Industrial medicine & hygiene

Medical and Psychological Aspects of Modern Industry

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The adjustment of men to the machine, of the machine to men, and of men to one another depends largely on psychological factors that have been greatly complicated by the steady trend towards an ever higher degree of industrialisation. Difficulties in human relations—with workmates, superiors and subordinates—the effects of scientific management on the content of the job, fears for health and employment security, family tensions, and a host of other problems tend to increase the nervous and physical fatigue of the worker to a point beyond which he may be said to have passed the " threshold of maladjustment ". According to the author of the present article it is the constant and important duty of the industrial psychiatrist to foresee and prevent this maladjustment by ensuring that the margin of tolerance of the workers is not exceeded.

IN recent years the " human factor " in industry has attracted growing attention, and understanding of it has deepened. In the process it has become obvious that economic and technical factors cannot be disentangled from their social context, and that the latter has a psychological dimension that is essential to any appreciation of the facts. Moreover, since civilisation is the handiwork of man, it would be wrong to contrast natural man and industrial civilisation. One cannot assert that a given machine is satisfactory on technical grounds alone : if it is dangerous for the worker the fact is that it has been badly designed. Similarly, a social security scheme cannot be justified simply because it is popular with its members ; if it is out of touch with the hard facts of economic life it must be acknowledged to be ill-conceived. One must be careful, therefore, not to take too narrow a view or to

make distinctions that are too artificial. On this point the experience of industrial psychiatrists makes them well qualified to detect the relation between cause and effect and to show how the one gives rise to the other. Psychopathology is the magnifying glass of psychology. For example, it shows why and how some working conditions are harmful, and by getting down to individual cases helps in the search for general preventive measures.

Modern industry is passing through a period of rapid change. The industrial environment differs greatly from country to country and from decade to decade. This article is chiefly concerned with France in the 1950s, where various stages of development can be observed side by side ; as a result its conclusions can be applied, *mutatis mutandis*, in other countries. For instance, in 1953 the industry in a single département ranged from oil refining (highly automatic, where the workers do not come into contact with the products) to the extraction of shingle from beaches (unbelievably primitive, technologically speaking), and from the depressed textile industry to large and prosperous building firms ; it also included various types of semi-rural industries (employing small farmers who divided their time between their own holdings and jobs in wood-processing factories). Naturally, all the problems involved cannot be dealt with in this article, which must confine itself to a few salient features of general interest.

Adjustment to the Industrial Environment

Current definitions of normal health (both physical and mental) involve far more than the mere absence of an ascertainable disease or infirmity. The traditional approach, which was negative and static, has given way to a positive and dynamic attitude. Health is the outcome of the interaction between the individual and his environment. He is healthy if he is well adjusted. It must be clear from this alone that the factors capable of helping or hindering his adjustment are bound to be very numerous. Some are proper to the individual (age, sex, education, general background, etc.), others to his environment (technical, social, economic, etc.). Some are connected with his work, and others with his family. Any change in an apparently isolated factor may upset the general balance, as is borne out by our day-to-day experience. To quote an example, a 50-year-old overman in the coal mines, a sturdy, cheerful and capable individual, suffered from silicosis (with an invalidity assessment of 40 per cent.), which was of long standing and by no means troublesome. On being re-examined after an interval of only a few weeks he seemed ten years older. He became breathless at the slightest exertion, complained about his job and talked of retiring ;

yet an X-ray showed there had been no worsening in his condition. The only new development had been the replacement of his immediate superior by a colleague. Ill-feeling between them had quickly come to a head and this had upset the balance. The shift from adjustment to maladjustment and from health to sickness was brought about quite suddenly by an event which, on the face of it, was both trivial and external.

Frequently a woman employed on piece-work or an assembly-line job keeps up without any difficulty for a long time, and then all at once her work falls off. She spoils parts, arrives late, takes time off, resents discipline, etc. The reason is not usually hard to find, for in most cases her child has fallen sick or she has had a quarrel with her husband. Although a factor of this kind is unconnected with work or even with the factory itself, it has been found that such an occurrence is much commoner in certain jobs, workshops or firms. Moreover, once the cause of the trouble has disappeared the worker often takes a long time to return to normal, and sometimes never does so. The working environment must therefore also be taken into consideration. Some types of work, owing to the hours, noise, tempo, and the like, wear people out so that they become incapable of making the slightest extra effort. These examples show that if the margin of tolerance is exceeded the worker passes beyond the threshold of maladjustment.

Attempts at adjustment must be made within this margin of tolerance, to which it is as well to add a safety margin. It must be admitted that as yet these two margins can only be gauged empirically, the danger point being established on the basis of day-to-day observation, i.e. to some extent only when it has been passed. Assessment is made difficult by the range of individual variations. The effort of adjustment demanded varies from job to job, as does the ability of each worker to make it. Some delicate individuals are the first to become maladjusted; but once the limit is reached the entire work force suffers from various functional, neurotic or occupational symptoms. In the majority of cases a reasonable degree of adjustment can be achieved, but for preventive reasons it is as well to check not only that adjustment has taken place but also at what cost and risk to the individual it has been achieved.

Adjustment is a continuous process that is liable to be impaired at any time. Technical change, population pressures and shifts in the employment market bring many individuals face to face with new situations which may be traumatic in their effects. For example, a farmer who takes a job as a factory worker finds himself in some ways in a new world. He may at once be an obvious failure, but there is a much bigger chance that this will only become

apparent after some months of effort on his part.[1] This partly justifies the opposition of some marginal firms to reconversion, which does in fact involve a real threat to the workers themselves. During adolescence, when an individual takes up a career, the problem is often very serious and stubborn. Take the case of a village lad who on leaving school started to work with his father, a small rural craftsman, but quickly saw that the job held no future for him and left home after quarrelling with his family. He went to Paris and, being unskilled, had a hard struggle at first, but finally won for himself an honourable place in society. It might be thought that his troubles were over, but it was precisely at this time that he became prone to depression accompanied by a strong feeling of guilt. His success in his job had been bought at the price of rejecting his origins.

Individual Factors Affecting Adjustment

Vocational Guidance and Selection

Each person's ability to adjust himself depends on his personality. Mental level is extremely important, as might be expected, but the two do not necessarily go together. The type of intelligence is also vital, and its suitability for a particular job depends on the individual's previous experience and level of education. Moreover, allowance must also be made for his emotional maturity. Between the complete helplessness of a baby and the independence of a fully developed adult there is a whole range of stages to which physical age offers only a very rough guide ; this emotional maturity governs the individual's attitude towards his social as well as his working environment.[2]

Accordingly careful vocational guidance is desirable. The time-honoured concepts of aptitude and vocation are misleading since they are so interdependent that they cannot be considered separately. Moreover, the psychological processes involved are extremely complex, whereas the instruments available to psychologists are still somewhat rough and ready. The way in which advice is given should also be improved. Failing to attach enough

[1] On this point see the research on morbidity among North African workers carried out by G. Daumezon, Y. Champion and J. Champion-Basset : " L'incidence psychopathologique sur une population transplantée d'origine nord-africaine : Etude de démographie hospitalière et d'écologie psychiatrique ", in *Monographies de l'Institut national d'hygiène : Etudes de sociopsychiatrie* (Paris), No. 7, 1955, pp. 83-125.

[2] On this subject see P. Sivadon : " L'adaptation au travail en fonction des niveaux de maturation de la personnalité ", in *Le travail humain* (Paris, Presses universitaires de France), Vol. XVII, Nos. 3-4, July-Dec. 1954, pp. 173-179.

importance to the need to understand and instruct the person seeking guidance, the psychologist is apt to limit the scope of his interview. Without going into technical details it may be useful to mention that a good deal of advice is not followed because the individual concerned is not sufficiently drawn into the conversations, alternative suggestions have not been carefully thought out, and the individual's ambitions have not been accurately gauged. What of a young public-assistance ward who wants to be an engineer despite his low standard of education ? Is it likely that he will be happy doing something less ambitious ? One rightly hesitates to allow him to take such a long shot, but in view of his determination to get on and his right to fair treatment the reply must be weighed with the utmost care, particularly since after all one may be wrong. Subject to these qualifications, however, there is no doubt that vocational guidance does afford a safeguard against failure. One has only to observe a number of sick or unemployed individuals or even of workers chosen at random to be convinced of this fact.

Vocational selection, which is technically akin to guidance, must be carried out with the utmost care. It is unassailable in so far as it is used to fill certain dangerous or " safety " jobs, but paradoxically enough it can also contribute appreciably to maladjustment. It is quite understandable that an effort should be made to pick out the best, but there is a risk that those chosen will be too good—indeed, it is not uncommon to find individuals who are too gifted for their work—and above all that the handicapped will be denied any opportunity at all owing to failure to allow for such very important psychophysiological phenomena as the possibility of compensation and overcompensation for handicaps.

Among the handicapped in general the handicap itself is a good deal less important than the way the individual's life is adjusted to it and the way he himself is adjusted to his working environment. It must be appreciated that the difference between handicapped and normal individuals is largely one of degree, brought about by a lowering of the threshold of maladjustment. A job that is ruled out for former tubercular cases as being harmful is bound to be relatively harmful to normal individuals ; similarly working hours that exhaust an asthenic may well reach or even exceed the margin of tolerance of his workmates. As regards the mentally backward, who are far more numerous than is generally believed, it is not generally realised that they are capable of working quite satisfactorily ; repetitive work requiring no initiative, involving direct handling of the product and a steady rate of output is admirably suited to some of them.

If a " simple " individual remains in a village he may make

a perfectly good shepherd; but if he comes to a town he will not be able to find a job, while if he happens to be a townsman he will not be able to stand country life. The solution is perfectly straightforward provided his limited powers of adjustment are borne in mind. He can be given vocational training of almost any kind, but it must concentrate on one specialised job, starting when he is young and continuing without any interruption or digression until the movements have become completely instinctive and he has worked up to an adequate speed.

Fatigue

The first sign of faulty adjustment in handicapped individuals, as in everybody else, is fatigue. The nature of this phenomenon remained obscure for a very long time: physiologists have been unable to explain it in terms of the "human engine" because not only is man an inefficient engine but he is less and less being used as one; even the concept of "nervous fatigue" by no means gives a complete description of what actually happens since the onset of fatigue does not coincide with changes in metabolism or nervous conduction. It is quite certain that work of any kind has a physiological effect and this effect is probably proportional to the amount of work performed or to the shocks encountered in the course of it; once a certain threshold is passed these changes are no longer readily reversible and constitute a special state, viz. exhaustion. Fatigue is something different. It forms part of the individual's own experience and reflects his general attitude towards his work. It operates as a feed-back in reducing exertion; it is more complex than the classic notion of "subjective fatigue" because it is not necessarily conscious and may only make its presence felt indirectly.

In some circumstances no attention is paid to the warning signal provided by fatigue. In order to keep up the pace, for example, there have been cases where motor car assembly workers have taken to drink and women accounting machine operators have kept going on coffee. In this way the margin of tolerance is stretched artificially and not only is fatigue ignored but the system is poisoned as well. The results are disastrous and organic exhaustion becomes inevitable.

It has become standard practice to draw a distinction between the adjustment of man to the machine, of the machine to man and of man to man. This distinction is necessarily arbitrary since it makes no allowance for the interactions between them, but it may be of more use if combined with a breakdown of all the factors affecting adjustment into technical and psychosociological factors.

Technical Factors Affecting Adjustment

It has become almost a truism to point out that many machines have been designed without proper thought for the workers who have to operate them. The usual explanation, when there is one at all, is that this is because of technical requirements. If this is so the method employed must be unsuitable, for the worker himself is an integral part of the production process. In quite a few cases there are other, psychological explanations, some of which are quite remarkable. But at the very least the attention of designers should be called to certain blatant anomalies. For instance, some pressure gauges show the maximum pressure at the bottom of the dial, while to move some tools in one direction the levers have to be moved in the other. Of course, the operatives grow accustomed to this, but if something happens to distract their attention they may move the lever the obvious way and cause an accident. There is an urgent need for scientifically established standardisation of machinery controls (which need not rule out variations, e.g., for left-handed or handicapped workers). An attempt should also be made to reduce the psychophysiological demands made by certain jobs. Some operatives, for example, are supplied with two earphones through which they have to listen to (and not simply hear) two different messages simultaneously, while others have to perform movements with their upper and lower limbs at completely different rhythms. These facts are less well-known than the ill effects of noise, but they also result in saturating the margin of tolerance.

Such human engineering studies form part of the much wider subject of scientific management (involving job analysis, work simplification, etc.). The rationalisation of methods and jobs is undertaken largely because of its effect upon the rate of output and production costs, but its effect on the workers is almost always taken into account. It is somewhat disconcerting at first to find how strong opinions are both for and against and how much they vary from one place or time to another; few technical problems have generated so much feeling. Ardent enthusiasm on one side is countered by ingrained scepticism on the other, and so far from preserving the scientific attitude that Taylor thought he was introducing the battle is fought out in the atmosphere of a war of religion where ethical and moral arguments abound and sensational conversions and defections take place. These questions cannot be dealt with exhaustively in this article but their broad lines may perhaps be indicated. On the positive side scientific management helps the individual to adjust himself, while on the negative side it results in frustration.

Historically speaking scientific management grew out of a stage of industrial development lying midway between the manufacturing methods of the nineteenth century and the advent of automation. Its distinguishing feature is the carefully planned division of labour. As compared with traditional forms of craftsmanship industrial work is broken down in every way and is therefore simpler and easier.

Work that is properly organised and broken down requires less adjustment. The length of apprenticeship needed is reduced and the level of ability is lowered (which helps the handicapped, the older workers, etc.). It would be logical to conclude that fatigue is also reduced, but this does not necessarily follow. In point of fact the elimination of lost time and unnecessary movements (which may provide some rest), coupled with the reduction in the variety of tasks and the shortening of the cycle of operations may create new sources of fatigue. Moreover, owing to the inadequate scientific knowledge on the subject it is impossible to tell *a priori* what is the maximum amount of work that can be assigned to a worker without endangering his health. This is the reason for a good many disappointments.

Work study, which is usually carried out by experts, encroaches on the traditional rights of both management and labour. Both sides thereby lose many opportunities of showing their initiative and often react sharply against this loss of independence. It is advisable in these matters not to try to be too ambitious. Too highly developed a system is liable to cause over-rigidity; any further progress becomes difficult if no provision is made for large-scale consultation with those concerned or if there is any hesitation about scrapping a beautiful theory that has proved unsatisfactory in practice. These risks are more serious than those resulting from the methods of work study itself. The use of the stop watch, for example, has received an undeservedly bad press. The threat to a worker's self respect does not lie in the actual timing of his movements (since a worker is no more turned into a machine by the use of a stop watch than he becomes a tailor's dummy by having his waist measured) but in certain types of human relationships, some of them objective and some subjective, entailed by this process.

The division of labour separates the two ideas of quality and quantity and thus robs a man of a large part of his initiative and makes inadequate demands upon his creative abilities. In mass production the worker finds that part of his responsibility is shifted to the management and another part to his workmates. This at least partly explains why the maintenance man on an assembly line gets a certain personal satisfaction of which the fitters are deprived. The job of supervisor, which is growing in importance,

entails certain risks for its holder : he plays no direct part in production but is responsible for the work of others, and both psychologically and socially is in an awkward position. He is usually chosen because of his conscientious nature, i.e. because he has precisely those obsessional traits that make it difficult for him to extricate himself from a dilemma. Judging how much responsibility should be given to each worker is unquestionably one of the most thorny problems facing the psychologist today. In any event it is extremely important to give the worker greater pride in his job in order to reduce monotony and boredom ; where possible, for example, inspection should be left to the production worker himself. Quantity control, which is equally important, is more readily dealt with ; wherever possible long runs should be broken down into batches corresponding with certain types of biological rhythm. Job enlargement is also rightly advocated since too many workers have no idea of the purpose of their jobs or of the part they play in the production cycle and always have the feeling of having left their jobs unfinished.

The division of labour makes adjustment easier but at the same time it reduces the personal element. A semi-skilled worker is not a genuine tradesman ; he makes his adjustment only by allowing most of his abilities to lie idle. He is liable to be left with feelings of frustration and inferiority, and with no opportunity of improving his skill. This frustration of the individual's desire to better himself is not always recognised. It is aggravated by the need to accept methods and a pace of work imposed by others ; although this may seem to run counter to efficient management, it is advisable to allow each worker a certain amount of freedom to set his own pace, for example by building up stocks in between two stages of production. Frustration can also be offset by a number of measures not directly connected with this question, e.g. by vocational training of every kind at all levels, particularly if it is accompanied (although this does not always happen) by definite opportunities of promotion. Workers should be switched around from one job to another in order to relieve fatigue and give them more experience.

However, sweeping judgments must be avoided, for simple repetitive work is not equally harmful to all individuals. Some are not affected by it at all either because their mental and emotional interests find other outlets or because they are quite at home in a repetitive job.

In so far as scientific management contributes directly or indirectly to reduce the part played by the worker it constitutes a danger, since it immediately threatens the deep-seated need for a sense of security. It would be grossly misleading to identify tech-

nical progress with insecurity of employment, but it must be acknowledged that such a confusion is possible whenever the social, economic and psychological climate is unfavourable.

Social and Psychological Factors Affecting Adjustment

Security of Employment

Fear of unemployment plays an essential part in the workers' reactions. However arduous a job may be, no one wishes to lose it if he depends on it for his livelihood. This need for security creates a strong link between the worker and his employer. It accounts for the workers' demands for safeguards and regulations and for their reinforcement by a special branch of labour legislation. But this process has its drawbacks, for too many safeguards may themselves give rise to disputes. Every benefit that is too closely bound up with the contract of employment may produce a feeling of constraint and end up by sapping the worker's initiative or the firm's vitality. This is an argument for encouraging social insurance schemes, which provide the necessary security without impairing the participant's independence.

Group Relationships

A somewhat less straightforward but extremely strong link between the worker and his employer is forged by the fact of working together. The consciousness of belonging to certain groups is very important for the emotional balance of the individual. In practice there are very wide personal variations since the need to belong to a team, an enterprise or an association is not equally present in all human beings; but when this group consciousness is strong it is a net gain both for the worker and for the firm employing him. Here again, however, care must be taken not to overstate the case. Interdepartmental rivalries are sometimes more like a minor war than healthy competition, while some groups of workers refuse to accept anyone who does not conform to their own rigid code. It is a mistake, however, to lose sight of reality : for example, in the hope of cutting down absenteeism and turnover, a factory may launch a magazine in an attempt to foster the team spirit; but if relations within the firm are bad, no one will read it, however well it is produced.

The question arises how far it is possible to have a feeling of belonging to both a firm and a trade union, which are antagonistic social bodies. This dual loyalty does, in fact, sometimes confront people with a painful choice that is liable to produce neuroses.

On the whole, however, the clash is not harmful. Usually one of the groups enlists far more support than the other or the individual does not belong wholeheartedly to either; alternatively, if they work closely together, the tensions can eventually be resolved.

The family group has been greatly changed by the progress of industry. The time is long since past when in the coalfields a man would bid for a stint and take his family down to work with him. Modern techniques tend rather to break up the family and some firms even refuse to employ a husband and wife. If both work, their hours may be so different that they have hardly any home life together. Travelling also helps to keep them apart, for while speeds may be higher, distances are longer. Perhaps the most serious problem in this connection is the employment of women. A mother of a family who takes a job because she has to, or merely in order to earn some extra money for herself, often has to look after her children outside working hours, for there are almost no opportunities for part-time work. On the other hand, a number of efforts are fortunately being made to reconcile the needs of the job with the needs of the family, e.g. by matching holidays and working hours, and by recruiting and placing workers in accordance with their family ties.

Safety and Health

The desire for security of employment is matched by that for safety and health at work. Work is often felt to be a threat to health, and despite all the preventive measures employment injuries and occupational diseases have by no means disappeared. A great deal of ink has been spilt over the human causes of accidents and it has yet to be established whether there is such a thing as proneness to accidents. But there is no doubt that in certain circumstances some individuals are more vulnerable because of a maladjustment, which can be remedied by additional training, psychotherapy, change of job, etc.

Safety campaigns should be based on sound psychology. There are, for example, posters and films which, with the best of intentions, are dangerous because they suggest the disaster they are intended to warn against. Thus, in one firm which launched a campaign against pneumoconiosis, one of the first results was a panic among the staff followed by a complete drying up of recruitment, while in the workshops themselves a number of protective devices were removed or damaged.

It must be appreciated that certain factors are vital, e.g. the system of payment. Operations that contribute towards safety should be paid for over and above productive work; otherwise

they are bound to be neglected. The payment of bonuses for dangerous or unhealthy conditions tends to perpetuate the existing state of affairs. If a safety measure merely becomes a nuisance or, worse still, a joke, it is useless. Although clamps, chains or handcuffs are effective, they are also tiresome and a device added to a machine after it is installed will never last as long as the machine itself. In other words, safety must form an integral part of the job instead of being added as an afterthought. Machines must be designed for safety and workers should be taught safe movements during their apprenticeship. It has been found, for example, that properly trained young workers have no trouble in wearing gloves that their older workmates discard as being hopelessly cumbersome. Indeed, any safety measure that proves troublesome without entailing some obvious and immediate advantage is futile and, in fact, dangerous. A fairly typical example is afforded by the change in the methods of drilling rock. Silicosis prevention methods had almost completely failed when a new type of equipment appeared on the market. It was adopted very quickly owing to its impressive technical qualities and its ability to cut costs. At the same time it demanded far less muscular exertion and made it not only possible but necessary to use a water-spraying system. Thus material factors rather than altruism or fear cleared the way for a reduction of effort and greater safety. The introduction of this new equipment proved favourable in yet another way: experts had to be employed to give proper training to a whole category of workers, some of whom had very little skill and who naturally derived real personal benefit from the change.

Wage Systems

Industrial safety is affected by a number of questions that are important from other points of view as well. For instance, the system of wage payment has a decisive effect on the degree of danger to health and on whether or not the workers' desire for safety is satisfied.

Payment by results has a reputation of achieving high output, but unfortunately it also leads to overwork and saturation of the margin of tolerance. Any safeguards that have been provided rarely operate and it is inevitable that in the end the maximum pace of work and the maximum earnings should be looked upon as the standard. Although the workers themselves have often called for the introduction of payment by results, other systems of payment are certainly preferable. The best incentive would appear to be a climate of confidence within the firm itself, and if this exists the method of calculating the wage loses much of its significance.

Of the numerous systems that may be advocated the simplest is always the best, for complicated pay slips and confusing calculations only baffle everybody, including the management. Any system must be selected with a definite purpose in mind. For example, the payment of a bonus for quality, punctuality or waste prevention may entirely change the medical and psychological characteristics of a job. Payment by results buys an article, payment for the job rewards the worker and payment in accordance with skill is a recognition of the importance of the individual. Too much effort should not be expended on finding absolute justice, which is unattainable ; thousands of interviews have shown that round figures are all that count and that workers reckon in terms of only one or two significant figures (in stating their earnings they will quote their hourly, daily, fortnightly or monthly rate, whichever brings in 150, 2,000 or 35,000 francs).

It may be asked what makes a worker look on his wage as a fair one. There is no cut-and-dried answer to this question. Standards of judgment vary enormously according to time and place and the political and economic situation. But running like a thread through all these changing circumstances is the tendency for living standards to rise or at least the hope that they will, and this in itself is enough to make any collective agreement fairly quickly out of date. Moreover, every worker keeps a close watch on his neighbour and is apt to be aggrieved if he obtains some extra advantage. Instead, however, of using the easy explanation that he is prompted by envy, it would be psychologically more accurate and socially more constructive to recognise the underlying reasons. A man's wage shows " what he is worth " ; it is a reward and an endorsement granted by others. Similarly, starvation wages entail dishonour just as a seniority bonus is a mark of respect. The existence of these ethical and emotional undertones explains phenomena that at first glance may appear strange. Thus, as an exception to the rule laid down above, one worker may risk his job by arguing over some small differential, or, when a general increase is granted the negotiators will safeguard their masculine prestige by taking care not to abolish the differential between men's and women's pay. Conversely it has been found that when negotiations take place on a man-to-man basis the arguments are always confined to " business ", i.e. no matter how forcefully conducted they never stray beyond economic questions.

It can thus be seen that the " sickness of industrial civilisation ", about which so much has been said, is largely the result of certain very general psychological laws. For example, a reorganisation of production may be unpopular because it is put forward by a well-intentioned but extremely tactless engineer.

Similarly a works committee has been known to be paralysed because of the non-co-operation of a workers' representative who took to heart some trifling matter of a broken window in which his prestige was involved. Though it is a mistake to concentrate on the moral problems while ignoring the material factors, it is equally misleading to deal with problems such as management or labour disputes without properly understanding their psychological side or making a study of the motives, hopes and attitudes involved.

Authority and Disputes

Organisational structures differ according to the stage of development of each enterprise and of the society in which it operates. The patriarchial type has not disappeared and exists side by side with others which may be authoritarian or more or less democratic. It is difficult to weigh up a real situation because its pattern is necessarily harder to understand than an organisational diagram; and even organisational diagrams are rarely well conceived. Each individual is caught up in a web of extremely complex and frequently ill-defined relationships. Some workers have orders fired at them from all sides, while others are left to their own devices. Either state of affairs may apply to anyone from a labourer to a chief designer. But this situation is particularly serious when it involves the medium-level supervisors, for it is among these men, on whom the whole hierarchy hinges, that the majority of technical and human troubles are encountered.

A good chargehand, office manager or foreman is a boon to his subordinates and a first-class asset to his employer, as can be readily seen from the unfortunate consequence of placing the wrong man in such a job. A leader who is lacking in self-confidence and cannot stand up for himself to his superiors often becomes so strict as to be almost indistinguishable from a sadist. He may, for example, forbid any conversation among his subordinates on pain of dismissal or sit on a platform behind them, etc. With such supervisors any sensible suggestion is either indignantly rejected or declared to be against the rules. The latter, incidentally, are worded very unfortunately in many firms and are calculated to generate anxiety; such phrases as " the management reserves the right . . . ", " it is strictly forbidden to . . . ", " under penalty of . . .", lead the worker to wonder what he is, in fact, allowed to do and to feel guilty before he has even offended.

Some situations may be a source of pathological mental states. The investigations of Le Guillant and his pupils have shown how faulty employer-worker relations can prove harmful to telephonists

and domestic servants.[1] Some jobs have been observed to be bearable only for those who already are, or who become, neurotic. It is important to add that, while a high tempo of work may be imposed because of the wish to make the best use of equipment, the fact remains that the speed at which a conveyor moves is never determined by " the machine " (as is claimed) but by a man, and if the worker cannot keep up he has no option but to slow it down. The only characteristic peculiar to the machine is its relentlessness, but the actual tempo of production is the outcome of a balance between authority and obedience.

This balance between initiative and discipline is also experienced within each individual. Everyone throughout his life should alternate between submission and domination to the extent that suits him personally. This process sets up subtle compensations, e.g. between the responsibilities of business and the discipline of sport, between obedience at work and mastery at home, etc. ; generally speaking a role in life that is too active or passive sets up excessive tensions.

A number of supervisors are promoted for the wrong reasons. A first-class workman, for example, does not automatically make a good chargehand. He may feel frustrated through no longer being able to handle the product or he may not be able to keep up with technical changes ; he is always liable to develop the neurosis that comes with a little responsibility. Or, to quote an actual case, an assistant manager may regularly fall ill whenever his superior has to be absent. Thus authority, too, can have harmful effects. This makes it highly desirable to take particular care over the training of supervisors. Promotion would benefit if modern selection methods were more generally used, in particular scientific psychometric tests. At the same time any preconceived idea about " leadership " should be avoided. There is no universal formula nor, for that matter, is there any human type predestined to lead. The quality of a man's leadership depends on his personality and if this is mature and fully developed, whatever its type, he has a much better chance of success.

At the higher levels the problems are virtually the same. Sociological studies and training at the staff level, when carried out scientifically[2], show that certain psychological factors (particularly the emotional factors) are vital. They also bring out the difficulties of communication inherent in large firms. The transmission of

[1] LE GUILLANT, BOELLENS, BEGOIN, BEQUART, HANSEN and LEBRETON : " La névrose des téléphonistes ", in *La presse médicale* (Paris), No. 13, 15 Feb. 1956, pp. 274 ff.

[2] See, for example, J. J. GILLON : " Expériences relatives à la cohésion des groupes de travail ", in *La direction du personnel, fonction d'état-major. Hommes et techniques* (Paris, 1953), pp. 111-124.

orders and the control of production are carried out through channels that are liable to considerable interference. Another point is that executives know very little about their subordinates [1] and there is a great need for improving systems of merit rating.

Many industrial disputes are embittered by a lack of information on both sides. It is not uncommon for contacts between different levels to take place only during disputes, with the paradoxical result that discussions between management and workers are only made possible by a strike or the threat of a strike; it is hardly surprising that they do not usually lead anywhere. Replies tend to be made with an eye not only to the arguments put forward by the other side but also to their actual or assumed intentions and conscious or subconscious attitudes. The negotiators think they are discussing money or working conditions, but in fact one side suspects the other of subversion while the other is afraid of exploitation. In this atmosphere bluff, bluster, stonewalling and violence are common. And yet, even when a trial of strength takes place, it seems unnecessary for so much emotional tension to be generated.

The Role of the Industrial Psychiatrist

The industrial psychiatrist has a part to play in this environment. He can help to settle difficult situations, but in so doing he must take pains not to appear as a " strike breaker " or a " strike agitator " ; and he will find it wiser to limit the scope of his work rather than compromise his essential task, provision for which was implicitly made by a group of experts of the Correspondence Committee on Occupational Safety and Health of the International Labour Organisation who stated " . . . specialists in various branches of medicine . . . may be employed in occupational medical services or consulted by them ".[2] This forms part of a general definition of industrial medicine [3] which—

> should aim at : the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations ; the prevention among workers of departures from health caused by their working conditions ; the protection of workers in their employment from risks resulting from factors adverse to health ; the placing and maintenance of the

[1] See in particular R. Bonnardel : " Etude sur l'évaluation de l'aptitude professionnelle de la maîtrise subalterne et sur les jugements analytiques portés sur différents aspects du comportement de l'homme ", in *Le travail humain*, Vol. IX, 1946, pp. 178-194.

[2] A panel requested by the Governing Body of the I.L.O. to draw up guiding principles for the organisation of occupational medical services (Geneva, 29 November to 10 December 1954). See *Occupational Safety and Health* (Geneva, I.L.O.), Apr.-Sep. 1955, pp. 111-120.

[3] Adopted by the Joint I.L.O.-W.H.O. Committee on Occupational Health at its First Session. See ibid., p. 112.

worker in an occupational environment adapted to his physiological and psychological equipment and, to summarise : the adaptation of work to man and of each man to his job.

But in fact one only finds what one is trained to find. Ignorance about mental pathology and particularly pre-pathology is notoriously widespread. Moreover, morbid phenomena are concealed in various ways : one man may hide his sickness by an iron self-control ; another will always manage to dodge any consultations ; and many more leave their firms before it is possible to find out what is the matter. In practice a psychiatrist soon demonstrates the need for his services. After the initial stage in which he is sent a series of urgent cases consisting of jilted lovers, harmless crackpots and even deaf people, he is no longer looked upon with mingled trepidation and amusement.

Depending on the size of the firm and whether or not confidence is more likely to be shown in someone who is actually on the staff, the psychiatrist may belong to an independent department, a department run jointly by a number of firms or a specialised independent body. In any event he must keep closely in touch with the other industrial doctors to whom he acts as a consultant. He must also try to build up the same contacts as any other industrial doctor, although some of these must necessarily be indirect while others must be extremely close (regular co-operation between the psychological department and the welfare department is absolutely essential). The clinical work of the industrial psychiatrist is similar to that of any other psychiatrist and he has far-reaching opportunities in this field. He is ideally placed to spot early symptoms and to deal with later stages of psychoses, neuroses and alcoholism or to provide guidance or rehabilitation for the handicapped. Nevertheless it is not his job to treat the sick—although he must do so whenever circumstances require—but rather to concentrate on preventing maladjustment.

He can only discharge his duties if he has a thorough grasp of industrial medicine and has served as a general works doctor for a number of months.

His scientific role is also important. There is a great deal of exploratory work to be done in the field of occupational neuroses ; owing to the complexity of their causes the logical way of tackling this question would be through statistical analysis.

In no circumstances (except, of course, within his own department) should the industrial psychiatrist exercise any authority. This would not fit in with his educational function and is quite incompatible with the right attitude, which is usually defined as one of benevolent neutrality.

In many undertakings there is someone with a broad shoulder

on which his fellow workers can weep when they are in trouble, because he has won their confidence and human beings must unburden themselves as best they can when no other opportunities exist. There is nothing reprehensible about this and it helps to preserve the mental health of the group as a whole. But attempts are sometimes made to provide an outlet for this need without first taking care to ensure that the adviser has the necessary knowledge, discretion, impartiality and self-control ; such attempts are thoroughly undesirable.

The industrial psychiatrist, with his respect for the personal rights of the individual, is a product of modern industry and of the present trend towards the more efficient use of labour.

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