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SHOOTING FROM THE SOLID.

In Nova Scotia there is considerable run of mine sold, and as there is a constant cry for big outputs it is possible that the desire to obtain large or lumpy coal is not so keen as twenty years ago. Nominally fast shooting is prohibited at most of our mines, but our information is that it is practised at times. The following extracts from paper read by Professor Steel of Arkansas University are commended to men and managers alike for perusal. And the part relating to the profits of the Arkansas mine operator is respectfully submitted to the Free Coal League, and all others who torture their souls wondering how the U. S. operators can sell coal so much cheaper than those of Nova Scotia. It will be noticed that though they did it, that is, sell more cheaply, they should not have done it, for 48 per cent. only did it and remained well; 24 per cent. did it and went in decline, and 28 per cent. did it and died.

"In the early days of coal mining, as you all know, only the lump coal had value and payment to the miners for anything but lump coal was considered absurd. In order to get as much lump coal as possible, the miners under these conditions developed the careful system of undermining all coal before blasting it. This method of mining also required very little powder and continued in vogue, until the great reduction in this price of powder tempted the miners to let the powder do the work. This led to the practice of shooting coal off the solid in those districts where the price for mining coal was high enough to pay for the extra powder. This means that the miners who get the highest unit wage do the poorest work. In times of scarcity of labor, this effect is common with other workmen, but the effect of poor methods of work is much more serious in the coal mining trade.

Even before the mining methods had changed, the industrial development of the country provided some sort of a market for the slack coal. As soon as the slack coal became a marketable commodity, the costs of mining coal and the statistics of the output came to be figured upon a mine-run basis, without regard to size. Coal was also occasionally sold to the consumers upon a mine-run basis. In filling such orders it was not necessary to screen the coal, but in order to avoid this screening, it was necessary to agree upon a mine-run scale of payment to the miners. Thus the buying of coal upon a mine-run basis first led to the payment of the miners upon a mine-run basis.

Even before the mine-run basis of payment to the miners was steadily used at any one mine, the practice of shooting off the solid became common in the Inter-

ior Coal Field. As a result the percentage of slack increased so greatly that the operators sought to dispose of it by increasing the use of mine run instead of lump. At the same time, distant consumers began to use more mine-run coal instead of slack. In this case, the operator was not so greatly concerned with the proportion of slack in his coal, but could attract plenty of miners by offering them the mine-run scale of prices.

This method of payment, therefore, became sufficiently common for the miners to learn how much easier it was to get out a dollar's worth of mine run coal than a dollar's worth of good lump coal. By this time also many of the operators foresaw the disastrous results of a mine run basis of payment and held out for at least intervals of payment upon a lump coal basis. To remove this condition the miners secured the passage of laws prohibiting the screened coal basis of payment in many of the interior States. Some of the more recent of these laws, such as those of Kansas, Arkansas and Oklahoma, not only require equal payment for all sizes of coal but also compel the operators and, therefore, the railroads to pay full price for the slate a careless miner sees fit to mix with the coal. For fear of indulging in too strong language, I will refrain from expressing my view of such provisions of the law. To adequately express it, I could possibly gain a better command of language by listening to some of your firemen who have to handle the stuff produced by miners working under the temptations of such a law.

The mine run basis of payment to the miners led to such an increase in the use of powder that the firing of shots caused frequent dust explosions. To avoid this danger to themselves, the coal shooters have secured the employment of shot-firers, who get sufficient pay to tempt them to run the risk. The only thing which now induces the more careless miner to save powder is its cost. Unfortunately this is not very effective because the miners are learning to blow the coal to pieces in a still more convenient way by putting in shots which are much wider and longer than those they used in the older and more careful methods of shooting off the solid; that is, they are dislodging more coal with each shot than formerly. With no increase in the proportion of powder to coal, doubling the width and the length of the shot requires four times as much powder in each hole. Such heavy shots so jar the tight mass of coal that it becomes little more than a heap of slack. If the attempt were made to increase the powder in an old style thin shot to get the same proportion of slack,

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