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Industrial Organisation on the Basis of Autonomous Groups

by

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It is agreed that one of the surest means of obtaining maximum production in industry is by giving the workers the feeling that they are associated in a joint undertaking. This explains the growing attention devoted by employers' and workers' organisations in many countries to methods of developing the feeling of co-partnership and, in particular, to systems of management sharing.[1]

The following article describes an original form of workers' participation based on a system of remuneration by "autonomous teams", which is designed to give the worker a feeling of independence by incorporating him in an organisation on co-operative lines.

The career of the author of the article, from apprenticeship in engineering to the secretariat of the French General Confederation of Labour and membership of the National Committee on Productivity, has enabled him to acquire a thorough knowledge of industrial problems. He has embodied his ideas in a number of books, including A chacun sa chance *(Grasset, Paris)*[2] *and* L'Equipe et le ballon *(Le Portulan, Paris). These ideas are beginning to attract the attention of industrial circles and are already being put into practice in certain undertakings in France and Belgium.*

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[1] A first discussion of the various aspects of co-operation in industry between workers, employers and public authorities took place during the 34th Session of the International Labour Conference. Cf. *International Labour Review*, Vol. LXIV, Nos. 2-3, August-September 1951, pp. 133-73.

[2] Also published in English under the title *A Chance for Everybody* (London, Chatto & Windus, 1939).

FOR many generations industrial organisation has raised a great unresolved issue—that between the needs of the individual and of society and between the concepts of freedom and order. Its aim is to achieve harmony through collaboration, but without sacrificing the advantages of individual initiative. This has given rise to many contradictions and also, unfortunately, to many conflicts. We shall try to show how the co-operative principle can reconcile these two opposing aims and combine them with fruitful results.

The Size of the Working Group

If we compare labour now with labour in the past, the most striking difference is that in the size of the labour force and of the constituent groups.

Even in the era of handicraft production the worker was not completely isolated. Nearly always the master craftsman had at least one or two helpers and apprentices working with him. The group being limited to a small number of persons living what was almost a family life, the problem of harmonious relations within the group was so simple that no " social problem " arose. As only simple hand-operated tools were used, methods of production and labour relations were quite different from those which came into existence when the substitution of machine tools produced a fundamental change in the dimensions of the group. A man working with the basic tools could carry out the whole series of operations involved in the manufacture of an article ; the allocation of the various operations to different persons led to an immediate increase in the number of workers in the unit, and at the same time destroyed the natural and, so to speak, spontaneous harmony which was formerly achieved in the craftsman's workshop.

But this fundamental change did not merely enlarge the group ; it also altered its composition, for the worker who is a cog in the productive process is not expected to have the same comprehensive knowledge of his trade as the man who previously carried out each succeeding operation unaided. One may say that at this stage the hierarchy of labour functions increased by one step at the base. The persons in this new

grade are not necessarily mentally inferior to others ; they are there because they have had no chance to acquire the knowledge which would have enabled them to be placed elsewhere.

This last fact is of great importance, for there is in this lowest category a " reserve " of intelligence which remains unused in the present form of industrial organisation. One of the problems of industry is precisely that of finding a way to bring this reserve into use.

The Persistence of the Feeling of Slavery

For a long time, various obstacles prevented recognition of the fact that the real root of the social problem is at least as much intellectual and moral as economic. Therefore, before describing a method of industrial organisation which will combine the conflicting aims already mentioned, we must briefly examine the major features of the great social phenomenon to which the International Labour Organisation itself owes its existence—the movement of protest against the living conditions created by industrialism.

As these protests drew attention in the first place to the destitution of the workers in the nineteenth century, the initial efforts to improve conditions were mainly directed to the wages problem and to hours of work. But the reference made to working-class aspirations for liberty should remind us that the destitution complained of was not only material. The labourer also wished to escape from a certain form of slavery that had been perpetuated under the new systems of political liberty. As has been said in the United States, there is an increasingly conscious desire among workers, after acquiring the rights of political citizenship, to acquire those of " industrial citizenship ".

In response to this trend, attempts have been made for several decades to find some outlet for the workers' desire to participate in industrial life not only with their hands, but also with their heads. These outlets have taken various forms, from the simple expedient of having suggestion-books providing a tiny channel for the initiative of the worker, to the various proposals for and experiments in management sharing, in some cases as the result of private initiative, in others as a result of trade union pressure. This movement has led in various

countries to statutory provision for works councils on the one hand, and to nationalisation on the other.

The purpose and origin of the latter may perhaps be recalled here. Following up the idea that the enslavement of the worker is mainly due to private ownership of the means of production, it was thought that he could be made free by transferring them to public ownership. If he was working for the community, he would be free and his whole life would be changed. At the same time, transposing to the industrial field the conceptions of organisation arising out of the notion of political equality, it was hoped to solve the problem of management sharing by a system of representation, giving the undertaking a democratic structure similar to that achieved in the administrative organisation of nations.

But it soon became clear that the transfer of ownership and the system of representation introduced had left the social problems untouched. Despite the change of ownership, neither the internal structure nor the methods of operation of the undertaking had been affected in any way. This evident setback was due to a failure to take proper account of the realities of industry, which should have been carefully studied in the first place. Analysis would have shown that the structure of any undertaking is fundamentally hierarchical, with a system of functional grades requiring different capacities and increasing in importance up to the top of the ladder. At each level different activities are being carried on, which are so varied that they frequently involve a great number of distinct occupations. Consequently, there is in reality no true equality between the individuals on the different rungs of the ladder; there is no equality between a warehouseman and a production manager or an accountant. It will even be found—and this, while seeming a secondary matter, is actually of great importance—that the two groups do not speak the same technical language. And so a worker and an administrator are precluded from even discussing matters on a footing of equality. It is agreed that all have equal rights as men, but to give them equal influence in administrative matters can only lead to confusion.

And this is not all. If the introduction of the idea of democratic equality is in contradiction with the idea of hierarchy, it is particularly incompatible with the notion of "control", which even in nationalised undertakings is still

exercised from above and transmitted from apex to base through the channels of command by a devolution of power from a centralised authority. The problem, now receiving wide attention, of the internal and external relations of the nationalised undertaking is still the same as in private undertakings. The various forms of staff representation (which are becoming more and more alike both in private and in nationalised undertakings) have little or no effect on the " bonds of subordination " which are at the root of industrial unrest and underlie the apparent economic causes of ordinary disputes. This absence of any real and significant change from the worker's point of view can be seen from the fact that when the delegate elected to a works council by his fellows returns to the bench after each meeting, he is once more an individual under the orders of a superior clothed with authority by the devolution of powers mentioned above. He may have acquired a share in the ownership of the undertaking, but he will immediately see that his proprietary rights are purely theoretical and in no way alter his position as regards the direction of the undertaking.

In other words, his freedom is no greater than before, for no system of representation will have changed this bond of subordination which, as lawyers noted long ago, is the essential social characteristic of the wage-earner's situation. This is clearly demonstrated by the obvious fact that the method at one time considered capable of giving the worker a feeling of freedom has failed to bring about the expected change in his approach to his work. It is now known to all that the attitude of the worker is the same in nationalised undertakings as it is in those still under private ownership, thus proving that no fundamental change has taken place in the field of human relations.

Nevertheless, the experiment has probably not been without value, in spite of certain rather regrettable consequences. It may well have been necessary to make it in order to show that the feeling of slavery can be due to factors other than private ownership.

Is There No Hope for the Worker ?

If one can now say, after these experiments, that they have failed to touch the most important labour problems, it

does not follow that the idea of substituting a democratic form of management for the centralised authoritarian system that still prevails in public and private undertakings should be abandoned. We must now try to find a different approach, which avoids treating the individual in isolation without regard to the hierarchical structure of the undertaking. Our task is therefore to seek practical means of reconciling the conflicting aims mentioned at the beginning, for this is in fact the crucial problem ; we must set the industrial worker free, we must " integrate " him in the undertaking. We must not only offer him the prospect of improved material living conditions, but also point the way to a better system under which he will be able to use all his faculties and fully develop his personality.

Happily, as the principles of co-operation are already available as a guide, the problem is merely one of finding a way of incorporating them in the industrial world.

The notion of co-operation has already been applied on a considerable scale in industry : an instance of this is to be found in the network of producers' co-operatives. Here is at least one example proving that it is possible to organise business co-operatively. However, an important observation must be made. Since producers' co-operatives are usually founded by working men, their opportunities for expansion are automatically limited by such financial means as working men may command. The slight amount of assistance provided by the State (as in France since 1848) prevents this form of organisation from venturing into the field of large-scale industry, where a large capital is needed.

This fact may seem discouraging. It might lead one to suppose that large-scale industry is closed to co-operation, and that there is therefore no prospect and outlet for the industrial workers in this direction.

In addition to such factual obstacles which, as we shall see, can be overcome, there are others which may be termed imaginary obstacles and which take the form of widely held misconceptions.

Many persons who are perturbed by the position of man in the modern world of technology see it from outside and are naturally affected by those features of mechanised industry which most easily move the imagination and often inspire

terror: the more impressive scenes in the metal industry, the dramatic incidents in the mines, the elaborate machinery in many industries which appears to be driven by some mysterious force, and frequently the deafening din—a combination suggesting a rather frightening setting for industrial work. It is not therefore surprising that the outsider fails to see the real problems under these appearances.

There are many people who are unable to imagine that a workman can find highly mechanised operations interesting, and suppose that such work gives no scope for mental development. This prejudice is perpetuated by writers (including some very distinguished ones), who often intervene in the discussion of industrial matters without any real knowledge of the facts. As a result, there is a widespread belief that many industrial occupations requiring no apparent intellectual effort on the part of the operator must inevitably have a bad effect on his mental efficiency. The first answer to such assertions, which are usually made by persons who know nothing of industrial organisation, is that there is so far no proof of harmful effects, although the processes have now been used for a considerable time.

This prejudice, however, has given rise to a whole body of literature against the Machine, which is represented as a sort of monster with dangerous powers of evil. The persons making these attacks are, however, committing the grave error of blaming an inert organism for the ills which are really due to the way in which it is used. The practical effect of attacks on the Machine can only be to distract attention from the sociological problems in industry which, incidentally, apply to manual as well as mechanical labour, for the worker can be reduced to the level of the brute (if it be granted that there is such a danger) by purely manual labour as much as by work with machinery.

All Industrial Work can be Intelligent Work

Moreover, it must be added that the casual observer who is frightened by the (to him) unfamiliar aspects of industrial life usually does not realise that it is constantly changing, and that the processes used are continually being modified as a result, among other things, of the varying needs which

industry attempts to satisfy. When all is said and done, the choice between the use of machinery and a return to ancient manual processes is not a real one. It would imply a challenge to a thousand years of evolution to which man has long been impelled by the urge to economise effort. It would also reopen the whole issue of choosing between the ascetic life and the type of life resulting from what we call civilisation. We shall naturally not go into that question here, as our fellow-men seem most unlikely to reject the conveniences of civilisation in favour of the ascetic life. Even the humblest family now objects to a return to lighting by candles or lamps and would regard electric light as a necessity. But even the modest electric-light bulb presupposes the existence of a huge industry requiring complicated machinery and a hierarchy of functions inconceivable to the craftsmen of the past.

This example of one of the many articles in current use is merely cited to show that any idea of a return to an outdated technology must be rejected and, above all, that attacks against technology and the Machine can only lead to utterly unnecessary and sterile discussions, which waste time that might be more usefully devoted to considering how men can take a more intelligent attitude towards the processes acquired through industrial experience. There can be no question of discarding either the processes or the experience.

The problem is not one of eliminating processes or tools, but of finding means of enabling the machine operator to take the initiative in suggesting further improvements. Fortunately, this possibility is not excluded, if only because all processes are the result of intelligent thought and are also constantly perfectible. Those familiar with industrial life know that the operations which appear the simplest are often those which have required the most study. Contrary to the rule of proceeding from the simple to the complex, it often happens that the simplification of a process is the final result of a series of experiments from which needless complications have gradually been eliminated. New proofs of this are constantly being furnished by the work now being done in the field of " job simplification ". As a result of these new efforts, one can safely say that the prospect of more intelligent work is by no means closed to the worker. It may be enough, without going into further arguments, merely to mention the activities of

the International Labour Office in propagating methods of training within industry ; these clearly show the effort made to win the interest and understanding of the worker, even with regard to the simplest operations.

This leads us to the conclusion that in reality all work can be intelligent work. The objections often heard in connection with a specific process (for example, the notorious moving-band production method) miss the point. The real problem is whether the intellectual work required to perfect the process and ensure its continued improvement is to be the exclusive domain of the managerial staff, or whether the actual operators shall be allowed to take a part in it.

Scientific Management Minus the Human Factor

The mere fact of knowing that such a possibility exists would probably, in any occupation, restore the element of interest that is the chief source of pleasure in work.

The monotony and other undesirable features ascribed to mechanised labour are not a consequence of technological methods, as the layman supposes from the outward appearances that are all that he sees, but are primarily due to the passive attitude which present-day factory organisation imposes.

It must be pointed out, in this connection, that continuous progress in the various forms of production demanded by our way of life has for a long time raised problems of management and organisation. But the type of organisation given to the undertaking by experts has to a great extent excluded the human factor, and still prevents the worker from having that relationship to his tools which the musician has to his instrument. Without attempting to trace here the history of this important feature of modern industrial life, mention must be made of the man who did more than anyone else to introduce the scientific spirit and method into industrial life, namely Frederick W. Taylor. In a large number of important manufactures where competitive conditions and the need for maximum output have led to an analysis of work minute by minute or even second by second, the need for time economies is a major problem. Hence the new study initiated by Taylor, consisting of a careful investigation into the best order for the various operations and the best way of performing them. A

series of considerable advances has been achieved in this direction, particularly during the last fifty years, leading to thorough and detailed planning so that the various operations may succeed each other with maximum rapidity and efficiency. Thorough planning means leaving nothing to chance, preparing everything in advance in order that the job may be made as simple as possible.

Those familiar with Taylor's work will recall the first of his famous principles of scientific management, which (among other things) requires those in charge of labour to gather up all the traditional knowledge accumulated by past workers during the ages, so as to reduce them to laws or even mathematical formulae. His French follower, Fayol, summed up the principles of scientific management as follows: planning, organising, directing, co-ordinating, controlling.

To this day, the managerial process is still considered to be covered by these five terms, which perfectly express the various aspects of industrial administration proceeding from a central authority in which all the different functions are centred. Business organisation is regarded as a piece of machinery needing only to be properly regulated, in the five groups of functions that appear to embrace every type of work.

This represents the attitude of a mathematician considering industrial life merely as production by mechanical means, one of the means being the worker, who is thought of as an instrument without human characteristics. In this sense, the five terms may be considered as the crowning achievement of what is still called " modern " scientific thought, although it reflects an attitude current since the Renaissance. Man sought to discover the laws of nature in order to gain control over them, but he considered only the physical aspects of natural phenomena ; the laws which he discovered are physical laws. And, after five centuries, Fayol defined the duties of management purely in terms of physical laws.

The result has been the formation of the research departments of today, which in many cases have encouraged passive acceptance of instructions by the worker, excluding all initiative that might disturb a preordained and sacrosanct order.

It has been quite forgotten that work is not a mathematical abstraction, and that it cannot be performed otherwise than

through a human act—a factor of quite a different order from those which can be expressed in figures. A certain contradiction has arisen between the preordained order and the initiative which is still at times demanded of the workers whenever it becomes obvious, in spite of everything, that absolute passivity is an obstacle to efficiency. This contradiction shows that, no matter how perfect the system of organisation, there remains a certain awareness of what the work itself might stand to gain from unplanned initiatives on the part of the worker. It further proves that there is still room for progress in the field of management through a more rational use of the brain-power of those associated in production. The view may well be taken that to restrict all intellectual activity in the factory to a certain percentage of the staff, and to exclude the majority, represents a faulty distribution of mental work that will in the long run have an adverse effect on productivity. It is just as though certain resources in the undertaking were lying unused. Here again, we have evidence of the conflict referred to earlier, that between the concepts of order and freedom.

Scientific Management Plus the Human Factor

Fortunately, however, this conflict is not insoluble. The problem must merely be carefully considered so as to find a method of reconciling the need for freedom and the need for order. This is by no means an impossible task. The necessary technical means exist; and there need be no conflict with the methods of management which modern industry has developed over the past fifty years.

But management has its own particular domain, which lies within the limits of things predictable. Beyond that point lies the human domain, since man alone is able by his adaptability to cope with the unpredictable, with the inevitable hazards that constantly occur, however perfect the system of organisation. We all know that even the best organisation can be improved, and that the most advanced undertakings are constantly seeking means for further progress. Like any other scientific study, management is based primarily on the observation and analysis of facts, and to a large extent on facts and circumstances which have already occurred. It is true that it attempts to predict, as Fayol prescribed; but it

will always be difficult even for the acutest mind to foresee unprecedented chance occurrences, which are an essential characteristic of living beings and elude all processes of logical deduction. Management may have conjectured every eventuality, but it can hardly determine in advance what spontaneous and, in many cases, necessary reaction will be needed to deal with it. For this reason, any system of management will remain imperfect until it is able to benefit by the direct aid of the man most closely concerned with the work, by allowing him to react freely in the face of an unexpected difficulty.

To deny the worker any part in the organising of his own work is to block any interest he might take in it. It is not the process, the job, the tools or the machinery which must be criticised (as many ill-informed persons think), but the methods of management used in connection with the processes or machinery.

If this, the real "human" problem, is to be solved, we must end the absolute monopoly of management which modern industry has given to the controlling staff, leaving none to the subordinate staff. This monopoly is the chief internal flaw of modern industry. Its result has been to reserve the intellectual activity necessarily involved in the performance of all work to a small proportion of the members of the undertaking, leaving other brains relatively idle. The mere fact that such brain-power remains unused may well be regarded as an obstacle to maximum output.

At this point, we must dispose of an objection commonly put forward against the possibility of any such co-operation by the workers. The argument is that the workers generally, if not in all cases, lack the ability which could make it practicable.

It would, of course, be an exaggeration to say that all workers without exception are likely to have useful ideas in this field. The number may be quite small; in every sphere, by definition, the *élite* are the few. But the mere existence of some who are above the average justifies one in asking whether their co-operation ought not to be enlisted, in order to use such influence as they may wield over those around them in the basic working unit. One of the lessons of social history is surely that the difficulties which we want to eliminate are generally provoked by men whose brains are not usefully employed.

The Factory is a Hierarchy of Groups

If we closely examine the nature of the investigations and experiments already undertaken in connection with the problem of " integrating " the worker in the undertaking, the main conclusion to be drawn (as can be seen from the systems of representation devised) is that the worker has been considered as an individual, as an isolated element in the undertaking. This attitude is, of course, a natural consequence of the whole system of ideas, which has also been embodied in political institutions. However, with the sole exception of a very few craftsmen and of the artist working alone, all forms of production are found to involve the notion of a group. The workshop of the traditional craftsman, so much praised in literature, was occupied by a group : master, journeymen and apprentices.

This is an important point since, as we shall see, it gives the key to a simple solution, which will have to be tried in industry sooner or later. In reality, human problems in industry are dominated by the group concept; and this explains why they are fundamentally sociological rather than economic, despite the fact that the demands of labour make them appear economic and often cause reformers to devote too much attention to the purely material aspects of life.

This point leads to a second one, which is also very important—that the size of the group has a considerable bearing on the harmony of human relations within it. This truth is implicit in the often heard statement that the head of a large undertaking cannot have those direct relations with his staff which used to do so much to produce harmony in the older workshop.

Thus, the dimensional problem lies chiefly in the fact that direct relations tend to become increasingly difficult as the number of workers in the undertaking increases. The problem is therefore concerned with the number and not the individual value of persons. When we say that the atmosphere in the craftsman's workshop was relatively peaceful, this does not mean that men in those days were endowed with any particular virtues, or that they were better ; but merely that the small size of the group made for a simpler and clearer

relationship. Consequently, we are bound to ask a simple question : To what extent would it be possible to reconstitute such " human-sized " groups in modern industry ?

Now it must be admitted that to any technician familiar with the structure of an undertaking and with its constituent elements this question might seem absurd.

The undertaking is, in appearance, made up of individuals. In reality, its structure is hierarchical. The hierarchy, however, is not constituted merely by persons occupying the various positions in the chain of command. These men are not isolated ; they are heads of groups.

This shows that the undertaking is primarily a hierarchy of groups co-ordinated with one another in accordance with technical necessities : the departments which exist in any undertaking larger than a craftsman's workshop.

There is no question of replacing the departments by groups formed arbitrarily for reasons bearing no relationship to technical necessities. This existing unit, the primary cell in every undertaking, is the spot where the conflict between order and liberty must be resolved and the exercise of liberty made to serve the promotion of order.

It may be true that any attempt to form all the individuals in the undertaking into a single body with equal rights can only lead to confusion ; on the other hand, the staff already grouped in a department is an entirely homogeneous whole and the members have a clearer picture of their common interests.

Thus, the conciliation which we hope to bring about between what are at the moment conflicting forces must take place at the level of the department, by borrowing to a certain extent from the co-operative idea. By transforming the system of management in each of these units we can radically change the internal structure of the undertaking and achieve fully the aim which, as we have seen, systems of democratic representation have failed to reach.

A Clear and Simple Method of Management Sharing

We have discovered that every undertaking, since it consists of a hierarchy of groups, may also be regarded as a sort of federation (although the term is not customarily used in this sense), the units being the various technical divisions.

This suggests the solution to the problem of finding a democratic form of organisation, for if these technical units are given separate budgets, then they will acquire the character of economic units as well.

The reader may rest assured that these views are neither figments of the mind nor daydreams ; they closely correspond to a current trend in methods of industrial management, though this has a practical object unrelated to social questions.

This trend is well worth studying, for it is based on reasons very similar to those advanced against the possibility of democratic management in a centralised undertaking by individual representation.

Centralised management necessarily involves a centralised accounting system. However, as factory organisation improves, it becomes increasingly clear that certain very important cost items are difficult to ascertain from centralised accounts. It is often practically impossible to determine the exact manufacturing cost of a given part of an article produced. The resulting uncertainty may involve loss of possible profits, owing to the difficulty of controlling certain items of expenditure.

In order to overcome these disadvantages and throw light on some of the less clear details of management, there is a tendency to use decentralised accounting methods, which will gradually make it possible to assign to each department the share of the total budget corresponding to its particular activities and thus endow it with what one might call an economic individuality in addition to its technical individuality. The final result would be the budgetary autonomy of the various technical divisions.

The advantages of such a development are easy to see. The employees in each division will be brought face to face with far simpler problems of management than those involved in a centralised management. Bearing in mind the fact that most individuals are shortsighted, it is clear that by such decentralisation the problems of management will be brought within the range of vision of the average individual. The far-reaching social implications of the possibilities thus opened need scarcely be emphasised.

As regards the difficulties mentioned earlier in connection with the extension of the co-operative principle to large-

scale industry, it can be seen that they are considerably less formidable if management by departments is substituted for over-all management. And to those unwilling to relinquish the possibility of employee participation in the general management, we now have an easy answer—that such participation will be far more effectively provided in the future by a simple system of representation by divisions, than by any system of individual representation.

It is now evident how much more is involved in management on an independent team basis than mere questions of wages. Those who have thought of it as just another method of remuneration are taking a superficial view. What it really amounts to is a genuine form of management sharing, a type of organisation capable of satisfying not merely the purely material need for remuneration, but also the varying degree of conscious or unconscious need for mental activity which is certainly one of the causes of social unrest, if not the most important.

Reconciliation of Individual and Collective Needs

In connection with this last aspect, which is essentially social, we may perhaps invoke the memory of the first Director of the International Labour Office, whose upbringing was so much influenced by the social thought of the generation of the 1848 Revolution. The idealism of Albert Thomas clearly saw how such a subdivision could be a means of introducing the co-operative spirit into modern industrial organisation.

In the paper which he read to the International Co-operative Congress at Ghent in 1924, he described the new possibilities opened up by such a subdivision of the undertaking into autonomous units :

> These free but responsible groups, by doing away with the hierarchical subordination of the workers while at the same time maintaining contractually their technical inter-relation with the undertaking as a whole, result in a special form of participation by workers in management. But it should be noted that this type of participation does not represent a limited influence on the general control of the undertaking, but complete management by the associated workers of each division in the undertaking which can technically be isolated from the latter's financial and commercial control.

It is impossible to overstress the importance of the point concerning limited influence—which is precisely the kind of influence wielded by works councils—when compared with the possibility of complete management by workers under the proposed form of organisation. From now on they will control so many aspects of the work which are of the greatest concern to them: the distribution of tasks according to individual ability (which no one knows better than themselves); the sharing of gain earned by joint effort, either in equal parts or according to the value of each man's contribution; the possibility of mutual aid as a result of evident community of interest; the substitution of spontaneous discipline for discipline imposed by external authority.

A proper appreciation of the wide possibilities offered by this method of organisation based on group autonomy will show that here at last is the reconciliation, so long considered unattainable, between the individual and the collective interest, as well as between the desire for freedom and the requirements of order.

Moreover, many other problems are solved at the same time, such as the problem of apprenticeship and of vocational upgrading. As a result once more of community of interests, all workers in such a group will have a natural desire to make the apprentice into a useful member of the group as rapidly as possible; practical experience has shown this to be true. This process is already the first stage of "promotion" (a subject much discussed in recent years), which can in practice only take the form of an enhancement of the value of each worker. For, in this field, the term "promotion" can obviously not be taken in the narrow sense of a rise from a given position to a higher one. Clearly one cannot promise every individual an executive post. But it is quite possible to envisage each man rising in relation to his present position by increasing his ability on the job.

The community of interests within the group will offer permanent opportunities for this type of promotion. Since the group will not consist of equal-ranking persons, as already pointed out, this form of organisation should enable those with the best gifts to rise spontaneously by a process of natural selection that is infinitely preferable to the processes of election which are still practised.

Practical experience has shown that this form of organisation could be introduced into various industries, and that it would prove most effective and successful where the employees have the greatest opportunity for intelligent participation. This factor, of course, varies with the technique of production. All that is required is a study of the matters in which the workers can assist directly and usefully.

It cannot be overstressed that this form of organisation by groups in no way hinders the over-all organisation of an undertaking, which must still be carried out on the scientific lines mentioned earlier. The point we have tried to make is merely that by stopping short of the line where the liberty of the "human element" must be considered, scientific management has reached only a stage of technical perfection. A last step remains to be taken, which we hope has been made sufficiently clear by describing current technical management as management minus the human factor.

By giving workers the possibility of active participation outside the field covered by scientific management, in areas where there is scope for individual decision on the job, new prospects of progress are opened up, along the lines described as "management plus the human factor".