

# Scientific Management in the Coal Industry<sup>1</sup>

A Report on the Development of Methods of Centralized Production Control  
by the Davis Coal and Coke Company.

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## FOREWORD

ON account of its almost general acceptance and use by other industries, particularly the automotive industry, and the big part it has played in their orderly development, it was felt that scientific management must have something of value to offer the coal mining industry. Believing that one way to find out what it had to offer in the way of possible solutions for operating and management problems, Mr. R. P. Maloney, Vice-president and General Manager of the Davis Coal and Coke Company, whose mines are located in West Virginia, Maryland and Pennsylvania, authorized an examination or study. The complete study covered many of the phases of scientific management but the one chosen for the first installation was centralized production control.

The choice, I believe, was a wise one because it had for its purpose increased productive effectiveness and it intimately touched upon the work of those producing at "the face"; those whose departments supported the miner at the face, and finally, the men in charge of production and costs.

I owe an expression of appreciation to Mr. Maloney for his executive assistance; to J. M. Carmody at that time Vice-president in charge of industrial relations, for help in the design of the chart and methods used; to the engineering and production departments, including the superintendents and mine foremen, for their co-operation and interest. Even to the men in the mines I owe something because no one opposed this apparently unseemly intrusion into the daily work that they had a right to think they had been doing quite effectively for years.

<sup>1</sup>A paper presented at a joint meeting of the Management Division of the American Society of Mechanical Engineers and the Taylor Society, New York, December 9, 1926.

### Production Control Chart:

This production control chart was a test of centralized production control in the application of scientific management to this company's operations. It was part of a searching test to see if scientific management offered anything in the way of possible operating and management economies for this particular company. By the use of this chart the management was able to have direct contact with and immediate control over every operating function that affected costs and production in each of the mines included in the test, and eventually in all of the mines in a division. By a previous arrangement a mine's operating costs were known in the general office before nine o'clock of the day following. This method had already been in use before the chart was started, and fitted into the general plan of control.

By exact control over production I mean control over every producing unit that entered into the general production and management organization of the division. This control, exercised by the general superintendent's office, extended clear to the miner at the working face. The old idea that the miner at his work is an isolated character as to control and supervision was dispelled. By means of this chart intimate contact was made with him and almost every action he performed recorded. The man who handled this chart during a day's work performed functions similar to those of a train dispatcher on a railroad. It became, as it were, a living and moving chart depicting almost every move that was made in a mine during the day. It was a living, moving, and accurately reproduced action record.

On this chart, the first column is Heading Symbol. Under this heading was placed the division or district of a mine served by one gathering unit and its crew. The next column heading is Place Number, or the room number in which the miner and his

[illegible]

Figure 1

## COMPLETE CONTROL BY DIRECT CONTACT

Control by means of this chart is obtained through direct contact with production centers—straight line production methods. The official in charge of production has immediate contact with each of the service organizations. As shown on the organization chart these exist to support production. Communication is afforded by adequate telephone service.

"buddy" worked. The next column is Name, which is divided into two sections. The reason for this is that two men worked in a room. Then follows the Check Number, under which heading went the check numbers of the men working in this room.

The column following this is Number Days Work Ahead. It was intended that as every room was started from a heading it should be given an estimated life in days. A room starting up might have an estimated life of fifty days; then for every day that this room worked its life would become less; for example, the prospective life of the room would be forty-nine, forty-eight, forty-seven days, and so on, as each day decreased its life.

The purpose of this was to co-ordinate the work of the production and engineering departments in order that adequate plans for future operations might be made and so scheduled as to stabilize

production by balancing advancing and retreating work. Scheduling of miners so that they might know several days in advance where to go, without loss of time, as each place was finished was also a desired goal. It was intended that this information should form the basis of a budget system in which production and expenditures would be scheduled for a year ahead.

The next general sub-division of the chart is Days of the Month. Each day is divided into four parts. It was originally intended that the motemen serving this section should make reports at interval of two hours. This idea of two hours was later made to fit the convenience of the motemen. When everything was running well the interval was seldom longer than two hours, but the time of reporting was made to suit their arrival at a side track. It so happened that their time of arrival at the side