

TABLE VII. COMPARATIVE EFFICIENCY TWO-SHIFT AND THREE-SHIFT SYSTEMS

ROLLING MILLS

(Colorado Fuel & Iron Co.)

	36" Mill	Rail Mill	40" Mill	No. 1 Rod Mill	10 % Mill	12" and 14" Mill	12" Mill	20" Mill
Tons per hour								
Jan.—June, 1918	41.42	37.99	31.66	16.54	8.62	9.49	1.69	4.24
Jan.—June, 1919	52.48	47.81	33.90	19.61	9.84	7.95	1.66	3.86
Increase or decrease	+11.06	+9.82	+2.24	+3.07	+1.22	-1.54	-.03	-.38
Per cent	+26.7	+25.9	+7.08	+18.55	+14.15	-16.2	-1.77	-8.95

put, or double up on jobs. So the labor force was increased 50 per cent, wherever the change was made from 12 to 8 hours. So far as the blast furnaces and open-hearth furnaces were concerned there was no increase in output expected or realized. Table VII shows the tons produced per hour on the rolling mills during the first six months of 1918, which came before the change, and the first six months of 1919, which came afterwards.

It will be observed that no gain in production was shown by the 12-inch and 20-inch mills. On the contrary, while the production varied up and down greatly from month to month, the average for the six months' period after the change was a little less than for the six months' period before the change. These mills are an old type of hand mill and the wages paid are the Amalgamated scale, and it was felt by the management that the tradition with regard to the output that should be produced helped to keep these mills about stationary.¹ The 12 and 14-inch mill also shows a falling off in production and there seems to be no good reason why this should have been so. The other rolling mills all show a gain in output, in some cases a substantial one. It should be explained, however, that the increase in production on the 36-inch mill and rail mill, which averaged about 26 per cent, was largely due to the fact that under the 12-hour system the mills had not been well supplied with ingots. Under the 8-hour system these mills were run just two shifts of 8 hours each, and the facilities for heating the ingots are now adequate for keeping the mills supplied for the 8 hours that they now run. So this increase in production was to a large extent only indirectly due to the shortening of hours. The better showing on the three other mills was attributed by the management in the main to the shortening of

hours. It will be observed that the best record was made by the No. 1 rod mill, which showed an average gain for the half year of 18½ per cent. These men were on tonnage rates both before and after the change—as were also the men on the 10-inch mill and some of the other mills—and they started out with the determination of doing as well financially on 8 hours as they had formerly done on 12. They did not make it, evidently, but the increase in tonnage was substantial. While the figures show that increased tonnage is a possibility rather than a necessity under the three-shift system, it might be observed that the mills on which there was an increase of output were much more important than those on which output did not increase. In fact two of the latter mills only operate one shift each, and the other only two shifts (of eight hours); so that it turns out that the total shifts operated by the mills which showed increase in production was 13, and the number of shifts on the mills which did not show increases 4.²

In considering the eagerness of the Colorado employees to go on three shifts, it should be remembered that the percentage of Americans is about twice as large at Pueblo as in the steel mills in the East, and

¹An examination of the figures for the separate months would lead one to doubt, however, as to whether there was any planned effort to keep production stationary, or hold to any fixed standard; for, as between months, the record varied greatly, some months showing a large gain, and others a very large loss.

²It should be kept in mind, however, that production in steel mills rises and falls for a variety of reasons, and the introduction of the three-shift system was only one of various factors operating. So too much stress should not be laid on these figures. Since they were collected, production in Colorado, as in steel mills all over the country, has, in fact, fallen off—for reasons entirely unconnected with the length of the working day. The last two or three months, however, production has again been rising.

also that sentiment regarding the 8-hour day is much more pronounced in the West than in the East. Some years ago a state law was passed in Colorado prohibiting the employment of men in smelteries or mines for more than 8 hours, and doubtless the development of sentiment on this and similar occasions helped to prepare the way for the steel industry's going on three shifts.

Nevertheless, the experience in Colorado is valuable as suggesting how things might work out if the whole steel industry, instead of isolated plants, should go on three shifts. As long as one's neighbors in 12-hour plants are getting large wages, it is hard for oneself and family to accept a substantial reduction, even though one feels that the shorter day is better. But the Pueblo plant constitutes in itself the steel industry in that part of the country. The time was favorable for a change; in that the lull which followed the armistice was already beginning to appear. Under these conditions, the Colorado Fuel & Iron Company changed over quickly, without special cost, and to the satisfaction of everyone concerned.

As just indicated, it is what those around us are getting that influences our idea of a proper wage rate, even more than our own needs for money. Accordingly, while in isolated plants and localities the employees have often been anxious to go on three shifts, even if they could hope for but little increase in hourly wage rates, in those plants which are in close proximity to steel companies paying large wages for long hours it has been more difficult for the men to see their way to accepting substantial reductions in earnings. The farther East one goes the more necessary it is to keep total earnings somewhere near what they would be in two-shift plants. For this reason, and because neither employers or employees like to see earnings drop suddenly as much as one-third, it has been the usual practice in eastern plants, especially in recent years, to advance hourly earnings somewhere near 25 per cent—and, in a very few instances, even more.

As our last detailed illustrations, we shall turn our attention therefore, to two plants, one of which increased its hourly earnings 25 per cent, while the other has aimed to keep the weekly earnings of the men as high as they had been under the old system. The chief interest in connection with these plants centers about their efforts to keep labor cost from rising.

4. THE INTERNATIONAL HARVESTER COMPANY

The International Harvester Company, through its

ownership of the Wisconsin Steel works at South Chicago, operates three blast-furnace stacks, besides Bessemer converters, blooming and bar mills, a coke works, and various auxiliary departments. At one time two-thirds of the employees were on 12 hours. About 1913 the Bessemer and bar mills were put on three shifts, and in 1919 all continuous processes were put on three shifts. At a later date the 8-hour day was introduced into all departments in accordance with the wishes of the men as expressed through their industrial council plan. There is an arrangement by which each employee gets off one day a week.

In making its wage adjustments the International Harvester Company went just half way with its employees, the men being given just ten-twelfths of what they would get in a 12-hour plant. This 25 per cent increase in hourly wage rates has, however, been partly offset by two things. First, taking the average for all departments, the labor force was not increased 50 per cent. The management went over this matter of taking on new men very carefully with its foremen; it was figured out just what new men would have to be taken on, where they could be obtained, and how they could be trained. Second, there was also some increase in tonnage. Prior to the time when the rail strike introduced abnormal conditions into production the increase in output had for six months run along at a rate which almost, though not quite, kept labor cost down to the former level. Conditions have not been normal for a long enough period to know whether it would be possible permanently to maintain production at a standard that would mean no increase in labor cost.

There has sometimes been difficulty in getting common labor in competition with neighboring two-shift plants, but as regards the bulk of the employees the company feels that it gets a much better pick of men than while it was on two shifts. While the company does not wish to influence other companies one way or the other as regards their shift systems, one of the very last things that the management of the International Harvester Company would consider doing would be to go back to two shifts.

5. THE AMERICAN ROLLING MILL COMPANY

The American Rolling Mill Company has blast furnaces at Columbus and rolling mills at Middletown and Zanesville, Ohio. Their three-shift operation is at Middletown where there are two plants which constitute the main works of the company and employ