C.M. is a union formed to protect and forward the interests of management employees in the British Coal Mining Industries. The association has a number of regional organising secretaries, employed full time. The interests of local N.C.B. Areas are looked after by part time officials, working to the regional secretary.

The Area Director initially undertook to clear the matter personally with the regional official, with whom he normally has meetings on an approximately monthly basis. With more pressing matters to take up their time, the subject took a low priority and agreement was not reached at this level. Mr. Allsop (Head of Recruitment and Training) was delegated to clear the matter with the B.A.C.M. regional secretary. Agreement itself proved to

be a relatively simple matter, with the assurance of anonymity, and the voluntary nature of participation.

5. Choice of Individuals for Interview

The stratum of management selected for interview is that of branch heads of departments at Area level and the equivalent stratum at Colliery level.

The Area stratum is selected because this level where each official performs a job requiring a tangible contribution, over which the individuals have control and for which they have direct responsibility. Above this level management becomes more concerned with policy formulation, strategic and tactical planning, etc. Below this level, Area Management becomes highly functional, but with a less than overall view of Area operations. At this level the actual detailed plans and control of plans for operations are formulated. It is, therefore, upon the effort and effectiveness of these people, that successful "doing" depends.

At Colliery level, the management stratum selected, despite being lower in the overall hierarchy of the N.C.B. organisation, occupies a similar position to that of the Area officials. Each member of this stratum is responsible for the organisation and performance of a specific section of a Colliery's operations.

The two strata selected are such that all employees have demonstrated some career success in management. This fact implies that these people should be capable of a high rate of work motivation which is a desirable aspect for this research.

The stratum at Area level is of such a size, in terms of members of personnel that all could and should be interviewed. Time permitted this, but the sample at colliery level is necessarily smaller. The greater geographic dispersion of individuals, and the great demands made on the time of individuals, made it necessary to confine the investigation to officials at

two collieries.

A total of 22 officials at Area level and 11 at colliery were selected for invitation to participate. A high rate of response was anticipated and, indeed, necessary if samples were not to become meaninglessly small.

6. The Questions

A copy of the list of questions as asked is exhibited in Appendix 11. The following discussion explains the reason for individual questions.

The questions directly associated with motivation are those number 2 - 18 and are based on Herzberg's motivation and hygiene factors, those specifically with "Management by Objectives", 19 - 23, and those for classification purposes 24 - 28.

Question 1

This question is primarily intended to stimulate interest in respondents, but is also linked to question 17 concerning the individual's rating of his current salary. It is intended to put respondent's minds in the right perspective, by demanding a conscious answer to, what is to most people, if taken seriously, a difficult question. In answering this question the respondent must consider a wide range of different aspects of his job. He is, therefore, better prepared to answer the more specific questions which follow. The question demands a more pertinant answer than it would under normal circumstances, since most of the individuals questioned had just received a substantial salary increase from a general review agreed between the N.C.B. and B.A.C.M. This increase followed closely the annual increment review that is a standard feature of N.C.B. conditions of service.

Any estimates, therefore, of a substantial nature should serve as a measure of an individual's dissatisfaction with his current salary.

Question 2

Again this question, is intended, together with question 3, to

stimulate interest. Upon reflection, however, certain people might have bitter feelings about a failure to be appointed to a job, and this arousal of negative feelings so early in the interview could bias subsequent responses.

Assuming that most people make at least one job application per year, this question is an indicator of the recent achievement of individuals.

Question 3

This question does not apply to all respondents, only those who failed to be appointed to the last job for which they applied. This question, if answered positively, is an indicator of the individuals ego with respect to his ability to do a job. A person who considers that he could do a better job than the person appointed to do it, is likely to have bitter feelings about the matter. He is likely to suffer a loss of faith in company policy and administration, which being a hygiene factor will depress his current work performance.

Question 4

This question is intended to be a measure of a persons feelings of achievement in his job performance. A rating of five is indicative of a neutral effoct of this motivator, whilst greater than five is a measure of the motivators positive effects in improving the individual's work performance. A score of less than five, indicates some lack of achievement and possible negative effects. Some hygiene factors, such as company policy and administration or supervision is likely to be present, especially if the individual feels that either of these are responsible for his lack of achievement in his work.

Question 5

This question provides a measure of the strength of the "work itself" motivator. A score of 5 is taken as being neutral. Scores greater

than 5 indicate the strength of this motivator. A score of less than 5 indicates no motivational strength of this factor and is scored 0.

This question also provides a measure of the general feeling of satisfaction or dissatisfaction of employees (i.e. the relative strength of motivators and hygiene factors).

Question 6

The "possibility of growth" is one of Herzberg's motivators, and this question seeks to measure an individuals feelings about the possibility of growth of his work in particular via promotion. This motivator cannot operate in a "dead-end" job. Whilst few of the jobs considered can actually be regarded as "dead-ends" with no contribution to the possibility of future growth the actual situation does not necessarily coincide with that perceived by the individual. It is the latter image (perceived) rather than the actual that is most important as far as the effect on the individual is concerned. Hence it is necessary to measure the situation as perceived by individuals, rather than from an assessment of the value (re. growth) of the job itself.

A score of three is taken to be indicative of a neutral effect. Few people would rate their prospects of promotion as zero; there must be a glimmer of hope. However, a 'low' score is likely to be neutral in its effects on job performance. A score greater than three is a measure of the strength of the motivator. A score of three or less is indicative of neutral or slightly negative effects on performance.

Question 7

An individual who has a strong desire for promotion is likely to work at a rate which is enhanced by this factor. If, however, he sees his ambition being baulked or at risk by lack of promotion prospects (indicated by question 6), the enhanced rate will be reduced by an appropriate amount. Zero is taken as a neutral score, and the score must be multiplied by a

factor lying between 0 and 1, depending upon the score in question 6. The result is a measure of the strength of Herzberg's "advancement" motivator.

Question 8

"Achievement" in job performance is an important motivator, but an important reinforcement of this feeling is provided by its recognition. Particularly recognition by people who have the power and influence to advance the individuals career. Recognition of achievement by one's boss is, therefore, a particularly important motivator.

If one considers, that the boss has an opinion of one's performance of 'satisfactory' then this cannot be taken as indicative of positive recognition. A score of 5 is, therefore, taken as being neutral, with higher scores providing a measure of motivating effects. Lower scores are indicative of the absence of this motivator, and possibly the presence of the "supervision" hygiene factor. Negative scores are added to the "supervision" hygiene scores.

Questions 9 & 10

The responsibility attached to jobs can vary widely. The more important influence on individuals, however, is the responsibility felt by them. Even a dustman can feel that he carries a great responsibility for public health. These questions seek to measure the responsibility felt by individuals with regard to their jobs. This measure is assumed to be indicative of the strength of Herzberg's "responsibility" motivator. A neutral score is indicated by zero.

Question 10 modifies the score in the light of the individuals preference for responsibility in his job. If a person feels that he would like to have more responsibility in the future, then this indicates that this motivator has a particularly strong effect on him, and his score is added to by a factor of 1. If he would prefer less responsibility then his score is subtracted by a factor of 1 because this indicates that this

motivator holds less importance to him, and is likely to be of less effect. A preference for the same amount of responsibility does not affect the score given in question 9.

Question 11

A supervisor's competence is an important factor in an individual's feelings about his job. Herzberg's hygiene factor "supervision - technical" corresponds to this factor. This question was intended to provide a direct measure of the strength of this hygiene factor. After discussions with the Head of Staff Recruitment and Training it was decided to omit this question on the grounds that it could prove to be unduly offensive, and may make participants wary of the questionnaire. Connotations of "Big Brother" could be implied. The score for this factor is, therefore, arrived at by a combination of negative scores from questions 4 and 8.

Question 12

Interpersonal relations play a part in the performance of jobs. Whether social, or sociotechnical, such relations can significantly affect an individual's attitude to work. This question seeks to measure the effectiveness of interpersonal relations with the individual's immediate boss, on the former's work performance.

A rating of satisfactory implies with most people that relations are not all that they ought to be. Therefore, this rating is taken to be slightly negative, and the neutral point corresponds to a rating of 6. Scores less than 6, then, measure the strength of this hygiene factor. Scores greater than 6 indicate that the situation is such that the relationship is not adversely affecting performance.

Question 13

This question relates to the same area as question 12, but in particular seeks to measure the effedt of interpersonal relations between

the individual and his work colleagues, other than his immediate boss. The network point and scoring are on the same basis as in question 12.

Question 14

Herzberg's hygiene factors "working conditions" actually includes a range of environmental characteristics other than an individuals office. However, in order to obtain a standard measure of this factor the rating of the accommodation is common to all those interviewed, and all spend a sizable proportion of their time at work in the same.

Again a rating of satisfactory is taken to be indicative of slightly negative feelings, and a score of 6 is taken to be the neutral point. A score of less than 6 is taken to be a measure of the strength of this hygiene factor, whilst a score greater than 6 is regarded as being of neutral value as regards work performance.

Question 15

All individuals feel some need for status, and have some expectations of the status that should be provided by their job. A score of 5 or greater is taken to be neutral in effect on performance, whilst one of less than 5 is indicative of the strength of the hygiene factor.

Question 16

As far as this segment of the N.C.B. organisation company policy and administration are represented by the Area Board, the Director's Committee. Many people see very little of this Committee's performance, but all are subject to its decisions. Therefore, all are likely to have some feelings on the subject, since their future job prospects and security can be very much dependent upon this Committee's performance, and the quality of its decisions. A rating of satisfactory is not indicative of the state of affairs that leads to completely neutral feelings on the part of individuals influenced by this committee's performance, and is, therefore taken to be slightly negative in its effects. The neutral point is taken

to be a score of 7, equivalent to a subjective judgement of "good", since individuals with personal career aspirations are likely to demand a high standard of performance of such an influential body. Scores of less than 7 are taken to be a measure of the strength of this hygiene factor.

Question 17

"Salary" is one of Herzberg's hygiene factors. If an individual receives at least as much money as he feels that his job and performance deserve then his work performance is unaffected. If,however, he receives substantially less, then this is likely to affect his performance. A rating of 5, corresponding to "satisfactory" is taken to be the neutral point, and score of less than this is a measure of the strength of this hygiene factor.

Question 18

The final hygiene factor considered is that of job security. Nobody could realistically feel their position to be totally secure, even in an industry offering employment as stable and secure as that of the N.C.B., because chance occurrences can always totally change a situation (e.g. accident causing incapacity). Therefore, the neutral point is taken to be equivalent to a score of 2. Scores greater than this are a measure of increasing insecurity of feelings about the job.

Questions 19, 20 & 21

These questions are the first three of five relating to the application of "Management by Objectives" within the N.C.B. organisation.

A factor, fundamental to the "M.B.O" philosophy is the involvement and participation of individuals in the setting of their objectives. Without being able to influence the objectives set, individuals are likely to feel less commitment to their achievement.

Commitment to performance of objectives is the principal objective of "M.B.O" for the company's employees. It is likely to be a function of two things, the degree of influence that the individual has in

the setting of objectives and the practical achievability of them. If objectives are thrust upon employees they are likely to feel relatively uncommitted to their achievement. Similarly if objectives are seen to be unrealistic or out of practical reach, commitment will flag. This latter point applies even where individuals have set their own objectives. If in his enthusiasm the individual has set unrealistic goals, then subsequent realisation of the situation is likely to dampen his ardour. Indications in psychological research have shown that, left to themselves, individuals tend to set high performance targets for themselves. The role of the organisation in objective setting, then should be to temper an individuals ardour with realism. In the reverse case, where an individual is ultra conservative and realistic, the organisation should seek to temper his defensiveness with some enthusiasm.

Question 19 is an indicator of the correctness of application of MBO and a measure of this factor's affect on individual commitment. A minimum standard of 50% influence on the part of individuals should be arrived at. Question 21 is a measure of the effect of realism on individual commitment. A score of less than 5 is a measure of an effect to reducing commitment.

Question 20 is a direct measure of an individual's commitment, and is used with questions 19 and 20, which attempt to account for shortfalls in commitment, below the 100% level (score 10).

Question 22

A simple measure of the effectiveness of "MBO" as applied by the N.C.B., in improving job performance is to ask experience participants their opinion of its effectiveness in respect of their performance. The attractiveness of the principles involved is likely to bias results, such that an average score rates "MBO" as improving the performance of the organisation. Anything less than a score of +2 then, should be taken as indicating no significant change.

Question 23

Performance appraisal is a critical stage in the application of 'MBO'. If high objectives tend to be set, then 100% achievement is not likely to be forthcoming. Therefore, it is easy for such an interview to deteriorate into a negative criticism session. All "kicks" with no "pats" is likely to have detrimental effects on job performance, and this question scores as a measure of the correctness of application of performance appraisal, as a means of obtaining future performance improvements. It also serves as a measure of the hygiene factor - "supervision - technical", since the boss' perceived competence is likely very much to be indicated by his appraisal of the subordinate.

Questions 24-28

Serve as the bases for classification of results, upon which comparisons can be made. These are discussed in the next section.

7. Bases of Comparison

The author selected bases of comparison based upon his own feelings as to where significant differences in the population, with respect to motivation, are likely to be found. Five bases are used, which are as follows:-

(a) The level of the stratum in the hierarchy of the organisation. Both the strata selected, one at Area level, and one at colliery level, perform similar "doing" oriented functions. However, there are likely to be differences in factors affecting job performance, poorly accounted for by age and salary differences and the greater progress towards maximum potential of the former group, as recognised by their level in the hirearchy.

(b) Age is chosen as a basis of comparison on its own. The division in groups is taken at the 45 years of age level. Two groups are then set up, those less than, and those greater than 45 years old, giving a 50/50 split of the numbers interviewed.

(c) The third basis of comparison is that of salary ranges. Those earning less then £4,000 p.a. and those more than £4,000 p.a. forming two groups.

The actual choice of the salary division is meaningful only in respect of the general salary conditions applicable at the time of the interview. With recent inflation, and corresponding upward salary trends, this level is now erroneous. It was, however, correct at the time of interviews, and the application of an appropriate inflation factor would render it equally so today.

(d) The author suspects that a considerable influence on the motivator/hygiene pattern is exerted by the number of people financially dependent upon a man's income. This, then forms the basis of the forth comparison. Those individuals with less than 3 people dependent on their income (i.e. mainly man and wife only, with no dependent children), and those with three or more dependent upon their income.

(e) The final classification is based on the individual's professional training. Previous experience, particularly in the training years is likely to influence a person's attitutdes and hence his feelings towards his work. Those with technical training of an engineering nature (including surveyor) form one category. The remainder, the majority of who have had a more liberal education, and have undergone mainly "white collar" training, form the second group.

E. RESULTS

1. Trial Research

Before the data colledtion technique was applied to the population selected for investigation, a trial was carried out on a small sample of people from backgrounds similar to those of people in the main research group. The objective of this trial was to determine the main sources of ambiguity and confusion in the questionnaire, and also to provide some trial data to determine any snags that may arise. A number of questions were modified as a result of this trial. The numbers involved, however, were insufficient for any meaningful conclusions to be made from the data.

2. The Interviews

All interviews were conducted in private, but most were interrupted at some stage by telephone or other callers. This tendency was particularly common at collieries. However, since the interruptions were general to the body of interviews, any bias of the results from this source should be common to all, and therefore, should not affect comparisons of different groups.

The time taken to conduct interviews varied between 15 and 50 minutes, depending upon the interest shown in the research, and the deliberation taken in answering questions.

A majority of participants seemed interested in the research and expressed a desire to see the final results.

A number of the questions caused some difficulty in answering This usually arose for one of two reasons; the scope of the question being such as to require a number of factors to be considered before the final answer given or the interviewee being unsure of the meaning of the question.

The questions which seemed to cause particular difficulty were:-

Question 1. A number of factors have to be weighed here - proximity of

previous increment, the rates for similar jobs inside and outside the industry, contribution in cash terms of job performance, (and in other non-measurable terms). Many of the participants also seemed to wrestle with their conscience and with the need to free themselves from previous standards.

Question 16. This question posed some deliberation amongst participants. The judgement of the performance of the Area board, whose power and influence is considerable, may have been seen as somewhat threatening, particularly since the research had initially been introduced to them by the senior member of that board. Hesitancy was soon overcome, however, by a reassurance of the anonymity of results.

Question 20. A number of people had difficulty in perceiving the difference between this question and question 21. A short explanation by the author served to dispel the difficulty.

One person was unable to reply to any of the questions on management by objectives because he had no experience of it. Nine others were unable to reply to question 23, on performance appraisal, because they had no experience of it, and were working with specific objectives for the first time.

3. Data Presentation

Appendices 13 - 18 contain the data collected. Appendix 13 gives a breakdown of numbers of people in the various categories used for comparison purposes. It confirms a number of expectations; one that area personnel tend to be older than those at collieries (20% of colliery personnel over 45 years compared with 67% of area personnel); a second expectation was that the colliery personnel would be substantially lower paid. (This is supported by the fact that none of the colliery personnel interviewed earned over £4,000 p.a., whilst 61% of the area personnel did earn such amounts.)

A third expectation was that colliery personnel would tend to have more dependants (associated with age groups). Again this is supported by

the fact that 90% of colliery personnel have one or more children compared with 67% for area personnel.

Appendices 14, 15, 16, 17 and 18 present the data analysed on the five comparison bases: - organisational level (colliery or area), age (under 45 or over 45), salary (over or under £4,000 p.a.), number of dependants upon income (two corresponding, usually, to man plus wife, one to the man alone, any number greater than two representing children or other dependants), and professional training (engineers and surveyors tend to have had a training more closely tied to colliery operations and have more experience in line functions. Others tend to have a more liberal education, less tied to the coal industry, and have little line management experience).

Appendix 19 uses a "chi square" significance test to determine significant differences in the results. It should be noted that the significance decision for "salary shortfall" is not based on a "chi square" test but more simply on a rule of thumb decision level - if the difference between means is greater than £50, then the difference is significant.

4. Data Analysis and Findings

a) Motivators

i) In General

An analysis of the motivators and hygiene factors for colliery and area personnel shows that all are significantly different.

"Achievement", "Responsibility", "Advancement" and "the Possibility of Growth" are stronger amongst colliery personnel, whilst "Recognition" and "Work Itself" are stronger amongst Area personnel.

Certain hypothesesare drawn about each factor, based on the author's knowledge and experience, and compared with the results.

ii) Advancement

First a hypothesis is proposed: - Area personnel are less ambitious than those at colliery level. This is a function of greater age,

fewer dependants, existing advancement to a substantial level in the organisation, and a substantial salary level.

This hypothesis is supported by the lower mean score for advancement amongst Area compared with colliery personnel (3.12 c.f. 4.20); by the lower score for the over 45's compared with the under 45's (2.97 c.f. 4.61); by the lower score for those earning over £4,000 per annum compared with those earning less than £4,000 p.a. (2.96 c.f. 3.90); by the lower score for those with 2 or less people dependant upon their income (including themselves) compared with those with 3 or more dependants (2.58 c.f. 3.83).

Furthermore, the score for this motvator is higher amongst engineers/surveyors than amongst other professionally trained personnel. Explanations for this could be that a higher proportion of the younger colliery staffs are represented amongst the engineer/surveyor category; also the structure of the N.C.B's organisation is such that there are greater opportunities for advancement for engineers than other categories. This latter point is reflected in the types of person entering the industry in other categories; knowing the opportunities to be less, their expectations are less, and hence the emphasis that they place on advancement. That is not to say that their ambition is low, however, only that it is less than amongst the engineers.

The encouragement of the "advancement" motivator should be pursued amongst the younger engineers with families, particularly at colliery level.

Older personnel are not as susceptible to this motivator and great efforts should not be wasted on them in encouraging it.

iii) Possibility of Growth

The coal industry is one of the older basic industries and its image is not too attractive, compared with its competitors, to young professionally trained people. The least that the organisation can do is to ensure that its young personnel are presented with prospects of personal

growth within the organisation. If it is doing this, then the younger personnel will feel this motvator stronger than the older ones. This is so, and is supported by the scores for the under and over 45 year olds (respectively 2.43 and 1.36).

Hypothesis: - The possibility of growth is perceived as greater by colliery than Area personnel. This is a function of age, profressional training and number of dependants.

This is supported by the results: the score for colliery personnel is higher than for Area (2.60 c.f. 1.56); that for the under 45's is greater than the over 45's (2.43 c.f. 1.36); that for engineers/surveyors is greater than for other professionals (2.45 c.f. 1.00); and that for 3 or more dependants is greater than for 2 or less, (2.19 c.f. 1.14).

This motivator is similar to advancement and one could expect, as is the case, the results to be similar.

This motivator should be encouraged amongst the younger colliery personnel with families.

Older, non-engineering personnel at Area level are less susceptible to it. The difference in its strength between different salary groups is less marked than with other factors, but nevertheless, it tends to be stronger amongst the lower salary groups.

iv) Recognition

The difference between all classification categories for this motivator are all isgnificant (per "chi square" test).

Hypothesis: (1) Recognition is more important to men with no family left at home, other than a wife. Because ego satisfaction by his family is less, and because his behaviour is less reinforced at home, he comes to rely upon his work for these satisfactions.

(2) This, again, is a function of age, and should also be reflected by the results for organisational level, and salary.

This hypothesis is reinforced by the results: - the score for the over 45's is greater than for under 45's (4.50 - 3.14); that for two or less dependants is greater than for three or more (5.57 c.f. 3.14), which is particularly marked; the score is also greater for colliery than Area staffs (4.00 c.f. 3.30), and the over £4,000 salaries than under (4.73 c.f. 3.06).

One could expect the "doers", the engineers, to be more in need of recognition than other professions. Yet because this class tends to be younger, earn less than £4,000, and work at colliery level, the above analysis would point to its being highly improbable, However, the results do bear out that the score is higher for engineers than others (4.00 c.f. 3.30), which makes the fact all the more remarkable.

This motivator is most important to Area personnel, and to the older engineers. The younger engineers at colliery level are less susceptible to it.

v) Achievement

With the exception of the age classification, all differences are statically significant.

Hypothesis: (1) The young feel a greater need for achievement. Greater idealism as expressed in the young has need for satisfaction in achievement. Therefore "achievement" is stronger in the young than old. (2) Also, engineers deal with more tangible measures of performance than other professions in this organisation, hence their need for "achievement" is greater.

The first hypothesis should be reflected not only in "age" but also in the groups whose age plays a pronounced part in the split (i.e. organisational level, salary level, number of dependants.)

The results demonstrate that hypothesis (1) is founded on some substance: the under 45's have a higher score than the over 45's (4.50 c.f.

4.00); colliery personnel have a higher score than Area (4.50 c.f. 4.17); and those with more dependants have the higher score (4.28 c.f. 4.14), although the statistical test indicates this to be of no statistical significance.

A counter indicator, however, arises with regard to salary; the higher salaried, which one would expect to be associated with the older age groups, have a higher score than those less well remunerated (4.73 c.f. 4.00). This can be accounted for by the fact that engineers scored higher than other professions, and a number of the Area engineers are amongst the higher salaried group.

Achievement holds the greatest hold on the younger personnel, in particular engineers. It continues to retain its hold on the latter profession with increasing age.

vi) Work Itself

The results of the analyses of salary, and number of dependents are not statistically significant.

Hypothesis: - The people who no longer desire or see prospects of promotion are likely to be more dependant upon other motivators. In particular they are likely to seek satisfaction from work itself. To be more specific, one would expect Area personnel to be more reliant on this motivator than those at collieries, also the older more so than the younger those with fewest dependents more so than those with sizable families. Also, to hold to the converse of the expectations for "advancement", one would expect engineers to have less need of this motivator than other professions.

With the exception of the "number of dependants" expectations (the results of which are not statistically of significant difference (4.48 c.f. 4.45)), these expectations are borne out by the results:- Area staff score higher than colliery (4.84 c.f. 3.70); the over 45's higher than the under 45's (5.00 c.f. 3.86); the higher salaried higher than the lower salaried (4.46 c.f. 4.41) this difference not being of statistical significance;

and "other" professions score higher than engineers/surveyors (5.30 c.f. 4.00).

"Work Itself" has stronger effects on older personnel in professions other than engineering, particularly at Area level. There is no significance in differences according to salary or numbers of dependants.

vii) Responsibility

The results of analysis by "numbers of dependants" are not statistically significant.

Hypothesis: Those personnel who have been most closely associated with line management, or actually part of the line, are most susceptible to the "responsibility" motivator.

The results do not hold completely to expectations in all respects. With regard to organisational level and professional training they do, however; colliery personnel score higher than Area (8.60 c.f. 8.16; and engineers, a class which includes line management at colliery level and Area personnel with line experience, score higher than other professions (8.45 c.f. 8.10)

One would expect colliery staff's higher score to be reflected by a similar trend in the 'age' and 'salary' analyses. This is not so; the over 45's score higher than the under 45's (8.65 c.f. 8.07); and the "over"£4,000 p.a." score higher than the "under £4,000 p.a." (8.46 c.f. 7.94). This can be explained by the high score of the "engineers" category, who contain several people over 45 years old and earning more than £4,000 p.a.

The "responsibility" motivator is stronger among colliery staffs in the "engineer/surveyor" category. It is also stronger in higher age groups than amongst younger people; certainly the older group expressed feeling more responsibility. This latter classification correlates with higher income levels. In general, this motivator is strongest amongst those categories that bear most practical responsibility in the organisation near or actual line managers, and the old (and better paid) executives, who

have advanced to levels of greater responsibility.

b) Hygiene Factors

i) Working conditions

All analysis results are statistically significant.

Hypothesis: "Working Conditions" hold most importance for those who work in the worst conditions. Colliery offices are inferior in most respects to those at Area, particularly at the older collieries, (like the ones included in the investigations). Therefore, colliery staffs are more conscious of inferior working conditions than Area personnel.

This is supported by the results. Colliery scores are higher than Area scores (5.00 c.f. 2.61). This is reinforced by the scores for age (under 45's - 4.65 c.f. over 45's - 2.43); for salary (under £4,000 p.a. - 4.23 c.f. over £4,000 p.a. - 2.27); for numbers of dependants (3 or more dependants - 4.15 c.f. 1.43 for those with 2 or less). Since all colliery personnel come into the engineer/surveyor category one would also expect this category to score higher than other professions, and the results demonstrate this (3.84 - 2.80).

The "working conditions" hygiene factor is strongly felt at colliery level, as reflected by the personnel's score for their office accommodation. The company can do little to influence underground working conditions, but could improve office accommodation. The score suggest that it should give consideration to the matter.

Area staffs are more satisfied by their working conditions (a score of 2 represents their being satisfied), and little benefit is to be derived, in general, from improvements here.

ii) Status

All analysis results proved to be statistically significant.

Hypothesis: Personnel in positions of lower rank in the hierarchy of the organisation feel more lack of satisfaction of this hygiene factor.

In practical terms this means that one expects colliery personnel to feel more lack than Area personnel. This is verified by the results: - colliery scoring higher than Area (1.30 c.f. 0.22). The other results also reinforce this finding; the younger staff scoring higher than older ones (1.22 c.f. 0), the over 45's feeling no lack of status at all. The lower salaried group scored higher than the higher salaried (0.77 c.f. 0.22), the "3+" dependants group scoring higher than the "2-" group (0.81 c.f. 0), the latter feeling no lack of status. A further noteworthy finding is that engineers feel more lack than other professions, who feel no lack at all (0.95 c.f. 0). In fact the Area "other" profession members feel no lack of status.

Engineers and colliery staffs feel some lack of status. Continuing the trend to the recognition of collieries as the "sharp-end" of the organisation and further decentralisation of decision making through involvement should serve to correct this matter.

It is significant that the "other" professions, corresponding to 'staff' rather than 'line' functions feel no lack of satisfaction of their status needs.

Age increase correlates with advancement in the ranks of the organisation, and thus status needs are increasingly satisfied with age. These needs, however, seem to be generally well satisfied, since scores tend to be low.

iii) Inter-Personal Relations - With Boss & Colleagues

All analysis results show differences of statistical significance.

Hypothesis: Young people, being less experienced and less tied to the organisation are likely to be more forthright in their views. Therefore, adverse inter-personal relations with their bosses are more common. With the increasing dependancy on the organisation that comes with increasing age, and greater diplomacy that comes with experience, the older personnel have better personal relations with their bosses.

This hypothesis is substantiated by the results, although it was rare to find anybody who considers themselves to have particularly bad relations with their boss. The under 45's score higher than the older personnel (0.43 c.f. 0).

The tradition of outspokenness, commonly found at colliery level, also leads to more adverse relations and this is supported by the fact that colliery staffs and engineers score higher than, respectively, Area staff and 'other' professions, (0.6 and 0.33 c.f. 0 and 0).

It seems significant that none of the Area staff, over 45's, over £4,000 p.a. salaried, or those with 2 or less dependants, had any feeling of adverse inter-personal relations.

The same pattern is followed in the inter-personal relations with colleagues, where even fewer adverse relationships were perceived to exist than with the superior subordinate relationship.

Poor inter-personal relationships do exist but are relatively few. Such relationships are most common amongst the younger, colliery staffs.

iv) Company Policy and Administration

All analysis results show differences of statistical significance.

Hypothesis: Younger people are more critical of the job performance of others. Anxiety about their own aspirations enlarges their perception of other people's mistakes that impinge on their career prospects. Therefore, dissatisfaction with "company policy and administration", as expressed by feelings about the performance of the Area board, is greatest amongst young personnel, whose advancement in rank has, hitherto, been limited.

This hypothesis is supported by the results for age and salary, the latter being indicative of limited advancement. The under 45's score is 1.72 compared with 0.86 for the over 45's; the under £4,000 p.a. group score is 1.65 compared with 0.73 for the over £4,000 p.a. group. Of further

significance is the score of those with 3 or more dependants (1.53), compared with 0.57 for those with 2 or less. This is indicative of greater anxiety on the part of those with greater domestic responsibilities.

Considering the trend in other analyses, the fact that 'other' professions scored more than engineers (1.40 c.f. 1.22) is all the more significant. This is indicative possibly on a feeling amongst 'other' professions that company policy is over influenced by 'engineers', and that their representatives do not carry sufficient weight.

Dissatisfaction with company policy and administration is greatest amongst younger men of relatively low rank in the organisation. Of further significance is the dissatisfaction felt amongst professions other than engineers. In general, however, employees are satisfied with the performance of the Area board.

v) Salary

All the analysis results show differences of statistical significance.

Hypothesis: The younger men with greatest domestic commitments, and currently earning relatively low salaries, express most dissatisfaction with salary.

The results support this view; the under 45's are more dissatisfied with salary than the over 45's (1.72 c.f. 0.86); the lower salaried more dissatisfied than the higher salaried, (1.18 c.f. 1.00); the "3+" dependants more dissatisfied than the "2-" dependants, (1.10 c.f. 1.00).

In further support are the results for colliery/Area, and engineers/others.

Salary dissatisfaction is greatest amongst those currently earning the lower salaries, and with greatest domestic commitments.

vi) Job Security

All the analysis results show differences of statistical significance.

Hypothesis: Feelings of insecurity with employment are greatest amongst the older personnel, particularly those over 55, beyond which age, premature retirements were becoming increasingly common. *

The results support this proposal, the over 45's score is significantly double that of the under 45's (1.00 c.f. 0.50).

Of unexpected significance is the greater insecurity felt by 'other' professions compared with engineers. Possibly this is related to their functions being predominantly 'service' and therefore feelings that come to the crunch, they are more dispensable than engineers, in what is a predominantly production oriented industry.

The older personnel suffer most from this hygiene factor, with engineers feeling little insecurity in comparison with other professions. In general, however, personnel feel secure in their employment.

c) Management by Objectives

i) Commitment shortfall and influence or objective setting

Hypothesis: The degree of commitment to achievement of objectives is a function of the influence that the individual had in the setting of his objectives.

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* Footnote

Since the survey, a change in company policy, occasioned by the changed energy supply situation, means that early retirements and redundancies are rarer. This change would presumably be reflected in changes in answers to questions on job security.

A comparison of the results for "commitment shortfall", (a measure of by how much an individual is less than wholy committed) and influence shows this to be so; colliery staffs expressed less commitment (greater commitment shortfall) than Area staffs, (2.70 c.f. 2.53), and also donsidered that their influence in objective setting was less (3.80 c.f. 3.06). There is a similar lining up of results for age, salary, number od dependants and professional training.

Expressed in absolute terms, aiming at 100% commitment to objectives, there is a significant shortfall in commitment. However, if one considers the overall mean score (2.59), which corresponds to a subjective judgement of "high commitment", then the position is good. Similarly for influence in objective setting; the overall mean score of 3.34 corresponds to a 67% contribution in objective setting on the part of the individual concerned.

Commitment to objectives is associated with the amount of influence allowed the individual on their setting. Commitment is generally high amongst the group studied, but engineers are significantly less committed than other professions. A majority of those interviewed expressed, without volition, some lack of commitment caused by the interaction and inter-dependence of their performance, and achievements, with other members of the organisation.

ii) Achievability

This term is used to describe the "probability of achievement" of objectives.

Hypothesis: In jobs where the objectives have to be couched in broad and general terms, the achievability is less. That is the shortfall from subjective certainty of achievement is greater. Jobs at colliery level, and for engineers tend to be easier for the setting of specific objectives, being more associated with measurable results (tons of coal produced, cost

of maintenance, etc). If the hypothesis is to be substantiated the scores for achievability shortfall should be lower for colliery than Area personnel, and lower for engineers than other professions.

The results in fact support this; Area scores being significantly higher than those for collieries, (2.82 c.f. 2.30), and engineers' lower than other professions, (2.53 c.f. 2.80).

In jobs where objectives are set in specific terms the probability of achievement is felt to be greater. This is important in that if objectives are too broad, then the probability of achievement is much reduced, the commitment to them is likely to be less, and the objectives themselves become meaningless.

Attempts must be made to be more specific in the setting of objectives, particularly amongst Area and non-engineering personnel. Key tasks must be iddntified for all, and distinguished from "desirable" tasks of secondary importance.

iii) Effectiveness

This term is used to describe the effectiveness of MBO as a means of improving individual performances.

Hypothesis - (1) Those people with objectives couched in specific terms feel that the technique (MBO) is more effective in improving management performance. (2) Younger people are more receptive to new methods and change. MBO may not be new in principle but its formal application is. Therefore, the younger personnel feel that it is more effective than older personnel.

These proposals are given substance by the results, Colliery scores are higher than Area scores (2.90 c.f. 2.06) which supports the first hypothesis. The second hypothesis is supported by the score for the under 45's being greater than for the over 45's (2.50 c.f. 2.25), and the score for those with "3+" dependants being greater than for those with "2-", (2.68 c.f. 1.57).

Younger personnel feel more strongly that MBO is an effective means of improving their performance. Where objectives are readily set in specific terms, the feeling is stronger that the technique is effective. Endeavour to set objectives in more specific terms for other personnel will improve the effectiveness of the technique im improving work performance.

iv) Appraisal

Appraisal of performance is a vital stage in the application of MBO. If criticism of performance is too liberal then individuals are likely to feel hurt, and feel that they are being unfairly dealt with. Thus the "supervision" hygiene factor is likely to lead to reduced performance. The appraisal interview is also an ideal occasion for recognition of performance achievements, and encouragement of aspirations for advancement. These latter two are motivators and can lead to improved performance. Constructive criticism is necessary if individuals are to continue to improve, but is better if it comes from the individual himself.

If appraisal interviews are being correctly performed, then individuals should feel that, at least, they are not unfair, indicating that hygiene is being satisfied. If well conducted, such interviews should inspire individuals to better performance, by stimulating the recognition or "growth" motivators.

The results indicate that, in general, interviews are felt to be fair, and little resentment was noted at the questionnaire interviews. An overall mean score of 2.37 indicates this feeling for fairness, but variations between different groups are significantly different. In particular the under 45's feel the interviews to be less fair than older personnel (1.64 c.f. 3.86), and those with "3+" dependants are similarly different from those with "2-", (2.00 c.f. 4.25). This fact is possibly

related to decreasing sensitivity with increasing age.

Appraisal interviews are being conducted in a satisfactory manner, but some improvement may be derived from greater stimulation of motivators (recognition and growth) and less of hygiene factors (supervision and job security). In practical terms this implies more praise of work achievements, and indications of advancement rewards, and less criticism, particularly of a negative type, with fewer threats to job security (implicit or explicit). The younger personnel are being less stimulated by these interviews, and may well be more sensitive to criticism, hence efforts would be better expended on this group of employees.

F. CONCLUSION

1. Summary of Discussion

This research into motivation and the application of 'MBO' in an Area organisation of the National Coal Board, has identified significant differences between identifiable segments of the population examined. Using the factors established by Prof. F. Herzberg, comparisons of these factors have been made and a number of significant differences indicated.

'MBO' has emerged, in recent years, as one of the most popular techniques employed to improve management effectiveness. There seems little point in continuing to use the technique if a significant number of those subject to it, feel that it does not fulfill its purpose, or that it is being incorrectly applied. A common misapplication is the use of the technique principally as a means of holding individuals accountable for their performance, by specifying objectives against which performance can subsequently be measured. The philosophy behind the technique is to encourage self direction and control of managers within the organisation, rather than relying on superiors for detailed instructions. To establish this, individuals must be highly committed to their objectives, and this is achieved by allowing them to be involved in and influence the setting of their objectives. It is commonly found that individuals setting their own objectives, tend to set particularly demanding ones, Whilst this is desirable if objectives are set so high as to make substantial achievement of them impossible, then individuals are likely to lose commitment to them and follow different goals. One function of the organisation in objective setting is to ensure that objectives are realistic.

The value of 'MBO' is, therfore, assessed using five measures; the influence of the individual in setting his objectives, the achievability of his objectives, his commitment to his objectives, his feelings about appraisal interviews, and his feelings about the effectiveness of 'MBO' in

improving his performance.

'MBO' can play a significant part in the stimulation of motivators or hygiene factor, and its effectiveness may be judged on these standards.

2. Summary of findings

a) Motivators

i) Advancement: Younger personnel are most susceptible to this motivator, particularly those employed at colliery level.

ii) Possibility of Growth: The over 45 year old employees, particularly at Area level, feel less strongly about this motivator than the under 45 year olds at colliery level.

iii) Recognition: This motivator is most important to Area personnel, particularly engineers over 45 years old. The yonger colliery staffs are less susceptible to it.

iv) Achievement: This motivator has its greatest hold on the under 45 year olds, particularly engineers. Its hold on engineers is retained with increasing age.

v) Work Itself: This has stronger effects on the over 45 year olds in professions other than engineering.

vi) Responsibility: Personnel who have been, or who are currently part of line management are most susceptible to this motivator. Also the older executives who have advanced to levels of greater responsibility, are more susceptible than younger personnel.

b) Hygiene Factors

i) Working Conditions: This factor is most strongly felt at colliery level, where a significant number are dissatisfied with their office accommodation.

ii) Status: Engineers and colliery staffs feel some little dissatisfaction with their status. Other professions expressed no feelings of dissatisfaction from this hygiene factor.

iii) Inter-personal Relations: Poor relations do exist, but are relatively few. Such relationships are most commonly found amongst the younger staff at colliery level.

iv) Company Policy and Administration: In general, employees are satisfied with the performance of the senior Area officials. Such dissatisfaction that exists is greatest among younger men of relatively low rank in the organisation, and is stronger amongst 'other' professions than engineers.

v) Salary: Dissatisfaction with salaries is greatest amongst those currently earning the lower salaries, and with the greatest domestic commitments.

vi) Job Security: In general, personnel feel little insecurity in their employment. The older employees suffer most from this hygiene factor, with engineer's feeling less insecurity than other professions.

c) Management by Objectives

i) Commitment and Influence: In general, commitment is high in the group studied, but engineers feel less committed than others. Commitment to objectives is associated with the amount of influence allowed the individual in objective setting.

A view was commonly expressed, without any prompting from the author, that they felt some lack of commitment caused by the interdependence of their performance with that of other members of the organisation.

ii) Achievability: Where specific objectives can readily be, and are set, achievability is considered to be greater. Where objectives are set in more general terms achievability is less, and commitment tends to be less.

iii) Effectiveness: The under 45's feel more strongly that 'MBO' is an effective means of improving their performance. Where objectives are readily set in specific terms, the feeling is stronger that the technique is effective and worthwhile.

iv) Appraisal: Appraisal interviews are being conducted in a satisfactory manner, as far as minimising hygiene effects is concerned. However, some improvement may be derived from greater stimulation of motivators, and less of hygiene factors.

3. Recommendations

a) All the motivators and hygiene factors specified by Prof. Herzberg are represented amongst the population, but in varying strengths. Knowledge of these variances can provide guidance when seeking to motivate personnel or to avoid or satiate hygiene factors.

b) The under 45 year olds are most susceptible to the advancement, possibility of growth and achievement motivators. The older employees are more responsive to the recognition of achievement, and work itself.

Action on these findings should involve the stimulation of realistic promotion hopes in younger employees, who should have realistic but demanding objectives for their work performance. The older personnel should be more frequently complimented on their achievement, or at least favourable comments passed. They should be made to feel that their performance is valued, and is a vital part of the overall performance of the organisation.

c) Personnel who bear the most responsibility for productive organisational performance are more responsive than others to the responsibility motivator. A majority of the under 45's expressed a desire for greater responsibility in the future, thus providing a means of further motivating them.

Further responsibility should be given to those expressing a desire for it, and to those already performing 'line' management duties. The effect of greater responsibility on non engineers at Area level is unlikely to increase motivation conspicuously, and need not be pursued extensively.

d) Engineers do not lose their need for achievement with age, and their work should be such as to allow them to continue to make tangible achievements as they advance in rank. They should be permitted to pursue ideas of their own, for in accomplishing these ends their general motivation to work is increased.

e) Colliery staffs suffer more strongly from adverse working conditions. Whilst little can be done to improve underground conditions, much could be done to improve office accommodation, which currently is a source of much dissatisfaction.

Little dissatisfaction is felt about offices at Area level, and little benefit is to be derived from improvements here.

f) Status needs are most unsatisfied among younger personnel at colliery level, and no dissatisfaction at all was detected amongst professions other than engineers. Many employees feel that the status of unit engineers, undermanagers and surveyors has decreased in recent years, and it is these people who experience the dissatisfaction. The trend to allowing greater autonomy for collieries can go some way to correcting this, but something can also be done by the Board itself to increasingly recognise the vital importance of this management level to overall performance.

g) Such dissatisfaction as exists with the Area Board is felt by the younger staffs at collieries. Criticism of decisions taken at Board level are often accompanied by incomplete knowledge of the facts attached to the situation. More could be done to improve communication of policy decisions, and present the reasoning behind them. Ideally this communication should be two way, allowing individuals to express views and possibly influence the courses of action subsequently decided upon.

h) Salary dissatisfactions are greater among personnel with most need for money, and those who have the least supply of it. The present system whereby the higher paid tend to get larger increments than the lower paid

does little to improve this situation. Consideration should be given to an individual's domestic situation when deciding upon salary increases, and if bonus' are to be awarded they can be most effective if awarded to those in greatest need.

i) Insecurity of job tensure felt by older personnel is associated with increases of premature retirements. Whilst it must be recognised that, in a contracting industry, such retirements are preferable to widespread redundancies, they can lead to adverse effects on performance of persons who perceive that they might be subject to such action. Consultations with individuals, and agreement of terms should not be prolonged. "Sounding out" techniques of people's attitudes to early retirement can only enhance feelings of insecurity, and prolong the prcess involved. Having decided upon the action necessary the Board should use the "sword" rather than the "Chinese water torture".

Where individuals are in the age "danger" zone with regard to premature retirement, those who the company wishes to retain should be reassured in positive terms, to squash insecurity that they may feel, and rumours that they might hear.

j) Lack of commitment to objectives is often associated with the interdependence of individual performances. Most key tasks are combined efforts and individuals are mutually dependent. Consideration should be given to a system where group goals are set for meaningful combinations of personnel. Individual objective setting should then be done on a group basis rather than a boss-subordinate basis as now. The group should define its own objectives, allocate key tasks and hold individual members accountable for their performance.

Before such groups can perform this function effectively they may need some experience of "sensitivity" or "T-group" training, in order that inhibitions are disposed of and an effective work team built. This can only

be achieved when individuals have a realistic image of the abilities and limitations of individual team members.

k) Some reservation about the effectiveness of 'MBO' is felt among older employees, especially where objectives are difficult to specify in precise terms. If attempts at objective setting can only lead to broad and general definitions, then it is probably not worthwhile to go to the trouble of the exercise. The organisation should demand that such broad objectives be made more specific or not be set at all. The older personnel, particularly could benefit from further training in the application and potential contribution of the technique. Efforts should be made to put over the 'MBO' philosophy and dispell the emphasis placed on its use as a means of better accountability.

l) Whilst appraisal interviews are not currently giving rise to many significant dissatisfactions, neither are they providing the stimulus to motivation that they can potentially achieve. There seems a reluctance in the industry to recognise or praise any performance other than an outstanding one, whereas criticism is more readily imparted. Where praise is given it is often perceived as forced or insincere.

The potential motivation that can derive from sincere recognition of performance is being lost. If attitudes are to change then the example must be set starting from Board level, with greater recognition and appreciation expressed of earnest endeavours, whether or not outstandingly successful in terms of the results that they achieve.

4. Significance of recommendations

The majority of recommendations made apply to all groups of the population investigated, but special emphasis is made on the groups from which attention can lead to maximum benefit.

All personnel should be encouraged to find satisfaction in their work, by allowing them greater freedom of actions, and greater influence in

the setting of objectives. In this way the "achievement" and "work itself" motivators can be greater stimulated.

It should be recognised that the generalisations drawn apply to sectional heads of department at Area level, and to departmental heads at colliery, only. It cannot necessarily be inferred that the findings apply equally to more junior or senior officials within the Area organisation or, indeed, to officials in similar positions in other Areas of the N.C.B's organisation. Whilst such inferences are not improbable they cannot be wholly justified without further research.

The motivation of an organisation's employees is fundamental to its success and survival, and the motivation of management is particularly vital.

This project has sought to make some small contribution to our knowledge in this field. Some of the findings may well appeal to be biased by the author's opinions, but a sincere attempt has been made to interpret the results in an objective manner.

There are, however, many gaps in our knowledge, which can only be bridged at present by personal opinion.

5. Recommendations for Further Research

The inexperience of the author, and its limitation to the North Derbyshire Area, leave much to be desired of the project as a complete piece of work.

This field of knowledge has potentially great contributions to make, and an extension of the research to other work groups, and parts of the organisation can yield much useful information. Modifications to the technique and questions are desirable, but should not prove to be very onerous.

Further research would be better performed by trained sociologists.

6. Success Criteria Examined

These criteria were originally specified in the introduction of the report under "Objectives".

i) Positive practical suggestions are concluded from the research.

ii) Significant differences in the motivation needs of individuals with different circumstances are detected.

The author considers that the project has satisfied these criteria at least partially. The remaining three criteria await the findings of assessment, the opinions of his employer, and the future performance of the author

7. In Conclusion

The author wishes to express his appreciation for the co-operation of the North Derbyshire Area of the N.C.B. which made this project possible.

In particular thanks are extended to Mr. R.B. Dunn, (formerly Area Director) for his assistance and interest, Mr. D.J. Allsop (formerly Head of Recruitment and Training) for his interest, advice and invaluable assistance, and to all who participated in the research and presentation of the report.

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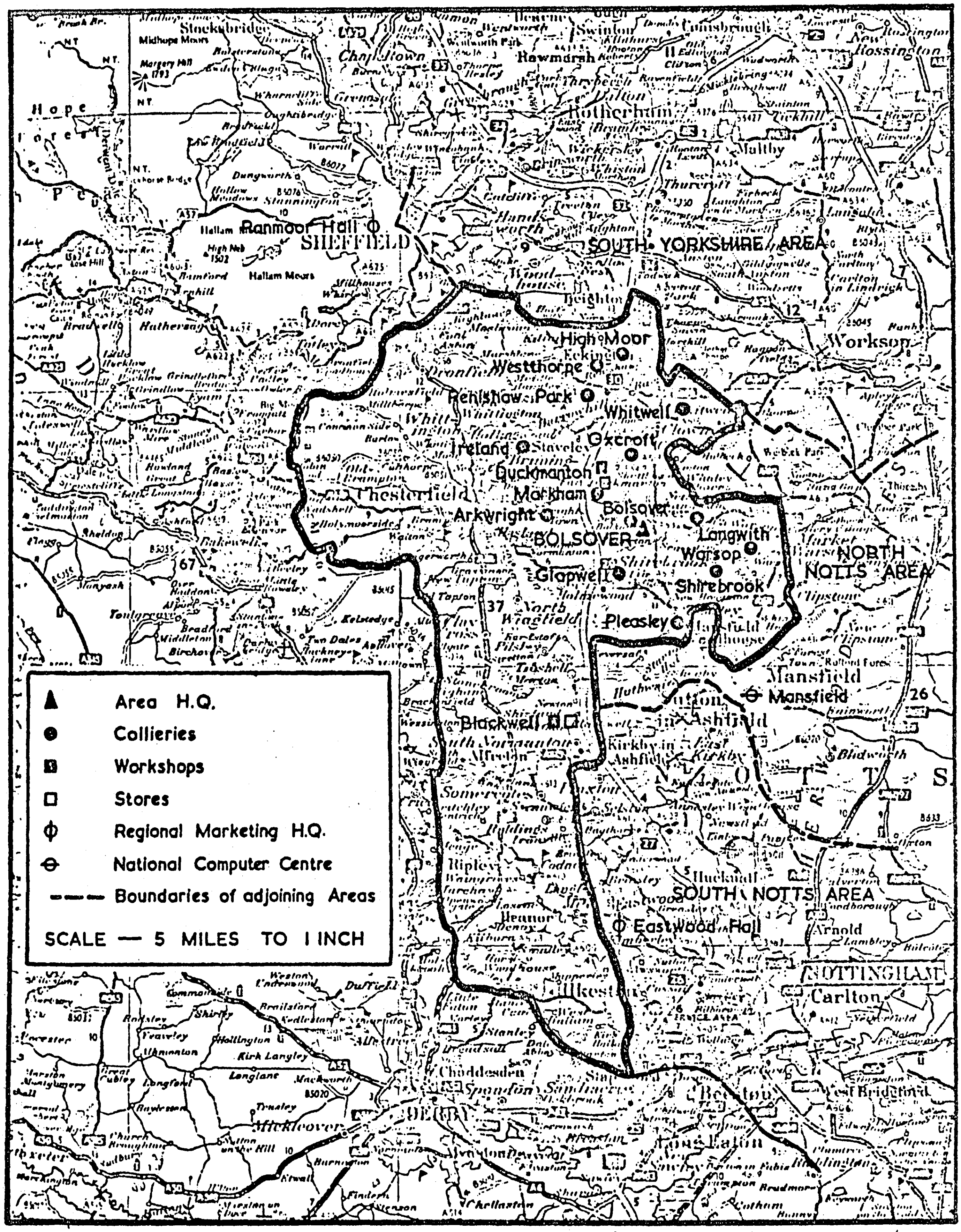
LIST OF APPENDICES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SOUTH YORKSHIRE AREA
High Moor
Westthorpe
Renishaw Park
Whitwell
Oxcroft
Ireland
Duckmanton
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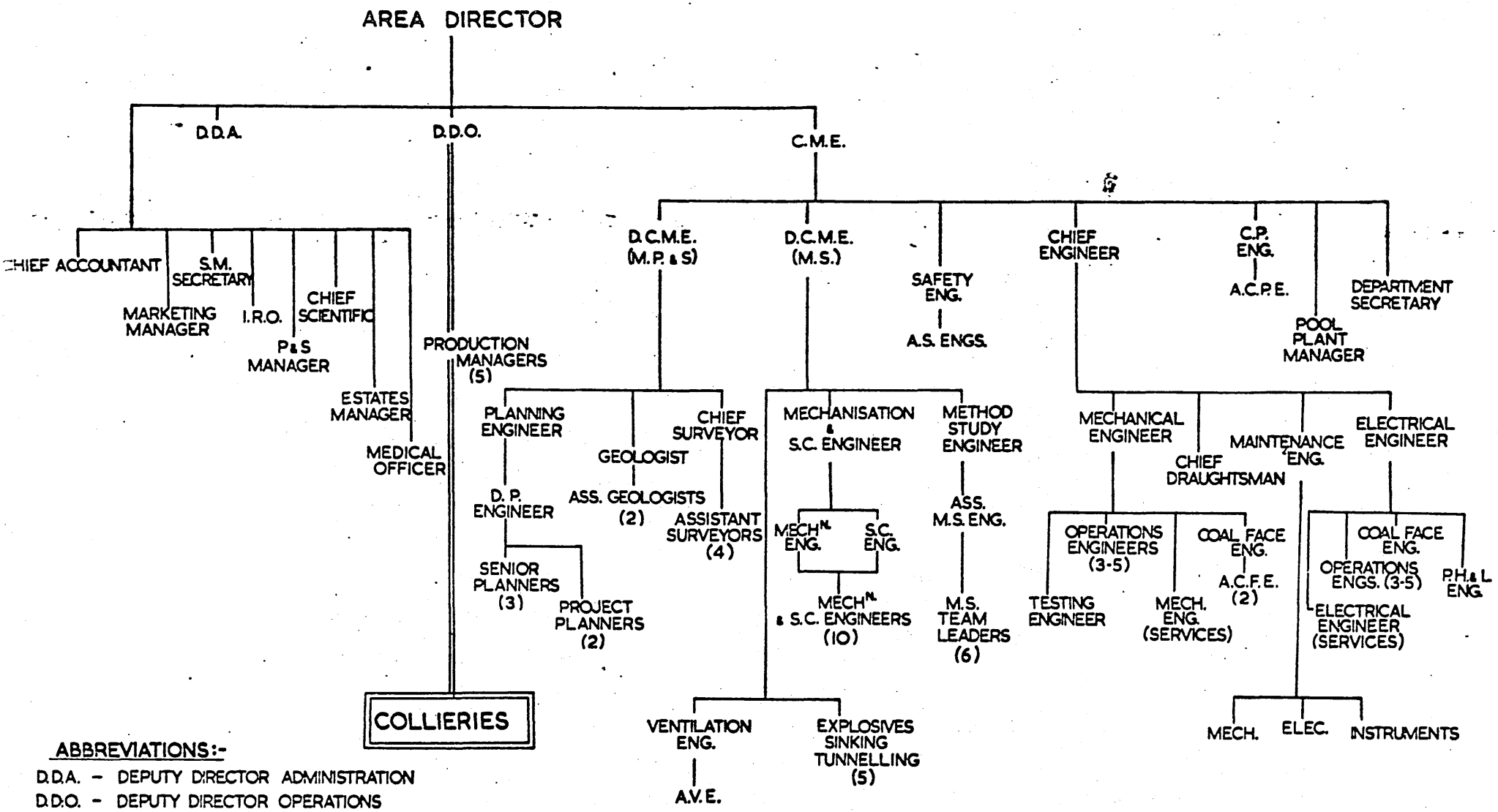
Arkwright
Bolsover
BOLSOVER
Longwith
Warsop
NORTH NOTTS AREA
Glapwell
Shirebrook
Pleasley
Mansfield
Blackwell
SOUTH NOTTS AREA
Eastwood Hall
Area H.Q.
Collieries
Workshops
Stores
Regional Marketing H.Q.
National Computer Centre
Boundaries of adjoining Areas
SCALE — 5 MILES TO 1 INCH



ABBREVIATIONS:-

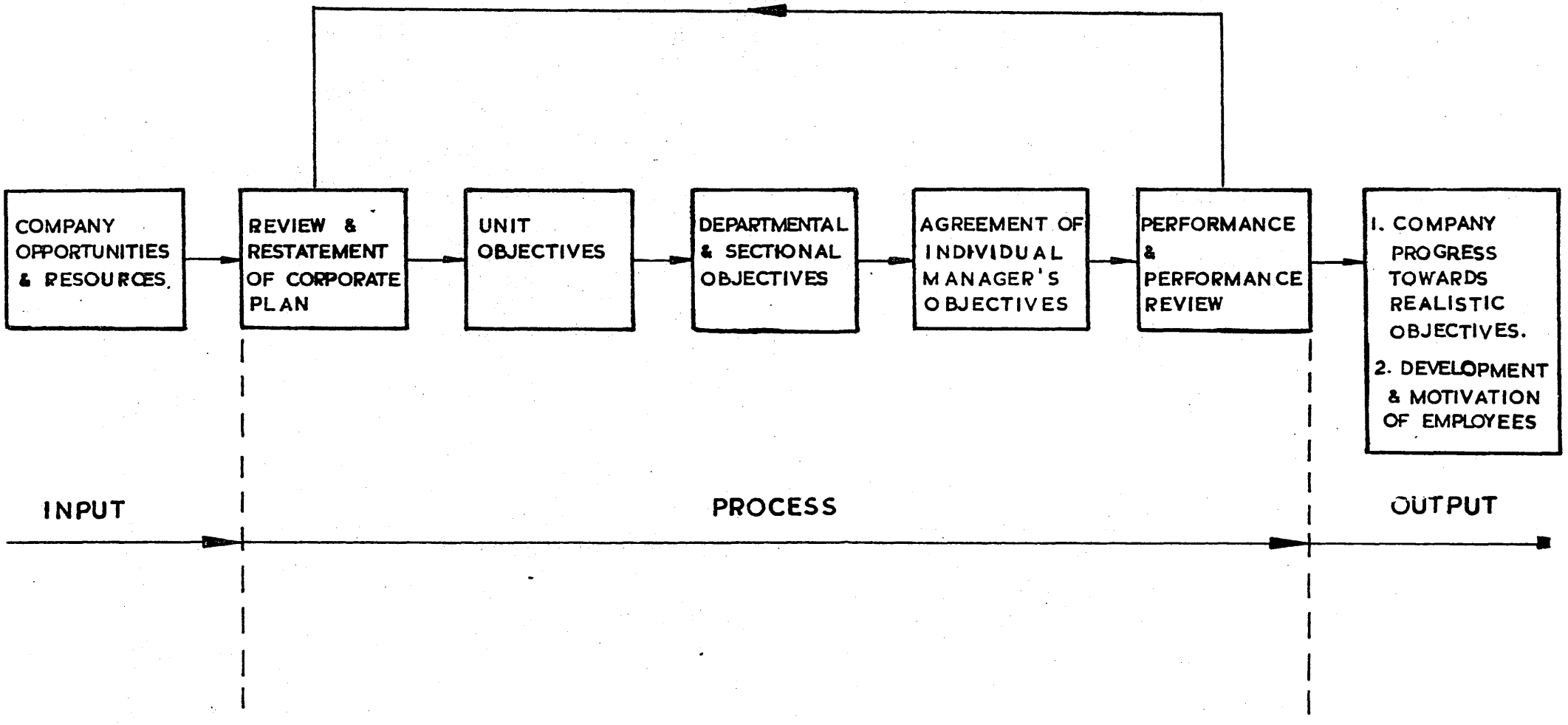
D.D.A. – DEPUTY DIRECTOR ADMINISTRATION
D.D.O. – DEPUTY DIRECTOR OPERATIONS
C.M.E. – CHIEF MINING ENGINEER
M.P.&S – MINES PLANNING & SURVEYING
M.S. – MINING SERVICES
M.S. ENG. – METHOD STUDY ENGINEER
A.C.P.E. – ASSISTANT COAL PREPARATION ENGINEER
I.R.O. – INDUSTRIAL RELATIONS OFFICER
P.H.&L – POWER HEAT & LIGHT
S.M. – STAFF MANAGER

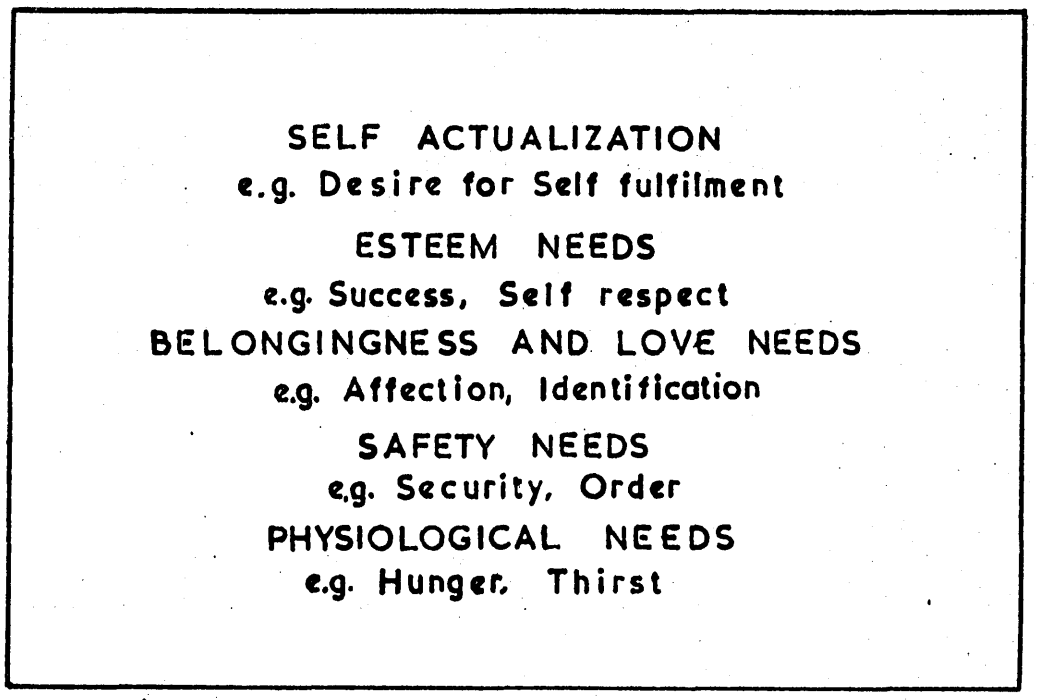
AREA ORGANISATION

SHEWING PRODUCTION DEPARTMENT

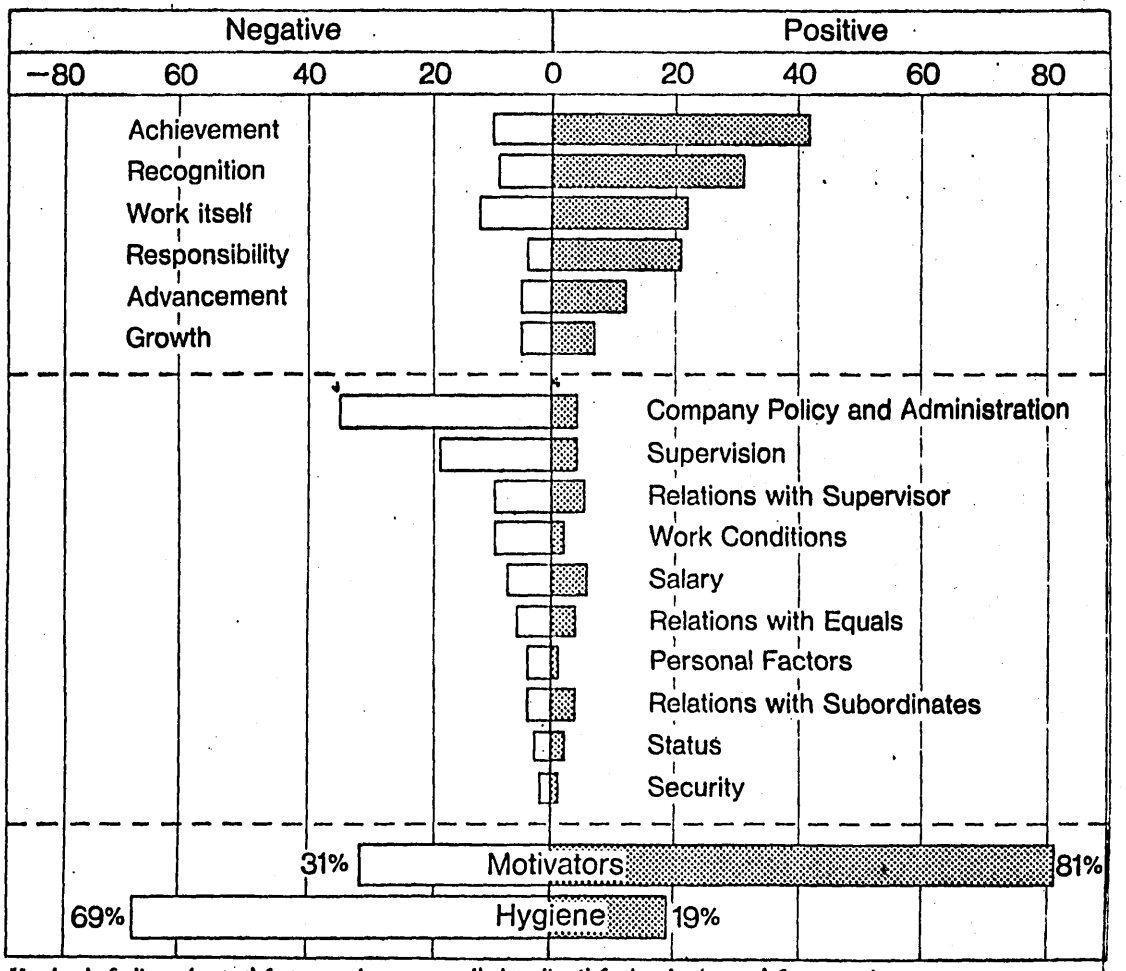
DOWN TO UNDERMANAGER – UNIT ENG. LEVEL

APPENDIX 3. MODEL OF THE PROCESS OF 'MBO' WITHIN THE ORGANISATION



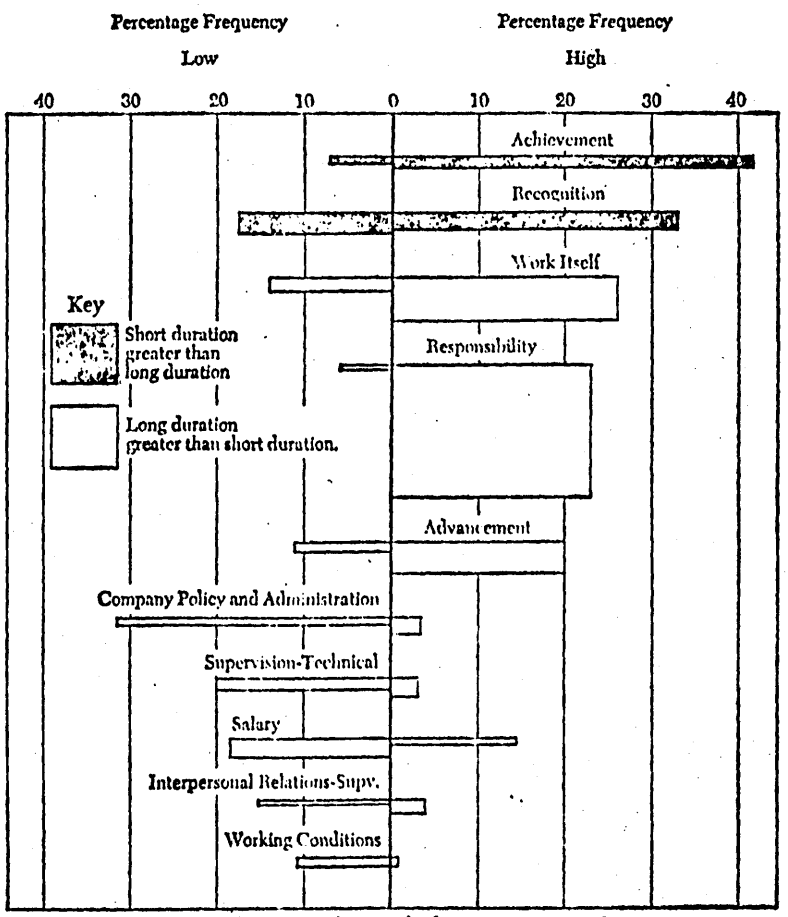


Maslow's hierarchy of needs



Herzberg's findings: 'context' factors, such as money, alleviate dissatisfaction, but 'content' factors motivate

Comparison of Satisfiers and Dissatisfiers



Reproduced with permission from F. Herzberg *et al. The Motivation to Work.* John Wiley and Sons, New York, 1959.

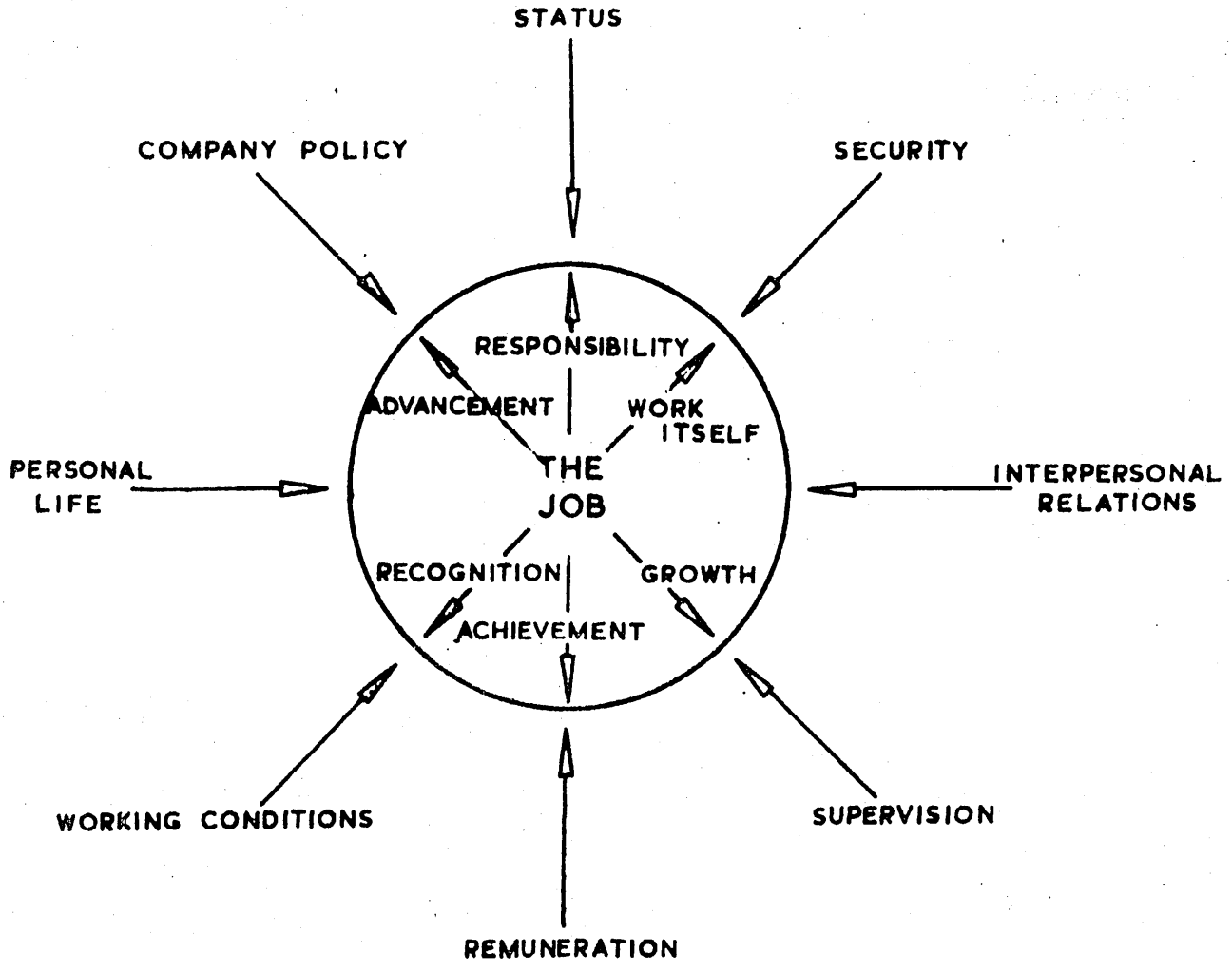


ILLUSTRATION OF CONTENT CONTEXT RELATIONSHIP

APPENDIX 7.

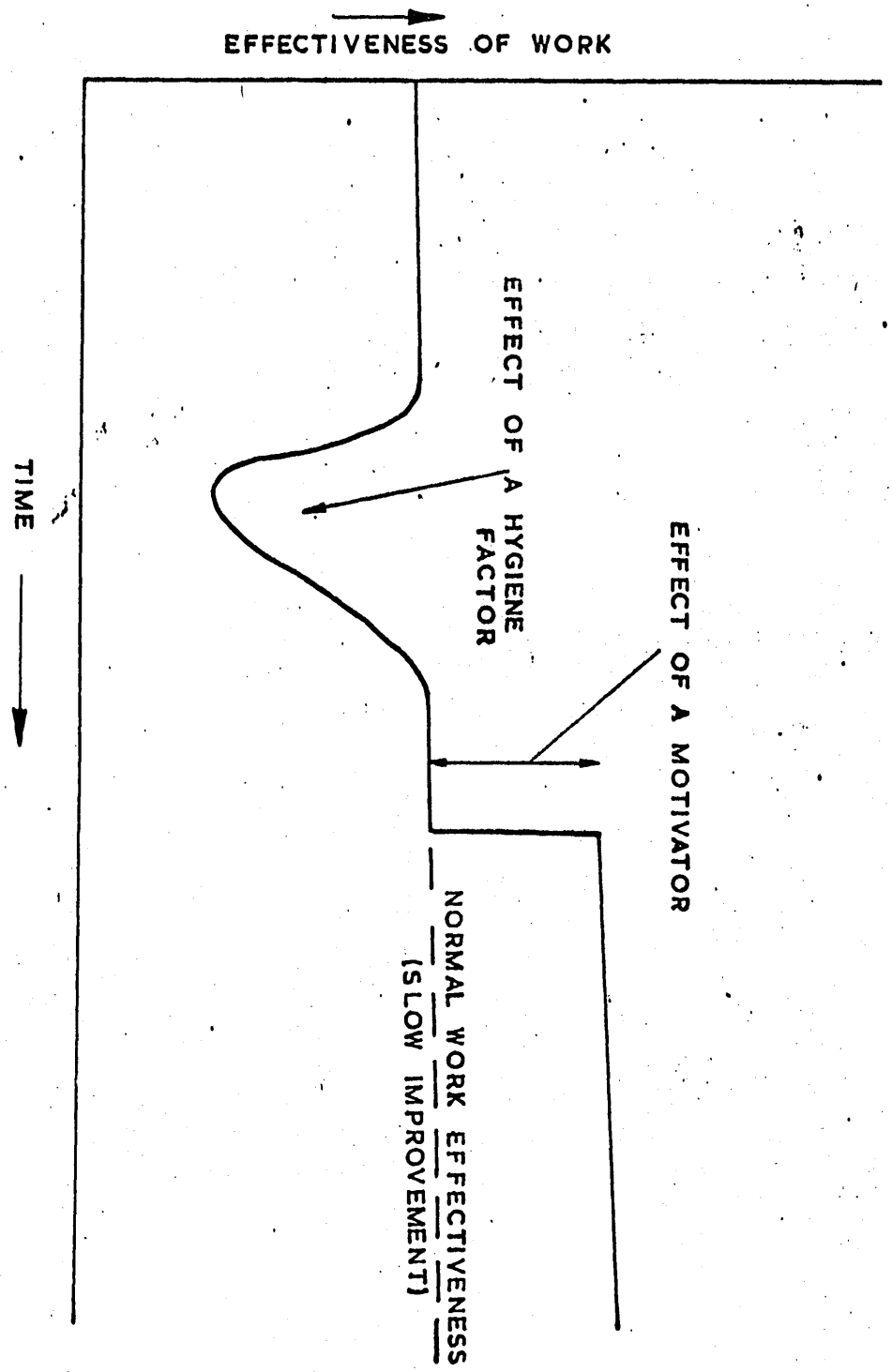
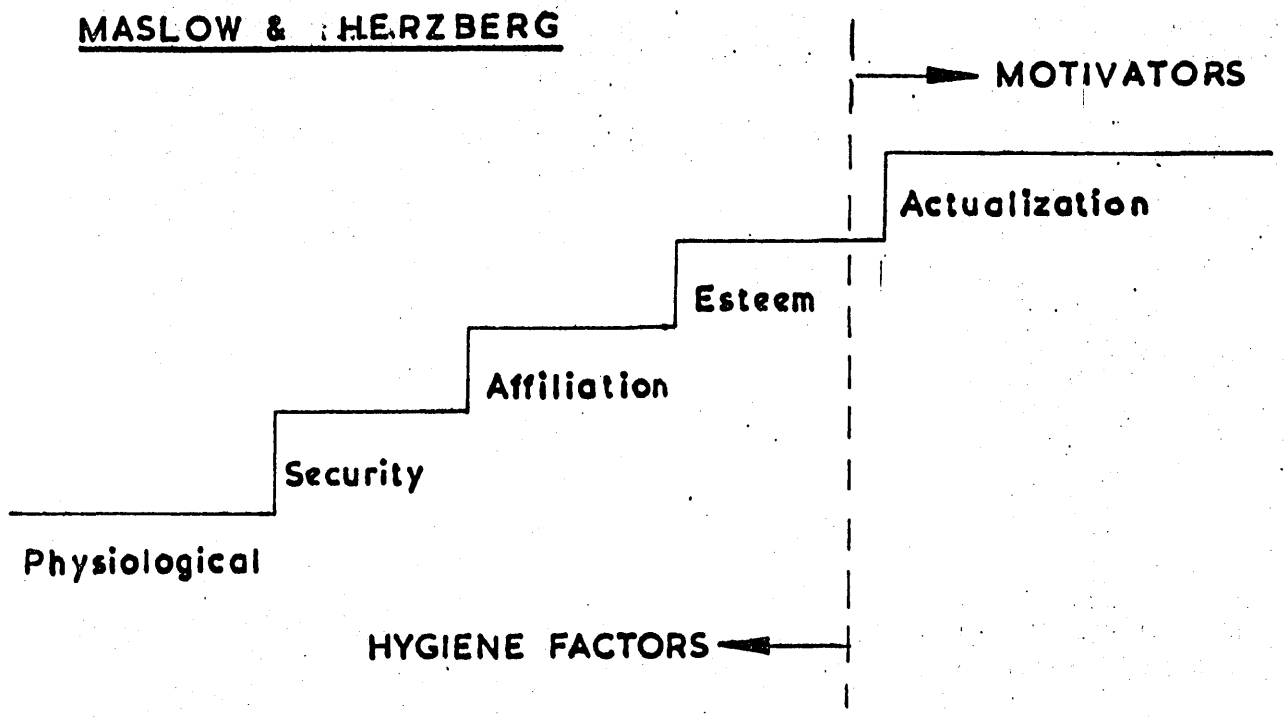


ILLUSTRATION OF EFFECT OF MOTIVATORS AND HYGIENE FACTORS ON WORK PERFORMANCE

CLASSIFICATION	REASON	o/c
Achievement	More opportunity to use ability	33
Job Itself	Work more interesting	20
Growth	More opportunity to learn different jobs	13
Responsibility	More responsibility	3
Advancement	Promotion systems better	15
Motivators		84
Remuneration	More money	30
Security	Wages secure	5
Working Environment	Clocking ended	5
	Working team bigger	3
Company Policy	Incomes policy good for low paid worker	3
	Company; competitive position	3
Hygiene		49

PETROCHEMICAL OPERATIVES:
REASONS FOR FAVOURING AGREEMENT

APPENDIX 9.

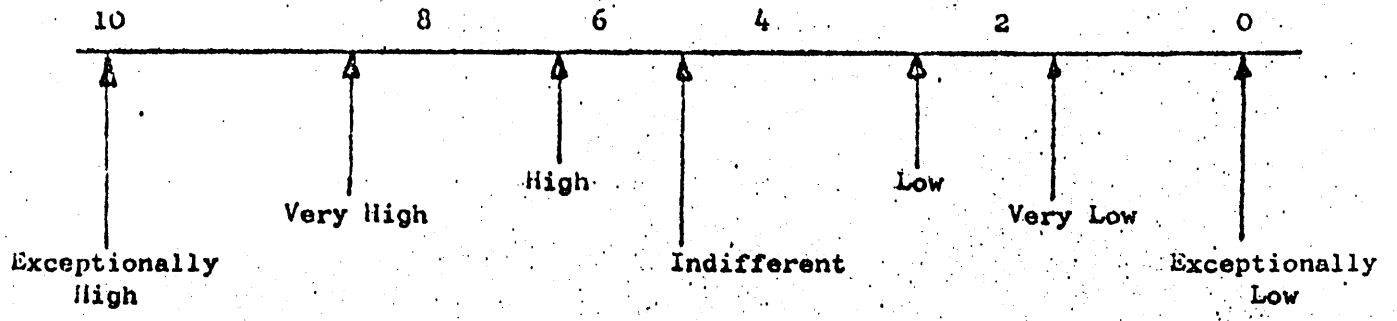


SUPERIMPOSITION OF HERZBERG'S MOTIVATORS AND HYGIENE FACTORS ON MASLOW'S HIERARCHY OF NEEDS.

APPENDIX 10 :

Original Questionnaire- Section to be completed by immediate Bosses of Principle Respondents.

1. How do you rate your subordinate's motivation for work. (Mark on the scale).



2. Do you consider that he is satisfied, in general, with his work ?

YES	
NO	
DON'T KNOW	

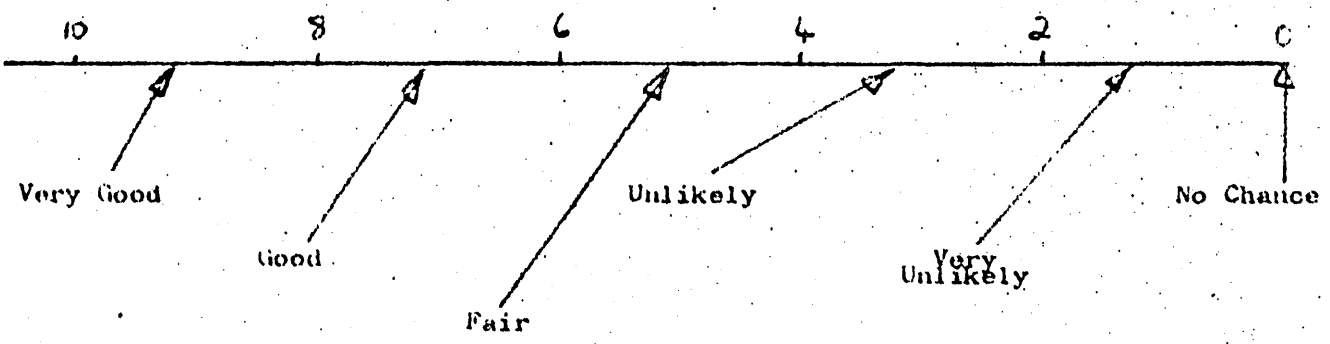
(Tick appropriate box)

3. If no, do you consider that any of the following factors play a major part in his dissatisfaction ?

a)	Your supervision	
b)	His salary	
c)	His working conditions	
d)	His work colleagues	
e)	N.C.B. Policies	
f)	Senior Management	
g)	Any other factors (Please state)	

(Tick appropriate box)

4. How do you rate the chances of his being promoted within the next 12 months ?



5. Would you recommend him for immediate promotion if the opportunity arose ? (Based solely on his personal abilities and not on any need you may have of his services)

YES	
NO	
DON'T KNOW	

(Tick as appropriate)

6. Are you satisfied, in general, with his work ?

YES	
NO	
DON'T KNOW	

(Tick as appropriate)

7. Is he aware of your opinion of his work ?

YES	
NO	
DON'T KNOW	

(Tick as appropriate)

APPENDIX 10 (Cont)

8. Does he seem inclined to acceptance of increased responsibility in the future ?

YES	
NO	
DON'T KNOW	

(Tick as appropriate)

9. What do you consider are his principle personal goals in life, with respect to his employment ?

(Number appropriate boxes in rank order)

PROMOTION	
STATUS	
FREEDOM OF ACTION	
TO BE HELD IN ESTEEM BY HIS FELLOWS	
A LARGE SALARY	
INCREASED LEISURE	
ANY OTHERS (PLEASE STATE)	

10. Do you consider that he seriously expects to achieve his principle goals ?

YES	
NO	
DON'T KNOW	

(Tick as appropriate)

Copy of questions as asked in the personal interviews. (For reply sheets see Appendix 8)

1. Considering the value of your job performance, how much do you think that your next salary increment should be if it were next month? Your answer should not necessarily be related to standard practice, and there are no upper limits to the figure that you quote. Insert your figure in the box provided.

2. Were you successful in being appointed to the last job for which you applied? Tick the appropriate box.

3. If you were not successful, do you consider that you could have done a better job than the person appointed? Tick the appropriate box.

4. How do you rate the way in which you are performing your present job?

Many of the following questions, like this one, involve you in rating your feelings or opinion about some matter. A scale is provided, graded from 0 - 10, alongside which are marked appropriate subjective judgements for your guidance. Your rating may be anywhere on the scale, and it is not necessary for it to coincide exactly with a number or subjective judgement. A tick or mark at the appropriate part of the scale should be used.

5. Rate your satisfaction with your present job.

6. How would you rate your chances of promotion within the next 12 months? Promotion may include any job that you would regard as representing promotion, and may be inside or outside the industry.

7. How do you rate the strength of your desire for promotion?

8. How do you feel that your immediate boss rates your job performance?

9. How do you rate the responsibility of your job? In other words, how much responsibility do you feel weighing upon you?

responsibility in the future.

11. How do you rate the job competence of your immediate boss?

12. How do you rate your personal work relations with your immediate boss?

13. How do you rate your personal work relations with your work colleagues? The latter term includes all persons with whom you come in contact in the course of your work, excluding your immediate boss.

14. How do you rate your office accommodation?

15. How do you rate the status that you derive from your job, within the organisation? Note : Everybody has some need for status from their job, even if it were zero. If the status that you desire equals that that you feel you need, then the score would be 5. If it were greater than your needs, then the score would be greater than 5, and vice versa.

16. How do you rate the job done by senior management as a team? Your judgement should not be overweighed by personal likes or dislikes, but rather be based on feelings about their combined performance. Even if you consider that you are not in close enough contact with them to make a fair assessment of actual per performance, you will have some feelings on the subject, and your answer should be based upon these.

17. Considering the value of the work that you actually do, how do you rate your salary?

18. How do you rate the chances of your being demoted, sacked or retired within the next twelve months?

Before proceeding with the following questions, it is necessary to ascertain from participants, whether or not they are in possession of personal objectives, set under the application of "Management by Objectives" for the current year, or were in possession of the same for the previous year.

available, to questions 19, 20 and 21.

19.a) How do you rate the influence that you have had on the setting of your objectives for the current year?

or b) How do you rate the influence that you had on the setting of your objectives last year?

At one extreme the answers could be that your objectives were thrust upon you and that you had no opportunity to alter or modify them in any way; at the other extreme you would have determined your own objectives, which were accepted by your boss without any change or modification. Inbetween the two extremes are various combinations of influence or the objectives set by the two parties involved; your boss and yourself.

20.a) How do you rate your personal feeling of commitment to achieving your objectives this year?

or b) How do you rate the commitment that you felt towards the achievement of your objectives last year?

21.a) How do you rate your chances of achieving your objectives this year?

or b) How successful were you in achieving your objectives last year?

22. How do you feel that "Management by Objectives" affects your job performance, with respect to the way that you would perform in its absence?

23. How do you rate the appraisal of your performance last year as expressed at your management development interview with your boss?

The following questions are for classification purposes.

24. Is your office situated at Area or at a Colliery? Tick the appropriate box.

25. Please indicate the range in which your salary lies. Tick the appropriate box.

26. Please indicate the range in which your age lies. Tick the appropriate box.

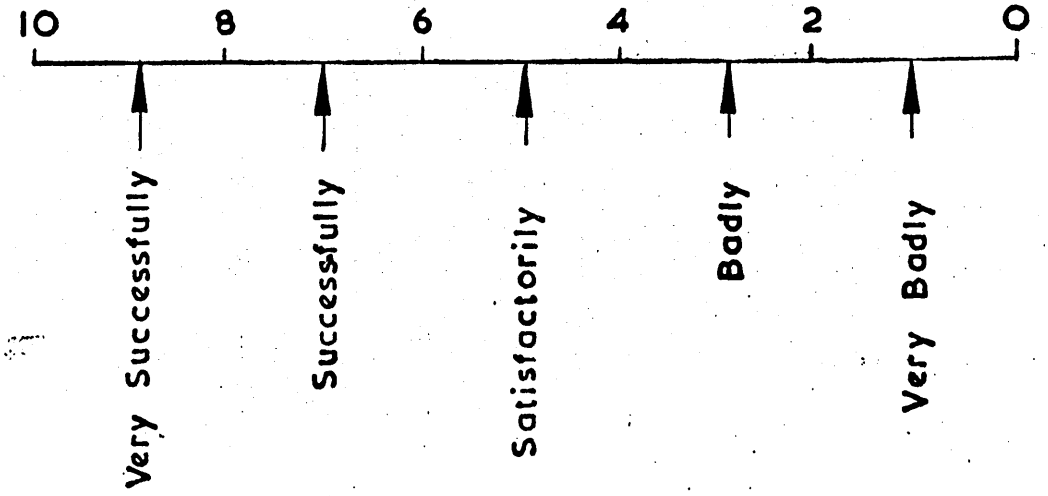
27. How many people are dependent upon your income, including yourself? Tick the appropriate box.

28. Would you class your professional training as mainly technical, administrative or other? Tick the appropriate box.

1. ☐

2. Yes ☐
   No ☐

3. Yes ☐
   No ☐
   Don't Know ☐

4. 

STANDARD INTERVIEW REPLY SHEETS

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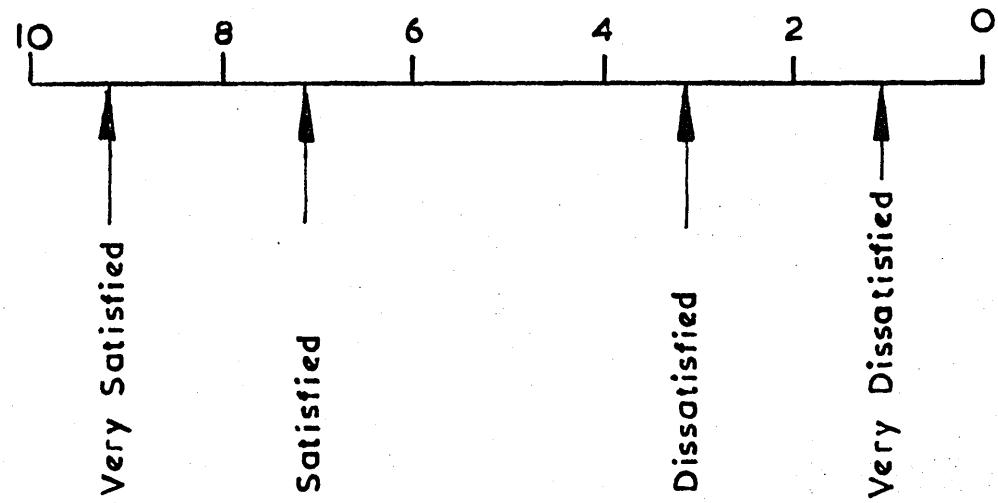
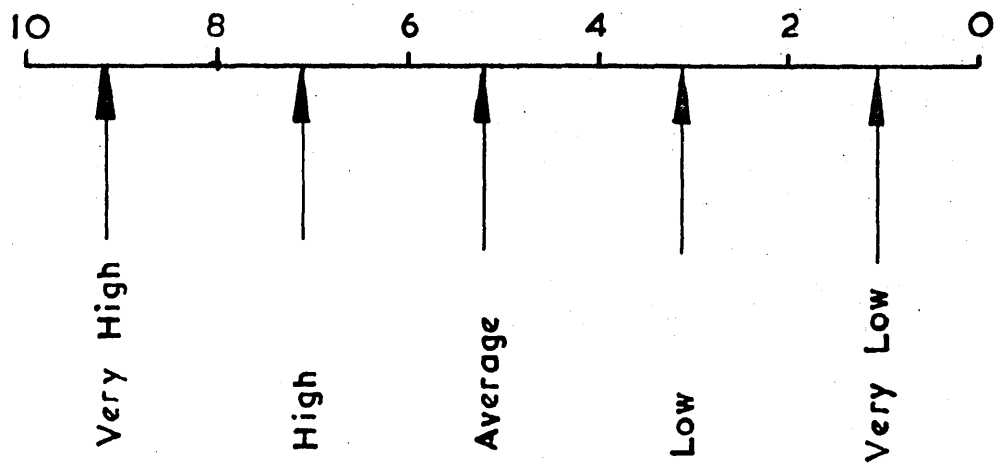
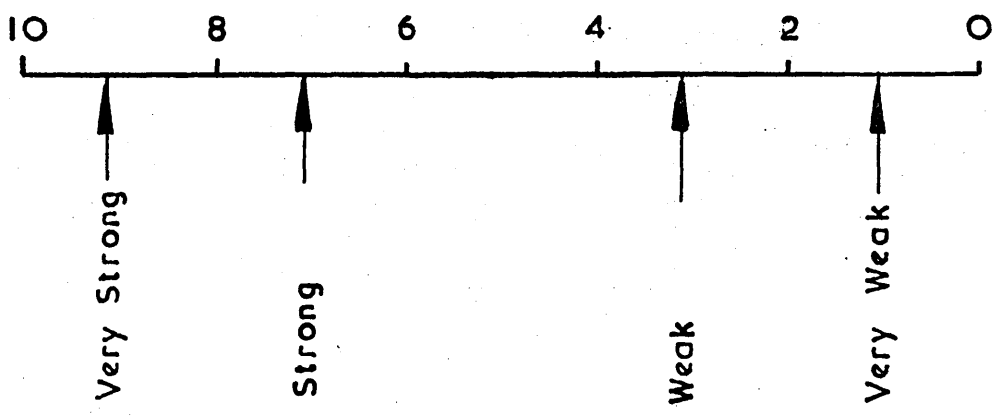

10
8
6
4
2
0
Very Satisfied
Satisfied
Dissatisfied
Very Dissatisfied

6.


10
8
6
4
2
0
Very High
High
Average
Low
Very Low

7.


10
8
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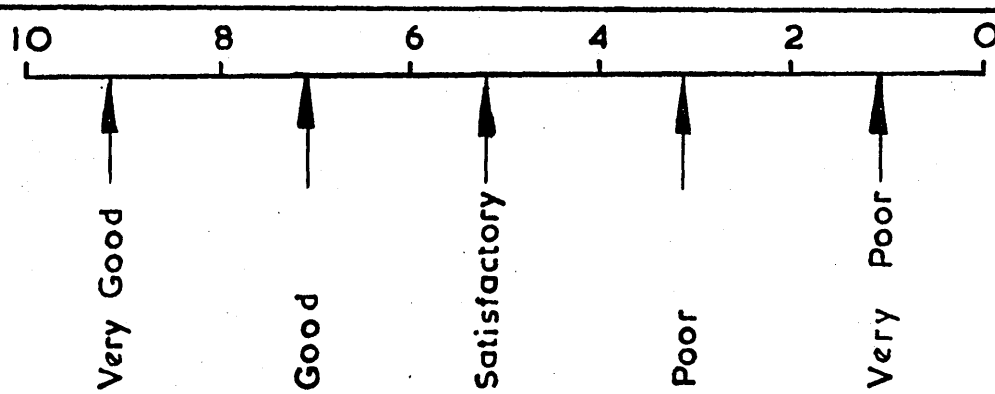
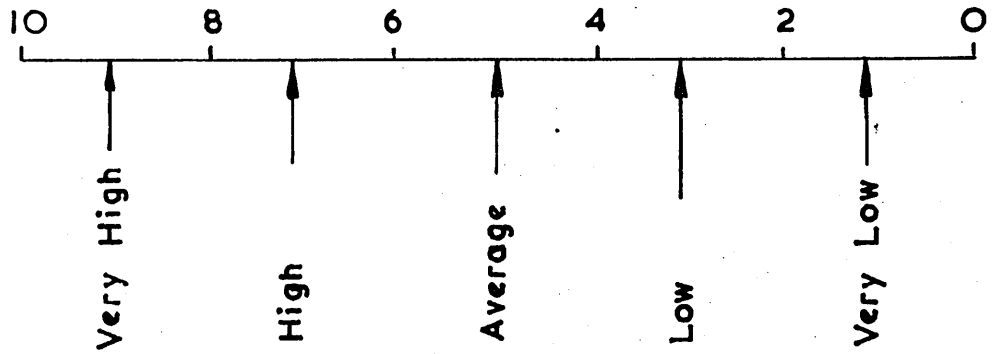
4
2
0
Very Strong
Strong
Weak
Very Weak

8.


10
8
6
4
2
0
Very Good
Good
Satisfactory
Poor
Very Poor

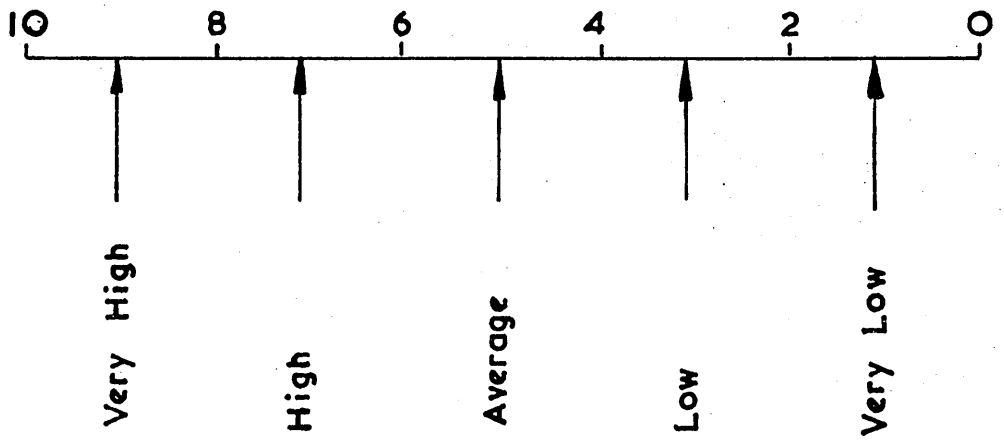
9.



10.

MORE
THE SAME
LESS

11.



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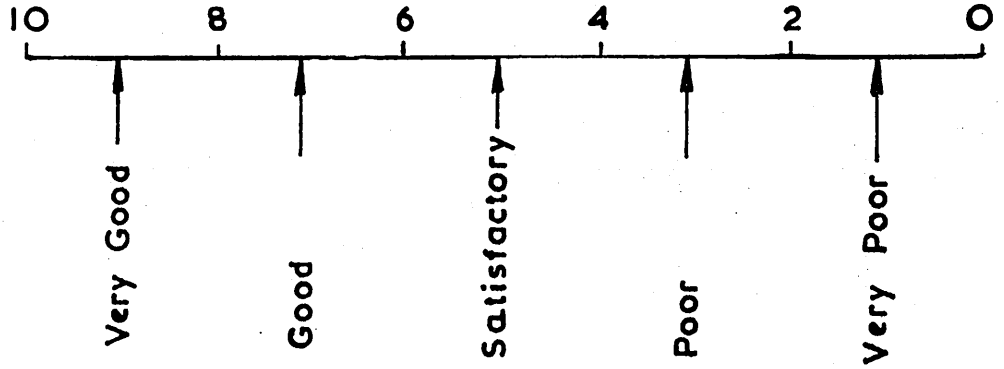

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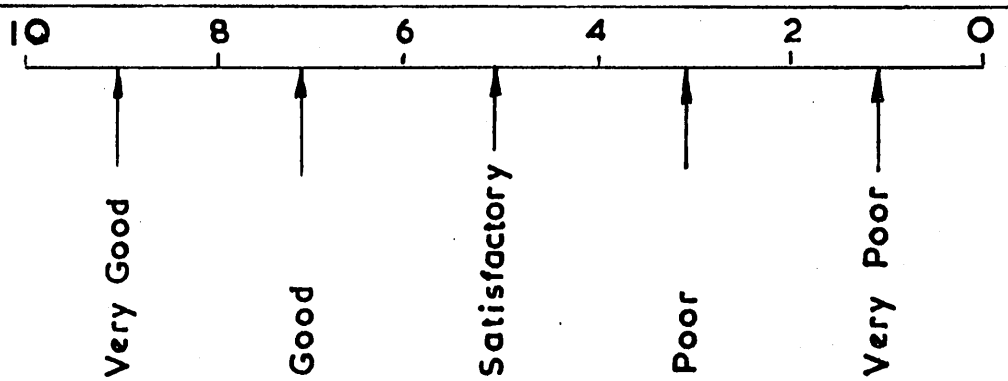

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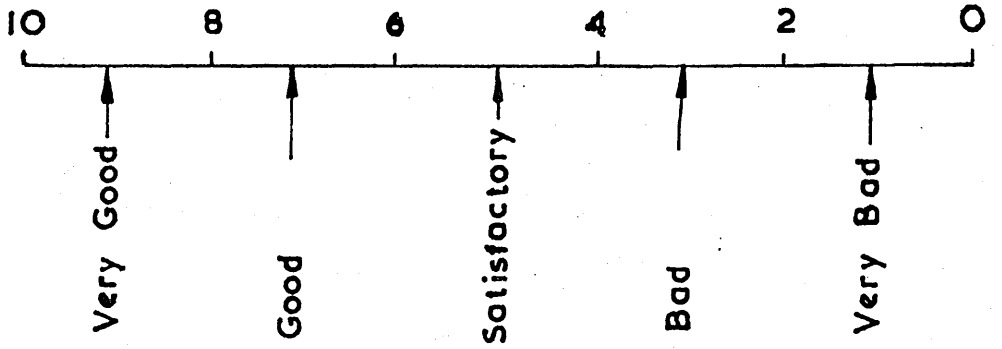
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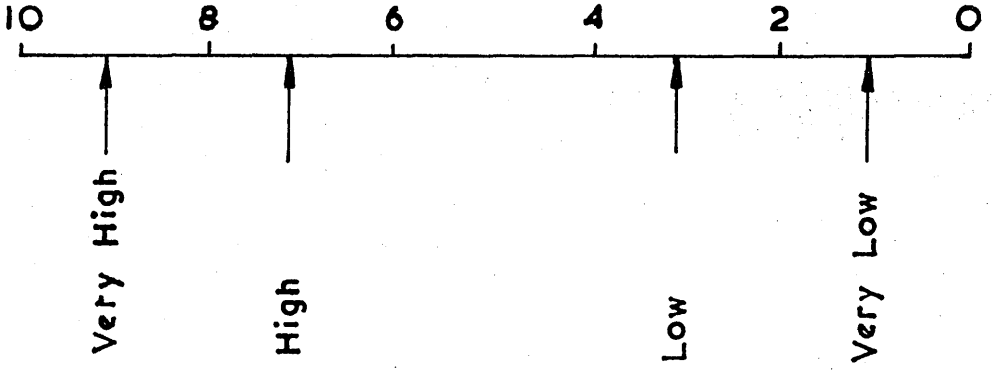
8
6
4
2
0
Very Good
Good
Satisfactory
Bad
Very Bad

15.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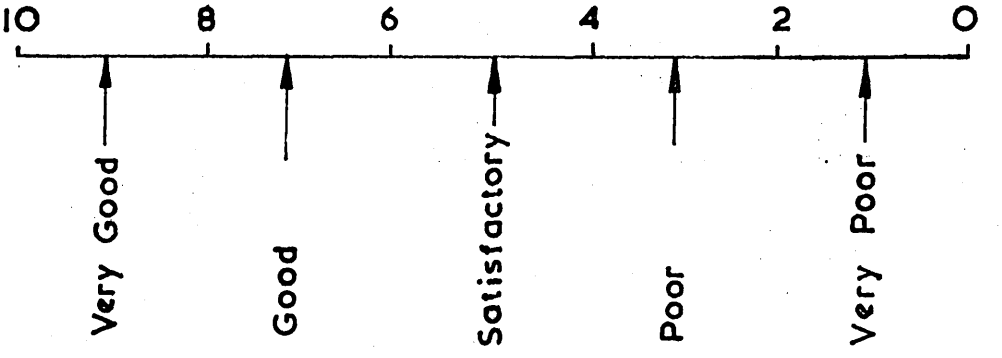
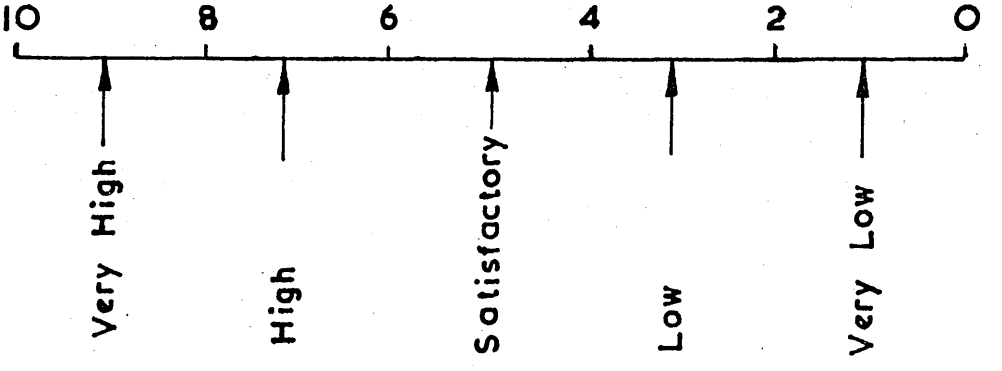
6
4
2
0
Very High
High
Low
Very Low

6.


10
8
6
4
2
0
Very Good
Good
Satisfactory
Poor
Very Poor

7.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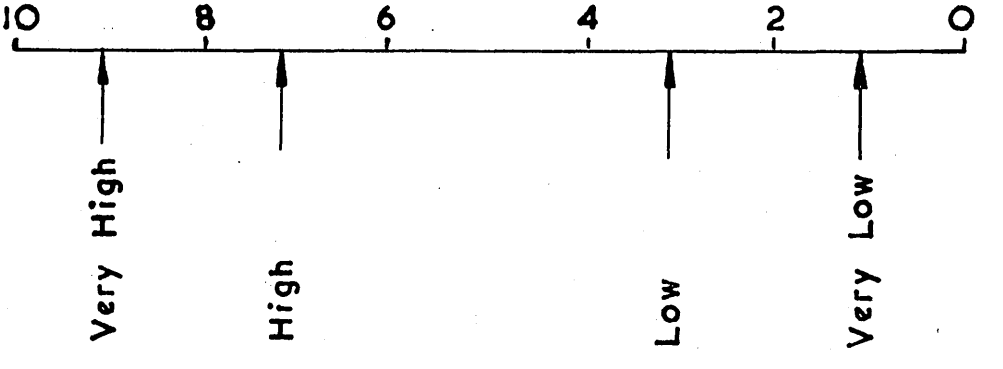
4
2
0
Very High
High
Satisfactory
Low
Very Low

8.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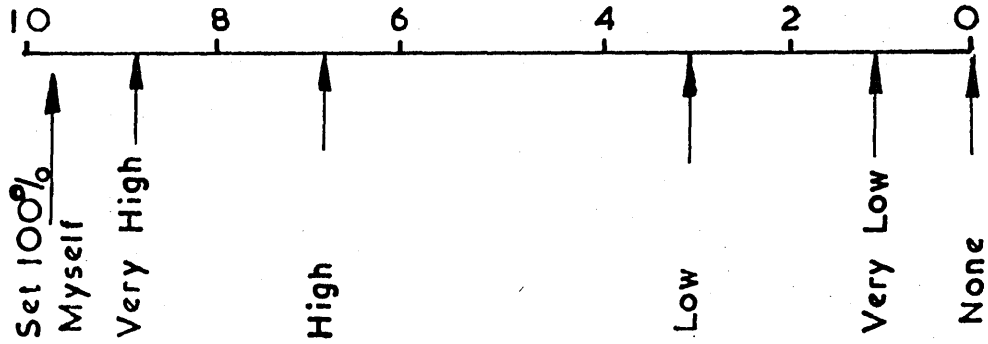
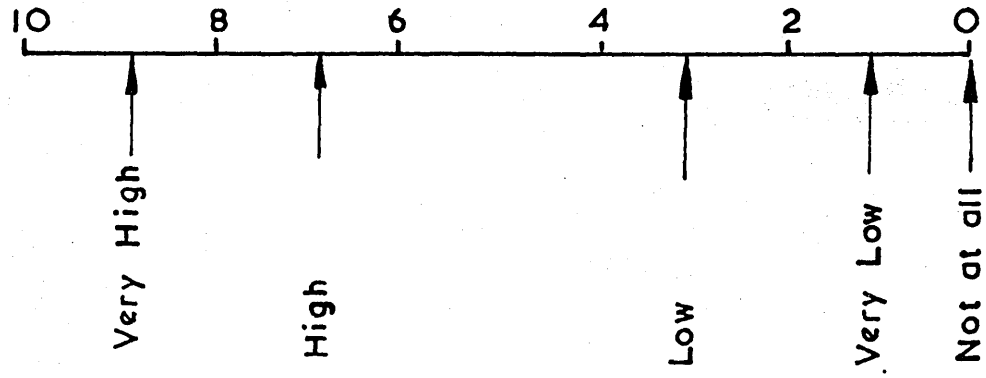
6
4
2
0
Very High
High
Low
Very Low

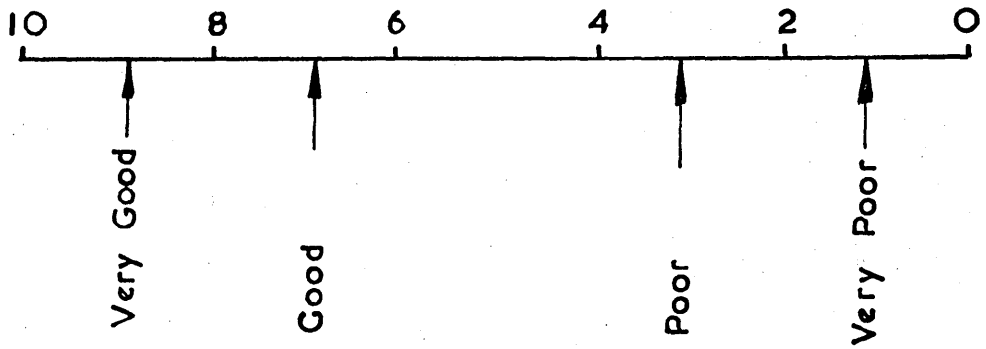
19.


10
8
6
4
2
0
Set 100% Myself
Very High
High
Low
Very Low
None

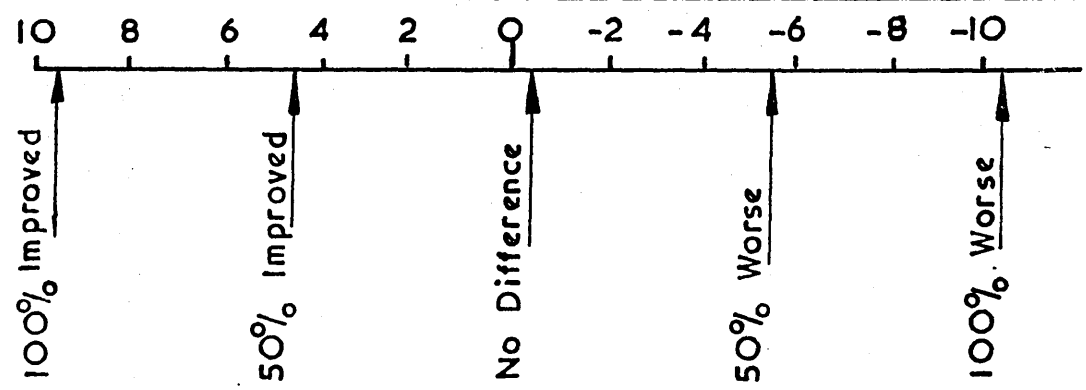
20.


10
8
6
4
2
0
Very High
High
Low
Very Low
Not at all

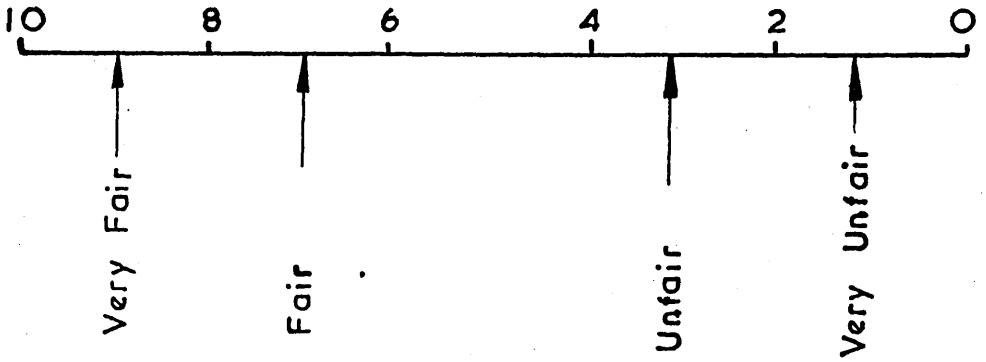
21.


10
8
6
4
2
0
Very Good
Good
Poor
Very Poor

22.


10
8
6
4
2
0
-2
-4
-6
-8
-10
100% Improved
50% Improved
No Difference
50% Worse
100% Worse

23.


10
8
6
4
2
0
Very Fair
Fair
Unfair
Very Unfair

Area

Colliery

20 25 30 35 40 45 50 55 60 65

2,000 2,500 3,000 3,500 4,000 4,500 5,000 5,500 6,000

1 2 3 4 5 6 7 8 9

Technical

Administrative

Other

APPENDIX :

ANALYSIS OF COMPARISON BASES BY COLLIERY AND AREA

BASIS	COLLIERY	AREA
1. Over 45 Years Old	2	12
Under " " "	8	6
2. Over £4,000 p.a.	0	11
Under £4,000 p.a.	10	7
3. 2 or Less Dependents	1	6
3 or More Dependents	9	12
4. Training:		
Engineer/Surveyors	10	8
Others	0	10

Of those earning over £4,000 p.a., 6 had more than 2 dependents.

" " " under " " 1 " " " 3 "

APPENDIX : ANALYSIS OF RESULTS BY ORGANISATIONAL LEVEL. a) MOTIVATORS

MOTIVATOR	RATINGS					
	COLLIERY	Total	Mean	AREA	Total	Mean
(i) "Achievement"	0,8,0,3,4,7,6,8, 2,7.	45	4.50	4,7,4,4,6,5,4,0, 4,6,3,1,5,4,4,4, 4,6.	75	4.17
(ii) "Recognition"	3,8,0,0,0,0,6,8, 4,4.	33	3.30	4,8,4,4,2,4,8,0, 4,4,4,5,8,0,0,4, 7,2.	72	4.00
(iii) "Responsibility"	8,10,7,7,7,9,11, 8,9,10.	86	8.60	7,7,10,8,7,8,8,7, 8,9,10,7,10,8,7, 7,10,9.	147	8.16
(iv) "Advancement"	6·3,8·1,1·8,4·5, 3·0,3·5,3·0,4·2, 7·0,6·0.	42.0	4.20	0·1,6·6,4·9,4·5, 5·0,4·0,2·8,2·1, 5·0,4·8,2·7,0·7, 4·9,4·5,0·3,2·1, 2·0,1·0.	56.0	3.12
(v) "Work Itself"	4,8,0,4,4,1,2,2, 4,8.	37	3.70	0,3,4,4,8,5,4,4, 4,8,0,6,6,6,8,6, 3,8.	87	4.84
(vi) "Possibility of Growth"	0,2,2,2,2,4,4,6, 0,4.	26	2.60	0,5,4,2,2,2,1,0, 2,3,0,0,4,2,0,0, 1,0.	28	1.56

ANALYSIS OF RESULTS BY ORGANISATIONAL LEVEL.

(B) HYGIENE FACTORS

HYGIENE FACTOR	RATINGS					
	Colliery	Total	Mean	Area	Total	Mean
(i) "Inter-personal relations - boss"	0,0,0,2,2,2,0, 0,0,0,	6	0.6	0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0, 0,0,0,0,	0	0.0
(ii) "Inter-personal relations - colleagues".	0,0,0,0,0,2,0, 0,0,0,	2	0.2	0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0, 0,0,0,0,	0	0.0
(iii)"Working conditions"	2,2,4,2,10,6,6, 10,2,6,	50	5.00	0,3,0,2,0,2,2,6, 2,4,6,6,0,6,2,0, 0,6, (X^2 = 84.19)	47	2.61
(iv) "Status"	0,0,2,4,0,2,4,0, 0,1,	13	1.30	4,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0, 0,0,	4	0.22
(v) "Company Policy and Administration"	0,0,4,0,6,2,0,2, 0,0, (x^2 = 25.70)	14	1.40	0,0,0,0,6,0,0,0, 0,0,0,0,8,4,0,4, 0, (X^2 = 84.19)	22	1.22
(vi)"Salary"	1,0,2,4,1,2,4,0, 4,0, (X^2 - 27·97)	18	1·80	2,1,2,0,0,0,0,1, 2,0,0,0,0,0,0,2, 2,0, (X^2 = 15.84)	12	0.61
(vii) "Job Security"	5,0,1,0,0,0,0,2, 0,0,	8	0.80	3,0,0,1,0,0,0,3, 0,0,1,1,1,0,5,0, 0,0,	15	0·83

Analysis of Results by Organisational Level - c) "Management by Objectives"

FACTOR	RATINGS					
	COLLIERY	Total	Mean	AREA	Total	Mean
(i) "Influence"	3,3,5,7,5,4,4,1, 3,3,	38	3.80	1,1,3,1,3,3,5,3, 6,3,3,3,1,4,6,2, 4,	52	3·06
(ii) "Commitment Shortfall"	3,3,1,1,3,3,3,5, 3,2	27	2.70	1,2,1,3,2,5,3,1, 3,3,4,2,3,3,3,3, 1.	43	2.53
(iii) "Achievability"	3,1,3,1,2,3,3,3, 1,3.	23	2.30	1,4,3,3,3,4,3,3, 3,5,3,2,3,1,3,3, 1.	48	2.82
(iv) "MBO Effectiveness"	8,4,5,2,6,2,0,2, 0,0.	29	2.90	0,0,3,8,5,1,0,0, 3,4,0,7,0,0,2,0, 0,	33	2.06
(v) "Performance Appraisal"	3,4,2,3,1,0,2,5, 2.	22	2.44	-4,4,0,4,0,3,4, 4,4,4,	23	2.30

Analysis of Results by Organisational Level - d) Salary Shortfall

"Salary Shortfall" (£)	200,100,0,100, 120,250,90,650, 100,250.	1860	186	250,300,150,250, 175,300,150,100, 500,165,145,100, 150,180,500,120, 400,250	4185	233

ANALYSIS OF RESULTS BY AGE. a) MOTIVATORS

MOTIVATOR	RATINGS					
	UNDER 45	Total	Mean	OVER 45	Total	Mean
(i) "Achievement"	4,1,4,6,7,0,0,3, 4,7,6,8,7,6.	63	4.50	6,4,4,4,5,3,0,4, 4,4,4,4,8,2.	56	4.00
(ii) "Work Itself"	0,4,0,4,4,1,2,2, 8,3,6,8,8,4.	54	3.86	3,4,4,5,4,4,0,6, 6,8,8,6,4,8.	70	5.00
(iii) "Possibility of Growth"	0,2,2,2,0,2,2,2, 3,4,6,4,0,5.	34	2.43	0,2,4,2,0,2,1,0, 3,0,4,0,0,1.	19	1.36
(iv) "Advancement"	1,6·3,8·1,8,3·9, 2·7,3·5,3,1·8, 5·0,6·8,5,4·5, 4·9.	64·5	4·61	2·0,2·1,0·3,5·2, 2·7,4·8,2·1,2·8, 4·0,0·1,4·5,4·9, 4·5,0·6.	41.6	2.97
(v) "Recognition"	4,0,4,8,2,3,0,0, 3,0,6,8,4,2.	44	3·14	4,8,4,4,4,4,8,0, 4,4,8,0,4,7.	63	4·50
(vi) "Responsi-bility"	9,10,8,11,9,7,7, 7,8,7,7,8,8,7.	113	8·07	10,8,7,10,10,9,7, 8,8,7,8,10,10,9.	121	8.65

ANALYSIS OF RESULTS BY AGE

(B) HYGIENE FACTORS

HYGIENE FACTOR	RATINGS					
	Under 45	Total	Mean	Over 45	Total	Mean
(i) "Inter-personal relations - boss"	0,0,0,0,0,0,0, 2,2,2,0,0,0,0,	6	0.43	0,0,0,0,0,0,0, 0,0,0,0,0,0,0,	0	0
(ii) "Inter-personal relations - colleagues".	0,0,0,0,2,0,0, 0,0,0,0,0,0,0,	2	0 0.14	0,0,0,0,0,0,0, 0,0,0,0,0,0,0,	0	0
(iii)"Working conditions"	6,6,6,2,3,0,2, 4,4,10,0,6,10,6,	65	4.65	2,2,0,0,2,0,6, 4,6,2,2,0,2,6,	34	2.43
(iv) "Status"	0,2,0,4,2,4,0, 1,0,0,0,0,0,4,	17	1.22	0,0,0,0,0,0,0,0, 0,0,0,0,0,0,	0	0
(v) "Company Policy and Administration"	0,4,0,0,0,6,0, 0,4,6,0,2,2,0,	24	1.72	0,0,0,0,0,4,8, 0,0,0,0,0,0,0,	12	0.86
(vi)"Salary"	2,1,1,4,2,4,0,0,0 2,0,0,2,1,	19	1.36	0,2,0,0,0,0,2, 0,0,0,2,1,0,4,	11	0.79
(vii) "Job Security"	1,0,0,0,0,0,5 1,0,0,0,0,0,0,	7	0.50	0,0,0,0,1,1,5,0,1, 0,3,0,0,3,	14	1.00

Analysis of Results by Age - c) Management by Objectives

FACTOR	RATINGS					
	Under 45	Total	Mean	Over 45	Total	Mean
(i) "Influence"	1,2,4,4,5,7,5,4, 1,1,1,3,3,4.	45	3.22	3,3,5,1,3,6,3,4, 3,3,3,2,6.	45	3•46
(ii) "Commitment Shortfall"	1,1,3,2,2,3,2,5, 3,3,1,3,3,1.	33	2.36	1,3,3,3,3,3,5,3, 3,1,4,3,2.	37	2.85
(iii) "Achievability"	1,3,4,3,3,1,3,3, 3,3,3,1,1,4.	36	2.57	3,3,1,3,3,2,3,4, 3,3,1,3,3.	35	2•69
(iv) "MBO Effectiveness"	2,2,0,0,0,5,5,0, 0,0,2,6,8,5,	35	2.50	2,2,0,0,7,1,3,0, 5,0,0,7.	27	2•25
(v) "Performance Appraisal"	-4,3,0,4,2,2,0, 3,1,3,4.	18	1•64	4,4,4,4,4,2,5.	27	3•86

Analysis of Results by Age - d) Salary Shortfall

"Salary Shortfall" (£)	120,400,250,100, 650,90,250,120,100, 0,100,175,300,150.	2705	193	100,500,500,150, 145,180,150,250, 300,250,100,200, 250,165.	3240	232

ANALYSIS OF RESULTS BY SALARY. a) MOTIVATOR

MOTIVATOR	RATINGS					
	UNDER £3000 p.a.	Total	Mean	OVER £3000 p.a.	Total	Mean
(i) "Achievement"	3, 2, 8, 0, 4, 4, 4, 1, 6, 0, 0, 3, 4, 7, 6, 7, 8.	68	4·00	4, 4, 4, 5, 4, 4, 4, 4, 6, 7, 6.	52	4·73
(ii) "Work Itself"	4, 8, 4, 0, 8, 8, 8, 4, 6, 8, 2, 2, 1, 4, 4, 4, 0.	75	4·41	4, 3, 4, 5, 6, 6, 8, 6, 4, 3, 0.	49	4.46
(iii) "Possibility of Growth"	6, 4, 4, 3, 2, 2, 2, 0, 2, 2, 2, 2, 0, 2, 0, 0, 0.	33	1.94	0, 5, 3, 4, 0, 2, 1, 4, 0, 1, 0.	20	1·82
(iv) "Advancement"	8·1, 6·3, 7·0, 3·9, 3, 3·5, 3·0, 1·8, 5·0, 0·7, 5·0, 4·5, 4·5, 2·1, 4·5, 0·6, 2·7.	66·2	3·90	0, 6·6, 4·8, 4·9, 0·1, 4·0, 2·8, 4·9, 2·1, 2·0, 0·3.	32·5	2·96
(v) "Recognition"	8, 4, 6, 0, 0, 0, 0, 3, 2, 5, 4, 0, 4, 0, 8, 4, 4.	52	3·06	2, 8, 4, 4, 4, 4, 8, 8, 4, 6, 0.	52	4·73
(vi) "Responsi-bility"	10, 9, 10, 8, 8, 8, 7, 7, 8, 7, 7, 7, 9, 11, 10, 8.	135	7·94	9, 7, 9, 10, 7, 8, 8, 10, 8, 10, 7.	93	8·46

ANALYSIS OF RESULTS BY SALARY

(B) HYGIENE FACTORS

HYGIENE FACTOR	RATINGS					
	Under £3,000 p.a.	Total	Mean	Over £3,000 p.a.	Total	Mean
(i) "Inter-personal relations - boss"	0,0,0,2,2,2,0,0, 0,0,0,0,0,0,0,0, 0,	6	0.35	0,0,0,0,0,0,0,0, 0,0,0,	0	0
(ii) "Inter-personal relations - colleagues".	0,0,0,0,2,0,0,0,0 0,0,0,0,0,0,0,0,	2	0.12	0,0,0,0,0,0,0,0, 0,0,0,	0	0
(iii)"Working conditions"	6,2,6,2,2,6,2,6, 0,2,4,2,10,6,0, 6,10	72	4.23	2,0,0,0,2,2,0,6, 4,3,6,	25	2.27
(iv) "Status"	0,0,0,0,0,0,0,0, 0,0,1,0,4,2,0,4, 0,2,	13	0.77	0,0,0,0,0,0,0,0, 0,0,4,	4	0.28
(v) "Company Policy and Administration"	8,0,0,0,0,0,4,0, 0,0,0,4,6,2,0,0, 2.	28	1.65	0,0,0,4,0,0,0,0, 0,0,4,	8	0.73
(vi)"Salary"	0,0,0,4,0,0,0,2, 0, 0,0,4,2,1,4,1, 2.	20	1.18	0,1,2,0,0,0,0,2, 2,2,2,	11	1.00
(vii) "Job Security"	1,0,3,0,1,0,0,1,0, 5,1,0,0,0,0,0,0,	12	0.71	5,0,0,1,0,0,3,0, 0,0,0,	9	0.82

Analysis of Results by Salary - c) Management by Objectives

FACTOR	RATINGS					
	Under £3000 p.a.	Total	Mean	Over £3,000 p.a.	Total	Mean
(i) "Influence"	1,2,4,4,5,7,5,4, 1,3,3,1,3,5,3,3,	54	3·38	4,4,1,6,3,1,3,3, 3,6,2.	36	3·28
(ii) "Commitment Shortfall"	1,3,1,3,3,3,5,2, 3,2,3,2,3,4,3,3.	44	2·75	3,1,2,3,3,1,3,2, 5,1.	26	2·36
(iii) "Achievability"	4,3,1,3,3,3, 1,4,1,2,3,3,3, 3,1,3.	41	2.57	3,1,3,3,3,0,3, 2,5,3,4.	30	2·73
(iv) "MBO Effectiveness"	5,8,2,6,2,0,2,0,0, 0,5,5,0,0,5,0.	40	2·50	7,0,0,2,2,0,7,1, 3,0.	22	2.20
(v) "Performance Appraisal"	4,3,3,1,0,2,2,4, 3,0,5,2.	29	2·42	-4,4,4,4,4,4,	16	2·67

Analysis of Results by Salary - d) Salary Shortfall

"Salary Shortfall" (£)	250,100,145,200, 100,175,300,150, 100,0,100,120, 250,90,650,100, 250.	3080	181	250,300,250,150, 180,150,500,500, 120,400,165.	2965	270

APPENDIX 17.

ANALYSIS OF RESULTS BY NUMBER OF DEPENDENTS. a) MOTIVATORS

MOTIVATOR	RATINGS					
	2 or less Dependents	Total	Mean	3 or more Dependents	Total	Mean
(i) "Achievement"	0, 8, 4, 4, 5, 4, 4.	29	4·14	3, 2, 4, 4, 4, 1, 6, 0, 0, 3, 4, 7, 6, 7, 8, 4, 4, 6, 7, 6, 4.	90	4·28
(ii) "Work Itself"	0, 4, 4, 4, 5, 6, 8.	31	4·43	4, 8, 8, 8, 8, 4, 6, 8, 2, 2, 1, 4, 4, 4, 0, 6, 6, 4, 3, 0, 4.	94	4·48
(iii) "Possibility of Growth"	0, 2, 1, 0, 4, 1, 0.	8	1·14	0, 0, 2, 2, 2, 0, 2, 0, 2, 2, 2, 4, 4, 4, 6, 2, 4, 3, 5, 0, 0.	46	2·19
(iv) "Advancement"	2·1, 4·5, 2, 2·1, 5, 2·8, 0·1.	18·6	2·58	2·7,0·6,4·5,4·5, 5·0,0·7,5·0,1·8, 3·0,3·5,3·0;3·9, 7·0,6·3,8·1,4·0, 4·9,4·8,6·8,0,0·3.	80·4	3·83
(v) "Recognition"	0, 8, 7, 4, 8, 8, 4.	39	5·57	4, 4, 4, 0, 4, 5, 2, 3, 0, 0, 0, 0, 6, 4, 8, 4, 4, 4, 8, 2, 0.	66	3·14
(vi) "Responsi-bility"	7, 10, 10, 7, 10, 8, 7.	59	8·44	10,9,8,8,8,7,7,8, 7,7,7,9,11,10,8, 8,10,9,7,9,7.	174	8·29

ANALYSIS OF RESULTS BY NUMBER OF DEPENDENTS.

(B) HYGIENE FACTORS

HYGIENE FACTOR	RATINGS					
	2 or less dependents	Total	Mean	3 or more dependents	Total	Mean
(i) "Inter-personal relations - boss"	0,0,0,0,0,0,0,	0	0	0,2,0,0,0,0,0,0, 2,0,0,0,0,0,0,0, 2,0,0,0,0,	6	0.29
(ii) "Inter-personal relations - colleagues".	0,0,0,0,0,0,0,	0	0	0,0,0,0,0,0,0, 0,0,0,0,0,2,0,0, 0,0,0,0,0,0,	2	0.09
(iii)"Working conditions"	6,2,0,0,0,2,0,	10	1·43	2,6,3,4,6,2,10, 6,0,6,10,2,4,2, 0,6,2,6,2,2,6	87	4.15
(iv) "Status"	0,0,0,0,0,0,0,	0	0	0,4,0,0,0,0,2,0, 4,0,2,4,0,1,0,0, 0,0,0,0,0,	17	0·81
(v) "Company Policy and Administration"	0,0,0,0,4,0,0,	4	0.57	0,4,0,0,0,0,2,0, 0,2,6,4,0,0,6,0, 0,0,0,0,8,	32	1.53
(vi)"Salary"	0,4,1,2,0,0,0,	7	1.00	0,2,2,2,2,0,2,1, 4,1,2,4,0,0,0,1, 0,0,0,0,0,	23	1.10
(vii) "Job Security"	3,0,0,0,1,0,3,	7	1.00	5,0,0,0,0,0,0,0, 0,0,0,0,1,5,0,1, 0,0,0,1,1,	14	0.67

Analysis of Results by Number of Dependents -

c) Management by Objectives

FACTOR	RATINGS					
	2 or less Dependents	Total	Mean	3 or more Dependents	Total	Mean
(i) "Influence"	1,3,3,6,2,3,5.	23	3·29	2,4,4,5,7,4,1,3, 3,1,3,5,3,3,4,4, 1,1,3,6.	67	3·36
(ii) "Commitment Shortfall"	1,2,5,1,2,3,4.	18	2·57	3,3,3,3,3,2,3,3, 3,3,1,2,3,3,1,3, 2,5,1,2.	52	2·60
(iii) "Achievability"	1,2,4,3,4,1,3.	18	2·57	3,3,3,1,1,3,3,3, 3,3,1,3,3,3,0,3, 2,5,3,4.	53	2·66
(iv) "MBO Effectiveness"	0,7,1,3,0,0,0.	11	1·57	5,8,2,6,2,0,2,5, 5,0,0,5,0,0,2,2, 0,7,0.	51	2·68
(v) "Performance Appraisal"	4,4,4,5.	17	4·25	3,3,1,0,2,2,3,0, 2,-4,4,4,4,4.	28	2·00

Analysis of Results by No. of Dependents - d) Salary Shortfall

"Salary Shortfall" (£)	145,200,250,300, 250,150,150.	1445	206	100,100,175,100, 0,100,120,90,650, 100,250,250,300, 250,150,180,500, 500,500,120,400, 165	4600	222

APPENDIX 18

ANALYSIS OF RESULTS BY PROFESSIONAL TRAINING. a) MOTIVATORS

MOTIVATOR	RATINGS					
	Engineers/ Surveyors	Total	Mean	Others	Total	Mean
(i) "Achievement"	0,8,4,4,5,4,4, 3,0,0,3,7,7,8, 6,7,6,4.	80	4.45	4,6,6,1,4,4,2,4, 4,4.	39	3·90
(ii) "Work Itself"	0,4,4,4,5,6,8,8, 8,2,2,1,0,6,4,0, 4,6.	72	4·00	4,4,6,4,8,8,4,8, 4,3.	53	5·30
(iii) "Possibility of Growth"	0,2,1,0,4,0,2,2, 2,2,4,4,4,6,2,4, 5,0.	44	2·45	0,3,2,0,2,2,0,0, 0,1.	10	1·00
(iv) "Advancement"	2·1, 4·5,5·0,2·8, 0·6,4·5,1·8,3·0, 3·5,3·0,3·9,7·0, 6·3,8·1,4·0,4·9, 6·8,0.	71·8	3·99	0·3,4·8,5·0,0·7, 5·0,4·5,2·7,0·1, 2·1,2·0.	27·2	2·72
(v) "Recognition"	0,8,8,8,4,4,5,3, 0,0,0,6,8,4,8,2, 0,4.	72	4·00	0,4,2,4,4,0,4,4, 4,7.	33	3·30
(vi) "Responsibi- lity"	7,10,10,7,10,8, 7,10,8,7,9,11,8, 8,9,7,9,7.	152	8·45	7,9,7,7,8,8,10, 7,8,10.	81	8·10

ANALYSIS OF RESULTS BY PROFESSIONAL TRAINING

(B) HYGIENE FACTORS

HYGIENE FACTOR	RATINGS					
	Others	Total	Mean	Engineers/Surveyors	Total	Mean
(i) "Inter-personal relations - boss"	0,0,0,0,0,0,0,0,0,0,	0	0	0,0,2,0,0,0,0,0,2,0,0,0,0,0,0,0,2,0,0,	6	0.33
(ii) "Inter-personal relations - colleagues".	0,0,0,0,0,0,0,0,0,0,	0	0	0,0,0,0,2,0,0,0,0,0,0,0,0,0,0,0,0,0,0,	2	0.11
(iii)"Working conditions"	0,0,0,6,6,2,6,0,6,2,	28	2.80	2,3,4,2,10,0,6,10,2,4,2,0,6,2,6,2,2,6	69	3.84
(iv) "Status"	0,0,0,0,0,0,0,0,0,0,	0	0	0,0,0,0,4,2,4,2,0,0,0,0,0,0,4,0,1,0,0,0,0,	17	0.95
(v) "Company Policy and Administration"	0,0,0,8,0,0,0,6,0,0,	14	1.40	0,4,0,0,0,0,4,0,0,2,4,0,0,2,6,0,0,0,	22	1.22
(vi)"Salary"	1,2,0,0,0,0,2,0,2,0,	7	0.70	4,1,2,0,0,0,0,2,0,2,4,1,2,4,0,0,0,1,	12	1.28
(vii) "Job Security"	0,0,3,1,0,0,1,0,0,5,	10	1·00	3,0,0,0,0,0,0,0,0,0,0,5,0,1,0,0,0,1,1,	11	0.61

Analysis of Results by Professional Training c) "MBO"

FACTOR	RATINGS					
	OTHERS	Total	Mean	Engineers/ Surveyors	Total	Mean
(i) "Influence"	4,6,1,3,3,1,3,6, 1,2.	30	3·00	1,3,3,2,3,5,4,5, 7,4,5,3,3,4,4,1, 3.	60	3·53
(ii) "Commitment Shortfall"	3,3,3,1,3,2,3,1, 1,2.	22	2·20	1,2,5,1,2,3,4,3, 3,3,3,2,3,3,3,2, 5.	49	2·82
(iii) "Achievability"	3,3,1,3,4,3,3,3, 1,4.	28	2·80	1,2,3,4,1,3,1,3, 3,3,3,3,0,3,2,5, 3.	43	2·53
(iv) "MBO Effectiveness"	8,2,0,0,5,5,0,0, 0.	23	2·30	0,7,1,0,0,0,6,2, 2,5,5,2,2,0,7,0.	39	2·44
(v) "Performance Appraisal"	4,3,0,4,4.	15	3·00	5,3,1,2,2,3,0,2, -4,4,4,4,4,	30	2·31

Analysis of Results by Professional Training - d) Salary Shortfall

"Salary Shortfall" (£)	250,300,150,250, 175,300,150,100, 500,165.	2340	234	145,200,100,100, 0,100,120,90,650, 100,250,250,150, 180,500,120,400, 250.	3705	206

APPENDIX 19

"CHI Square" Significance Tests on Data

a) Analysis by Organisational Level

	Values of "CHI Square"		Significant?
	Tables	Calculation	
a) MOTIVATORS			
(i) Achievement	0·00393	0·016205	Yes
(ii) Work itself	0·00393	0·163220	Yes
(iii) Poss. of Growth	0·00393	0·30450	Yes
(iv) Advancement	0·00393	0·18870	Yes
(v) Recognition	0·00393	0·07086	Yes
(vi) Responsibility	0·00393	0·01249	Yes
b) HYGIENE FACTORS			
(i) I-P.R.-Boss	0·00393	0·9350	Yes
(ii) I-P.R.-Colleagues	0·00393	0·3120	Yes
(iii) Working Conditions	0·00393	0·8950	Yes
(iv) Status	0·00393	1·0760	Yes
(v) Co.Policy & Admin.	0·00393	0·01317	Yes
(vi) Salary	0·00393	0·68120	Yes
(vii) Job Security	0·00393	0·01187	Yes
c) M.B.O.			
(i) Influence	0·00393	0·08695	Yes
(ii) Commitment	0·00393	0·00606	Yes
(iii) Achievability	0·00393	0·05512	Yes
(iv) Effectiveness	0·00393	0·15640	Yes
(v) Appraisal	0·00393	0·00414	Yes
d) SALARY SHORTFALL			No

b) Analysis by Age

	Values of "Chi Square"		Significant?
	Tables	Calculation	
a) MOTIVATORS			
(i) Achievement	0·00393	0·0294	Yes
(ii) Work Itself	0·00393	0·1461	Yes
(iii) Poss. of Growth	0·00393	0·2983	Yes
(iv) Advancement	0·00393	0·4466	Yes
(v) Recognition	0·00393	0·2491	Yes
(vi) Responsibility	0·00393	0·02062	Yes
b) HYGIENE FACTORS			
(i) I-P.R. -Boss	0·00393	0·4405	Yes
(ii) I-P.R.-Colleagues	0·00393	0·1400	Yes
(iii) Working Conditions	0·00393	0·7157	Yes
(iv) Status	0·00393	1·2200	Yes
(v) Co.Policy & Admin.	0·00393	0·2868	Yes
(vi) Salary	0·00393	0·1520	Yes
(vii) Job Security	0·00393	0·1666	Yes
c) M.B.O.			
(i) Influence	0·00393	0·008630	Yes
(ii) Commitment	0·00393	0·04660	Yes
(iii) Achievability	0·00393	0·00274	No
(iv) Effectiveness	0·00393	0·01316	Yes
(v) Appraisal	0·00393	1·16050	Yes
d) SALARY SHORTFALL			No

c) Analysis by Salary Level
(Significance Level 0·95)

	Values of "Chi Square"		Significant?
	Tables	Calculation	
a) MOTIVATORS			
(i) Achievement	0·00393	0·0648	Yes
(ii) Work Itself	0·00393	0·0002934	No
(iii) Poss. of Growth	0·00393	0·004214	Yes
(iv) Advancement	0·00393	0·1306	Yes
(v) Recognition	0·00393	0·3910	Yes
(vi) Responsibility	0·00393	0·01721	Yes
b) HYGIENE FACTORS			
(i) I-P.R. -Boss	0·00393	0·3135	Yes
(ii) I-P.R.-Colleagues	0·00393	0·1044	Yes
(iii) Working Conditions	0·00393	0·582	Yes
(iv) Status	0·00393	0·221	Yes
(v) Co.Policy & Admin.	0·00393	0·337	Yes
(vi) Salary	0·00393	0·01488	Yes
(vii) Job Security	0·00393	0·00867	Yes
c) M.B.O.			
(i) Influence	0·00393	0·00123	No
(ii) Commitment	0·00393	0·2149	Yes
(iii) Achievability	0·00393	0·00493	Yes
(iv) Effectiveness	0·00393	0·02175	Yes
(v) Appraisal	0·00393	0·01416	Yes
d) SALARY SHORTFALL	0·00393	19·10	Yes

d) Analysis by Number of Dependents

	Values of "Chi Square"		Significant?
	Tables	Calculation	
a) MOTIVATORS			
(i) Achievement	0·00393	0·003062	No
(ii) Work Itself	0·00393	0·0003804	No
(iii) Poss. of Growth	0·00393	0·35900	Yes
(iv) Advancement	0·00393	0·26550	Yes
(v) Recognition	0·00393	0·98340	Yes
(vi) Responsibility	0·00393	0·001838	No
b) HYGIENE FACTORS			
(i) I-P.R. -Boss	0·00393	0·24450	Yes
(ii) I-P.R.-Colleagues	0·00393	0·07722	Yes
(iii) Working Conditions	0·00393	1·3275	Yes
(iv) Status	0·00393	0·6755	Yes
(v) Co.Policy & Admin.	0·00393	0·4466	Yes
(vi) Salary	0·00393	0·005422	Yes
(vii) Job Security	0·00393	0·09194	Yes
c) M.B.O.			
(i) Influence	0·00393	0·000869	No
(ii) Commitment	0·00393	0·0001928	No
(iii) Achievability	0·00393	0·001712	No
(iv) Effectiveness	0·00393	0·29380	Yes
(v) Appraisal	0·00393	1·3250	Yes
d) SALARY SHORTFALL			No

e) Analysis by Professional Training

	Values of "CHi Square"		Significant?
	Tables	Calculation	
a) MOTIVATORS			
(i) Achievement	0·00393	0·03821	Yes
(ii) Work Itself	0·00393	0·20350	Yes
(iii) Poss. of Growth	0·00393	0·58800	Yes
(iv) Advancement	0·00393	0·24260	Yes
(v) Recognition	0·00393	0·07085	Yes
(vi) Responsibility	0·00393	0·00739	Yes
b) HYGIENE FACTORS			
(i) I-P.R. -Boss	0·00393	0·2785	Yes
(ii) I-P.R.-Colleagues	0·00393	0·0929	Yes
(iii) Working Conditions	0·00393	0·1641	Yes
(iv) Status	0·00393	0·8000	Yes
(v) Co.Policy & Admin.	0·00393	0·01317	Yes
(vi) Salary	0·00393	0·17830	Yes
(vii) Job Security	0·00393	0·10950	Yes
c) M.B.O.			
(i) Influence	0·00393	0·14280	Yes
(ii) Commitment	0·00393	0·07925	Yes
(iii) Achievability	0·00393	0·02395	Yes
(iv) Effectiveness	0·00393	0·004205	Yes
(v) Appraisal	0·00393	0·11440	Yes
d) SALARY SHORTFALL			No