

cars to go to the heading which was most in need of them.

It should be noticed that no elaborate or particular attention was paid to main line haulage locomotives. The control over this class of service was incidental, as the production manager was in constant communication with the gathering motormen and the main haulage motorman got information as to the distribution of cars at any time it was needed. If anything unusual happened the production manager could call the main line motorman. For instance, if a trip of, let us say, forty cars was directed toward a certain heading and the production manager found there had been a wreck or delay, he had these cars switched over to another heading where they could be used more advantageously.

The production manager had a constant check over all the available haulage equipment. He knew at all times what locomotives were in the repair shop, and their exact status. As this man was primarily responsible for production and was the central unit around which the production and service departments revolved, it was his duty to see that no haulage equipment was allowed to remain without repair.

In regard to the simplicity of this chart it should be noted that totals are cumulative, that is, each motorman reported his total number of loads pulled, which was added to the previous number or the previous total reported so that the cumulative total at any time during the day was shown. This meant that at the end of the day's run the only work required was the addition of the cumulative totals reported by each gathering unit to arrive at the total cars gathered for the day. This total was used to check the tittle report of the total number of cars hoisted, which was in turn checked with the total or standard expectation for the day, which had been set at approximately nine o'clock in the morning. As this estimated total was based upon the men actually available for loading coal, it was recorded when a man stopped loading coal during the day. This solved the old question of how long a miner works. Such a record and such production control also assured the miner, who was really interested in his work and in loading as much coal as he could to increase his earnings, of all the cars he could load. All the delays and inefficiencies that had occurred during the day's work, and had

hitherto been buried and unsuspected, were brought to light. This was not only a check on labor, but also a check on management.

We now come to the sub-division that surmounts the whole day's operation, which is divided as follows: Total Number of Miners In, which is the number of men classified as miners who have reported for work in the morning. The next total is Miners Loading. There is a vast difference between the number of miners who have reported for work and the number of miners actually loading coal. Heretofore the information used had been the total number of miners who reported for work. This, of course, was the information that the mine foreman had, and he seldom knew the number of men who were taken by other section foremen to do track work, or to substitute for any of the other day labor. Aside from these demands upon the mine's tonnage men, there were other production loss factors; such as, clay veins, bad track, short cuts by the cutting machine, small and large falls of roof during the day. There was also the fact that men left their work without reason at any time during the day. Every one of these happenings was reported to the production manager almost as it occurred.

The next heading under this general sub-division is Total Loads Expected Today—Standard. This was the beginning of setting standards, based upon capacity, because, as it was previously explained, actual conditions furnished the basis for them. This was one phase of the chart that the mine foremen themselves appreciated. Heretofore when the general office had used the total number of miners reported in as a standard upon which to base an expected production, the mine foreman was put to it to explain why his tonnage did not equal the tonnage per man times the total number of miners reported in.

The next column is Average Loads Per Man. The production manager used this column to set his standards, and having run these figures over a period of time he was given very accurate information upon which to work. The next heading is Total Inside Day Men. This is the total number of day laborers reporting for work. The next is Total Outside Day Men. Next comes Total Cars Coal Hoisted; this column is sub-divided into Cars on Hand A. M. and Cars Left Over P. M. And then there were the Total Cars of Rock Hoisted.

It was intended that this chart should be the pivot around which would revolve the entire operating, management and service organizations of the company; in other words, the regular weekly conference was held around this chart for the purpose of enabling the general manager to check up on the operations of his staff, to lend them his assistance and point out to them the moves that would be of the greatest value to them. The every action of the entire organization was, as it were, photographed, and it was possible for the general manager to analyze conditions concisely. It might be stated that such a chart was self-analyzing. As one chart was made to cover an entire month's operations there were no sheaves of papers to handle, or masses of confusing figures, in checking over and analyzing any part of a current month. Everything stood out by itself.

The use of various colored pencils made each of the sources of production losses stand out, and I might say, speak for itself. For instance, the num-

ber of men laid off for dirty coal was shown. The number of men losing time on account of sickness or injuries was indicated by red lines. Then there were the blue lines running across the pages to signify men remaining away for some reasons that were within their own control, and the yellow spaces indicated production losses due to management. It was the aim of the management to keep down the yellow marks on this chart as much as possible, because time lost by the miner, which was not directly his fault, was charged to the management. For example, if a miner lost several hours on account of no track, a short cut, or other delays, the production manager marked this in yellow opposite his name.

A distinction should be made here between a good or fair standard of production and an average. Where there is a combination of high and low producers, the result is average production. The high man helps to bring the average up, and the low man pulls it down. Standards were not based upon

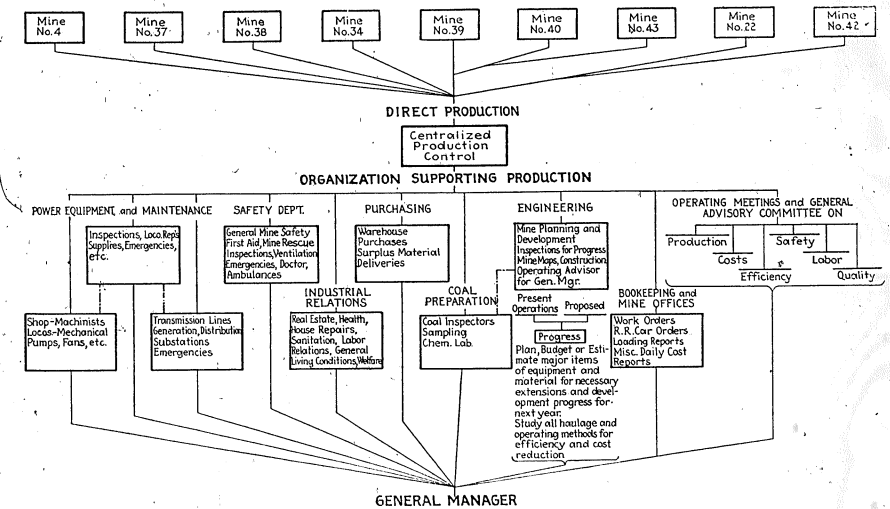


Figure 2

ORGANIZATION FOR PRODUCTION AND RESULTS

By making the official in-charge of centralized production control the one responsible for production and costs, all the other departments become in the nature of supporting units. Responsibility for the adequate support given production by any of the service departments can be definitely located by the operation of the production control chart, the object of which is organization for production.