**Work, Conflict, and Community**

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Since 1945, the number and scope of industrial studies undertaken in Great Britain have increased considerably. For the most part, they have been directed at such issues as productivity, absences from work, labour turnover, strikes, and a variety of factors thought to be connected with them. An important minority of such investigations have, however, been addressed to the actual ways in which work is organized, authority exercised, information communicated, and social relationships maintained. From these, there has begun to emerge, both in this country and elsewhere, an interest in the nature of the relationships which exist between particular industrial undertakings and the local communities in which they are set (Warner, Lloyd, and Low, 1947; Walker, 1950; Simey, 1954; Banks, 1956). This interest is readily apparent in a recent report by members of Leeds University* of a study which they had made of a mining community in Yorkshire. So far this particular development in social inquiry has not had much impact on medical research though clearly it is a promising one for industrial and social medicine.

At the time of the study, the community concerned had a population of some 14,000. Coal had been won there since 1868, and although one of the local collieries was closed in 1935, the great majority of the men were still employed at collieries in the town or nearby. There were comparatively few other kinds of jobs available in the area for men, and few of any kind for women. Most of the inhabitants came from families in which the menfolk of two, and often three, generations had worked in the pits. Thus for almost a century the fortunes of the local community had been bound up with the history of the local collieries, and through them, with the history of coal-mining in Britain. Despite the changes since nationalization of the coal-mines (changes which have often seemed less important to men actually working in the pits than to outsiders) the miners' past sufferings and their struggles against the coal-owners were still a very real part of everyday life. When changes introduced by the National Coal Board for the development of the industry generally, or even quite specifically for the benefit of the miners locally, come to be applied in the pits, far from being improvements, they may turn out to be, or may be construed as being, disadvantageous; they may even appear to be attacks on the miners themselves, their standard of living, and their hard-won rights.

Disputes about wages are endemic in the Yorkshire collieries, and hardly a day goes by without a strike in one of them. Since miners are wage-earners and their wage is the sole enduring economic link between them and their employers, the National Coal Board in London, most of the conflicts between miners and management take the form of wage disputes. In view of the remarkably changeable character of the working conditions in collieries, piece-rates and a complicated system of payments to cover any particular difficulties encountered hardly seem the most suitable methods of payment for faceworkers. Indeed, it is sometimes difficult to avoid the suspicion that these methods of payment and the organization of work in collieries are expressly designed to provoke conflict. These problems are, however, by no means confined to Yorkshire or even to Great Britain; disputes leading to strikes are more common in mining than in most other trades throughout the world (Kerr and Siegel, 1954).

The most thorough-going and forceful part of the Leeds inquiry deals with the organization of work throughout the colliery. Until now, the most detailed social analysis of a colliery has been that of Trist and Bamforth (1951), which dealt mainly with the operations carried out in winning coal by the "long-wall" method. The Leeds team show that there are other important elements to be taken into account in studying the social organization of the pit. The work of maintaining and extending roadways underground, of transporting coal to the shaft and miners to and from the face, the division of the underground workers into highly paid face-workers and quite poorly paid day-wage workers, together with the allocation of some of the "plum" jobs to allow for the dual responsibilities of trade union branch officials, and the previous experiences of miners on jobs other than their present ones, are shown to be powerful factors affecting the miners' reactions to the tasks immediately to hand, and their behaviour in situations at any given moment.

The faceworkers, who earned high wages by a kind of collective piece-work, displayed the greatest degree of cohesion against management. Men working on the transport system and other men on day-wages underground usually received no more than the minimum rate for this kind of work and earned perhaps only half as much as faceworkers and other contract workers. Their work was comparatively monotonous, its pace set by the machinery they tended, they had little control over it, and since, unlike the jobs at the face, their jobs were not interdependent, such workers did not develop permanent social groupings among themselves to anything like the same extent as the faceworkers. In this they resembled semi-skilled workers employed on assembly lines under broadly comparable conditions (Walker and Guest, 1952).

The main chance of occupational advancement for the day-wage workers was to become a faceworker. For the faceworkers themselves the main opportunity lay in getting an equally well-paid or even better-paid

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contract job on "back-ripping" or other development and repair work which was much less tightly scheduled. In practice the union branch officials had a lien on such jobs, so that their allocation was greatly affected by the conflicts inherent in the position of these officials. Such men could not simultaneously work at the face and represent their fellow workers in meetings with management, which were frequent, or carry out other essential union activities. Management, for its part, was usually willing to allot these less tightly scheduled jobs to union officials, who, in any case, were usually drawn from the ranks of the more experienced miners, in order to avoid any charges of discriminating against them on account of their union activities. At the same time, the frequent meetings between branch officials and managers, and the advantages which the former appeared to enjoy in obtaining relatively "soft" well-paid jobs were a constant source of friction with the men they represented, a conflict by no means peculiar to mining.

The theme of "industrial conflict", of conflict between workers and management, between workers and their unions, and between different sections of workers, which runs through the whole of this study has increasingly come to the forefront in industrial inquiries and indeed supplies the title for an American symposium on industrial relations (Kornhauer, Dubin, and Ross, 1954). In a sense, conflict is also one of the major issues underlying a further report on research at the Glacier Metal Company.* Observing that "the industrial scene continues to be disturbed by recurring difficulties in settling wages in the absence of a defined wage and salary scale", Dr. Jaques outlines methods which "might be considered a possible route towards a systematic pattern of financial reward in relation to the level of work done". In a complex situation involving many conflicts of interest, the discovery of one stable set of components might abate, or even remove, some of the conflicts. It is commonly thought that there is no real agreement between different sections of workers and management about "the rate for the job", or, more specifically, the appropriate rate for work done at a particular level. However, in the course of his inquiries, which are a continuation of studies already reported elsewhere† (Jaques, 1951), Dr. Jaques found that there did appear to be quite general agreement about "the rate for the job", provided that a distinction was made between the amount of work done in the course of a job and the level of work it represented.

To assess this level, it was necessary to discriminate between the prescribed and the discretionary content of the jobs being studied, and though there were many difficulties in the way, these were by no means insuperable. For the purpose of that analysis, the results of a job were taken as wholly prescribed, but the methods by which they were obtained appeared only prescribed in part. To some extent, there was always an element of discretion or judgment exercised in the use of particular methods, unless the job was absolutely automatic. This discretionary component of the job constituted the basis for making comparisons between jobs which, on the face of it, appeared completely different, since it contained an element which was unquestionably measurable, namely time. The maximum time span or period of time during which discretion was exercised before the work done came up for review, directly or indirectly, by a superior was found to be related to the wage or salary received, irrespective of the kind of work done or the title by which the occupation was known. Moreover, people who had about the same "maximum time span of discretion" tended to have similar views on what was a reasonable reward for their work.

Initially, the analysis was applied to the managerial and white-collar jobs in the firm, but it then appeared that it could be extended to manual work. The ensuing study of manual jobs gave rise to a new conception: that the level of work was related to the amount of the product which had to be scrapped as a result of failure to exercise "discretion"; thus discretion was related to the avoidance of damage. In this way it appeared possible to relate wage levels to the avoidance of damage in the course of production; the greater the potential damage that a worker might cause, the higher his level of work, and the higher his wage level. This in turn seemed to be related to the current rate of interest on loans. If the current rate of interest was, say 5%, an employee's wage or salary over the period during which he exercised discretionary control was roughly 5% of the value of the resources he controlled during that period.

Such procedures represent a major innovation in the study of work and wage structures. If the principles underlying them are at all applicable in industry at large, their impact could be very great indeed. It is therefore worth considering briefly what their probable limits are. One rough but ready test of this is the ease with which the main hypotheses can be reduced to absurdity. In the present instance, unfortunately, it can be done quite readily. If a worker's wage is, in effect, to be related to the amount of damage he avoids doing, it seems to follow that the less he does, the less risk he runs of producing scrap. The very best thing he can do is to stay away from work entirely because he then avoids the risk of causing damage altogether. Perhaps this is why shareholders are entitled to receive dividends. Actually manual workers and routine clerks, whether on piece rates or time rates are compelled to attend their place of work and to maintain a certain minimum level of production. In Dr. Jaques's notation this minimum constitutes an important part of the prescribed content of the job, and managements do indeed try to set the amount of work to be done. These attempts, however, often meet with considerable opposition. Disputes about production and the speed of working, especially in terms of wages, are the very stuff of industrial negotiations. Moreover, even when agreement is reached between unions and management on minimum levels of production often there is still considerable scope for controlling the pace of work and production itself on the shop floor, especially when...
A Discussion of Technique and an Analysis of Errors in Taking Industrial Histories in Coal-miners

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The following description of the technique of industrial history taking employed by the Medical Research Council's Pneumoconiosis Research Unit in their chest radiography surveys at various collieries in this country (Cochrane, Davies, Chapman, and Rae, 1956) may be of some practical interest.

The technique we employ is simply to ask each man to give a chronological account of his occupations and places of employment since leaving school, and the information is tabulated on our industrial history form which has a series of sub-divisions into: (i) surface and underground occupations; (ii) various types of dust exposure—coal, stone, mixed, and minimal; (iii) the actual occupations. As our dust measurements have only been made at the coal face during the coal-getting shift, the occupations included under this heading are specially grouped. Other sections of the industrial history form are used for (i) any other information which has been collected at a particular survey, such as anthropometric of social data, (ii) the industrial history in the periods between surveys.

Practical complications arise during the actual history taking as a miner's working life is commonly elaborate and he often finds it difficult to remember every detail of his career in the correct sequence, especially any periods of unemployment, but we have enjoyed the cooperation and forbearance of the vast majority of the miners we have interviewed.

As it is by means of his industrial history that a man's dust exposure may be estimated and related to the radiological findings, it is apparent that the same care and meticulous technique should be applied to the taking of an industrial history as to the reading of the radiograph, but the possible errors in the former were not appreciated so early as were those of radiological diagnosis, and we have found no reference to their magnitude in the literature. Over 20 people have taken industrial histories during our surveys and we have investigated in three ways the observer error involved:

1. Retaking industrial histories of the same men after a period of two and a half years; complete industrial histories were taken of the "pure face workers" at a South Wales colliery on two separate occasions in 1947 and 1949, and the results are compared in Table 1. The errors appear small and random, even though this

REFERENCES