

finitesimal areas, where labor organization did have its precarious foothold.

### III. REASONS IN FAVOR OF GOING FROM TWO SHIFTS TO THREE.

It is the primary purpose of this paper to recount the actual experience which steel manufacturers have had in introducing the three-shift system, rather than to make the discussion a mere debate regarding the abstract arguments in favor of three as against two shifts. But having, in the interest of a better understanding of the problem, which the three-shift manufacturers have had to face, recounted with some care the reasons why the old two-shift system became so deeply imbedded in the traditions of the industry, it is only fair that some mention be made of those yet weightier reasons why in fairly recent times a great many steel men have come to feel that the days of the two-shift system are definitely numbered.

First I wish to remove the impression which may have been created that the matter of health is not involved at all. While the general opinion of well informed steel men, even those who are much in favor of three shifts, is that the 12-hour day is not hard on the men physically, such a statement is probably only approximately correct. It is hard to believe that 12 hours in a shop is as good for a man physically as 8 hours in the shop and the balance outside. It seems possible that if we had health records as accurate as those which we shall later examine for the quality of open-hearth steel, we should find that 8 hours would keep a man in better health and increase his longevity in comparison with what would be the case under 12 hours.

But whatever may be the truth with regard to the 12-hour day as it is ordinarily met with in the steel industry, all well-informed persons will agree that there are times and places when the long day does mean 12 hours of gruelling work. When something goes wrong on the inside of the blast furnace, when the open-hearth furnace needs constant attention during a long period of hours, then there can be no doubt but that the 12-hour day is a strain. Also the 12-hour day when joined with the 7-day week makes an especially vicious combination. It means that once every two weeks or so a man is on continuous duty for 18 or 24 hours, while only once during this two-weeks period does he get off for any longer period than 12 hours. The system is without a factor of safety, so that when emergencies compel a man to

work overtime, or stand the turn of some one else, strain at once sets in. The long hours also have the indirect effect of stimulating a man to excess when once in a while he does break over the traces and take a day or several days off.

So it would probably be assuming a good deal to say that the 12-hour day is in no respects a strain on the health of steel workers. Yet the principal argument against the two-shift system is not the physical argument. If men had bodies only, if they had no other purpose in life than to make money for themselves and their employer, it would be doubtful as to just how strong an argument could be made against the 12-hour day. The true nature of the two-shift problem becomes apparent only when we begin to think of a steel worker as a man, stirred by the same impulses and having much the same out-of-shop interests and obligations as have other working people and other citizens. It is not so much because of what goes on inside the shop as because of what a man misses outside that the steel workers in these later days are beginning to change their minds about the advantage of the 12-hour day; while many other persons, both outside and inside the steel industry, are becoming concerned over the same problem.

Puddling and sheet mills, the two partially organized departments, are the only branches of the steel industry where the three-shift system is at all general. True, the work in both these departments is so arduous that it has been demonstrated that the shorter day is more efficient; but the shorter day would probably also be more efficient—though not so much so—on the cold rolls (of sheet mills); but the cold-rolls department, which is not so well organized as the hot-rolls department, has not so generally had the shorter day. (It means that the day about the hot mills was first reduced to two shifts of less than 12 hours each, and that technical conditions favoring continuous production were a factor in favoring the introduction of three 8-hour shifts. The cold rolls are not operated strictly continuously, because of time required for grinding the surfaces of the rolls.)

One of the first of the more diversified steel plants to go on three shifts was the one steel plant which stands practically alone as being organized throughout. Of the blast furnaces now on three shifts a considerable number belong to that almost undiscoverable section of the blast-furnace industry which is organized. The introduction of the three-shift system into open-hearth and rolling-mill work has largely taken place in establishments which have already had the three-shift system in sheet mills; so that there was, in some cases, an indirect connection between union organization and the extension of the three-shift system. In some other cases it is possible to trace a more or less direct connection between the three-shift system and union influence; and, where there is no union, employers going to three shifts have in a number of cases had shop councils.

On the whole, however, the three-shift movement described in this paper has been an employers' movement, aided considerably by sentiment already developed in favor of a shorter day, but in the main pushed through by the management. It has, of course, been highly important that the men understand and cooperate in making so great a change.

What sort of a home life, one hears it asked on all sides, can a man have who, including the time lost in coming and going, is on the job practically 13 hours every day? Add to this an hour for meals and 8 hours for sleep, and barely 2 hours a day are left for the duties and pleasures of family and community life. For a few years the ambitious, newly arrived immigrant may seek such a life; and throughout life, the dull man, or the one-interest-in-life man, may run on contentedly on this schedule. But any indefinite continuation of such a system for a block of several hundred thousand persons would simply mean the accentuation and continuance in American life of those lines of class and culture which immigration has already made too dangerous and deep. Who wants to have, in America a class of men who do not know what to do with themselves unless they are under the orders of some one else? Is this the way to raise the general level of literacy and personal capacity, and build up in America a civilization in which we may take pride? The argument against the 12-hour day based on the proportion of a man's time which it consumes is in short simply unanswerable both from the standpoint of individual freedom and development, and from the standpoint of national power and culture.

I believe that it is very largely this humanitarian and national welfare aspect of the 12-hour day which is most in the minds of that large body of steel men who express themselves nowadays as opposed to the two-shift system. There is, however, another objection to the 12-hour day which should appeal especially to the members of the Taylor Society, and to all those engineers who are interested in the more effective utilization of human labor; and that is the fact that, so long as the steel jobs are on a 12-hour basis, the way is practically closed against the building up in the industry of any substantially more efficient or responsible labor force. Just how much more efficient labor can be on 8 hours than 12 and how much this greater efficiency is really worth in the steel industry, will not be apparent for a good many years. The whole layout of the industry and the spirit which pervades its functioning has necessarily grown up to fit the 12-hour day. The attitude of the workman, in feeling that he must hang back from work about half the time, the attitude of the foreman who feels that to get anything done at all he must drive, the lax moral tone which must pervade an industry where sleeping is tolerated, all these cannot but be reflected adversely in the attitude of the men towards waste, towards care of tools and equipment, towards responsibility for

quality in the product, towards absenteeism, and towards the development in industry of the scientific spirit. None of these ill-favored children of long hours can be made to disappear in one year or five years. But from the standpoint of those forward-looking individuals who would study the efficiency of processes and men in the steel industry, with the idea of building constantly a better organization, it would seem that the very first thing to do would be to get the men away from the 12-hour day. Who will deny but that in the long run a brighter future is bound to lie before an industry which has learned that work is work, and has decided that long dull hours, and half-asleep workmen will no longer do?

This, however, is looking beyond the present into the future. The decisive test as to whether the time is at hand when the steel industry should or must go on a shorter day should be furnished by an examination of hours in other industries more or less similar in nature. For if the entire country gets very far away from the 12-hour day, any man knows that there is small likelihood of one industry remaining perpetually on a different basis. The tendency towards standardization in the habits and ideas of people is too strong. For a generation or so rather strong differences may survive. But eventually people want to live and work like other people. The steel workers of today are more affected by what goes on in other industries than formerly. What, therefore, taking the country as a whole, is the drift today in matters of hours of labor?

Table I shows the hours worked in a number of the country's most important industries as compiled by the United States Bureau of Labor Statistics. This table, it will be observed, is not for the entire industry but is based on representative plants. It does not show the full extent of 12-hour work in the steel industry for the reason that the table shows not the hours of labor on any one day, but the average number of hours per day for each man during a pay-roll period. Thus if during a given two-weeks period, a 12-hour man worked only 6 days, or 72 hours altogether, his daily average would be 1/12 of 72 hours or 6 hours; and he would be classified not as a 12-hour, but as a 6-hour man. So the figure of 17 per cent is not to be taken as the proportion of 12-hour men in the industry. The figures are for the beginning of 1919 when work was so irregular in these steel plants, or labor turnover so high, that there were actually more men averaging less than 4 hours a day than there were over 12. Nevertheless, Table I does