

Lay Supplement No. 3

ALCOHOL AND  
INDUSTRIAL EFFICIENCY

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## List of Lay Supplements Published and in Preparation

### *Published*

1. The Problems of Alcohol
2. The Nature of Alcoholic Beverages and the Extent of their Use
3. Alcohol and Industrial Efficiency
4. Facts on Delirium Tremens
5. Alcohol, Heredity and Germ Damage
6. Alcohol and Length of Life
7. What Happens to Alcohol in the Body
8. Alcoholic Beverages as a Food and their Relation to Nutrition
9. Facts on Cirrhosis of the Liver
10. The Drinker and the Drunkard
11. How Alcohol Affects Psychological Behavior
12. The Rehabilitation of Inebriates

### *In Preparation* [Titles tentative]

13. How Alcoholic Beverages Affect the Body
14. Government and the Alcohol Problem

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## ALCOHOL AND INDUSTRIAL EFFICIENCY

THE problem of the influence of excessive use of alcoholic beverages upon the productivity of factory workers is one which, in this country, has unfortunately attracted little attention in times of peace when there is opportunity to study it dispassionately. When, however, an emergency arises which demands greatly increased production, the problem is apt to assume exaggerated proportions as though to make up for the neglect of the past. In the first World War, allegations about the detrimental effects of alcohol on the productivity of workers in factories were frequently made, often on highest authority. In the present war, similar allegations have been made, chiefly in France. It was alleged that excessive drinking, especially among munition workers, seriously interfered with production. It was even charged by the Vichy government that the downfall of France came about through the rise of alcoholism in that country.

Reading these charges, one may become concerned about conditions in this country. But it is also well to remember that whenever things go wrong it is not unusual to look for a scapegoat. And scapegoats may distract attention from the real causes and so impede their remedy.

The primary question that concerns us here is: Does excessive drinking constitute a menace to factory production, or is attention only being diverted to a scapegoat?

To this problem no one can now give a certain and positive answer, first, because the problem has rarely been defined in its full scope, and second, because sufficient information has not been gathered on many important aspects. Attention has often been focused on only one or another phase of the problem by those who have not seen the magnitude of the entire problem; in finding answers to the smaller problems they have erroneously assumed they have answered the whole problem. What we shall attempt to do here is to define the problem in its broadest aspects

in order to set out the various parts and then give for each, such information as is available. And this information in the United States today is meager.

## DRUNKENNESS AND FACTORY PRODUCTION

A great many students of factory production have considered the problem of excessive drinking only so far as it concerned the interference with work from actual drunkenness. Such interference was at one time a serious problem. It is not serious now. Consequently those executives who see the problem only in this narrow scope erroneously believe that the whole problem has been solved.

In the past, heavy labor and the use of alcoholic beverages were associated in the minds of many people. It was believed that alcohol restored the strength used up in bodily exertion and hence that it was practically a necessity that a workman should take a hearty drink several times during his working hours. As a consequence, it was customary for workers to bring a bottle of wine or spirits to the factory. Drinking was sometimes encouraged in industries because of this belief.

As industrialization grew, doubts arose concerning the wisdom of this practice. This was especially true since an important civic problem was arising from the increase in abnormal drinking and alcohol addiction which paralleled the shift of population from small towns to large industrial cities. The question, whether or not the drinking of alcoholic beverages was necessary to maintain the strength of the workmen, had to be decided, not by opinions but by scientific investigations. The practical questions asked by industrial leaders gave rise to scientific studies to determine whether alcohol was a beneficial, even a necessary, food in hard work, or whether its use impaired manual dexterity.

Experiments\* have shown that alcohol does not restore muscular strength, but that by disguising the feeling of fatigue, it enables the worker to draw temporarily on his reserve strength at the possible expense of future efficiency. When it was found that the consumption of alcoholic beverages during working hours was not a necessity, industry began to adopt rules against drinking in

\*The experiments are described in other Supplements.

the factory or during the working day and many labor organizations made this principle their own.

Some of the American labor organizations that took steps against heavy drinking among their membership in the 1890's, or even earlier, were the Iron, Steel and Tin Workers; the Metal Polishers; the Core Makers; the Iron Molders; the Wood Workers and the Cigar Makers. Organizations of railway employees were especially strict concerning drinking on duty and they took stringent measures to discourage excessive drinking among their members. Some organizations refused to reinstate members who had been discharged because of drunkenness; and others deprived habitual drunkards of benefits to which they would ordinarily have been entitled during sickness, accident or unemployment.

Thus drinking on the factory premises came everywhere under disapproval and the sight of a man intoxicated at his work has become rare. But that fact does not signify that drunkenness today has no effect upon production. Some men may have come to work drunk and have been sent home and others may have been too drunk to come to work. The question becomes then, not how many men are drunk in the factory but how many working days are lost during a year because of drunkenness? Although this would appear to be a highly pertinent question for the industrial manager, few reports have been made on it in the United States.

One of these few—the most recent—is from a survey in a large steel mill employing 14,497 men. During one year, 382, or 2.6 per cent, of these workers were absent on one or more occasions because of drunkenness. The total time lost amounted to 483 man days out of a total of 3,865,488. If the results of this survey are reasonably characteristic of American factories in general—which cannot be asserted on the basis of this survey alone—we must admit that the problem, although not negligible, is not a serious one.

And because absenteeism due to drunkenness does not seem serious, many people have dismissed the whole problem of drinking and factory production as unimportant. Those who view the problem in its broader aspects, however, see that this part,

although the most obvious, is not the most important. The important question is: How much does drinking indirectly increase absenteeism, accidents and spoilage?

### INDIRECT EFFECT OF DRINKING

There are men who may never come to the factory drunk or ever stay away from work because they are drunk but whose work may suffer from the indirect effects of excessive drinking.

As we have said in a previous Supplement,\* there are many excessive drinkers who are not true addicts and are not chronic alcoholics but who, because they have an exceptionally high tolerance to alcohol as far as drunkenness is concerned, drink large amounts of alcoholic beverages. These individuals do not escape the hang-over from sprees. And likewise they do not escape the ill effects on their health from long-continued excessive use of alcohol. Both of these results may interfere with their work at the factory but both may also remain unrecognized.

A note which appeared in the Annual News Letter of the National Safety Council 1936 describes the situation as it applies to the heavy drinker with the hang-over. "We are not assuming that employees stagger to work and drape themselves around the machines, because they would immediately be corralled by the foreman and evicted; instead, we are dealing with the individual who takes part in a carousal which lasts into the wee hours of the morning, gathers himself up from under the table and totters uncertainly homeward. After a few hours of so-called slumber, he reports for work still in a daze, but from all outward appearances he is a very fine sober-looking gentleman. . . . To a man in this condition, safety laws are just that much rubbish."

When we turn to the literature on alcohol we find little information to help us in this part of the problem. We find, first, that although everyone knows what a hang-over is, there is little scientific knowledge as to the nature of the fundamental changes in the body which give rise to the symptoms of the hang-over. We find in the literature, numerous interesting reports dealing with the immediate effects of alcohol on strength, dexterity and output of work. We find a great many publications bearing such

\*Lay Supplement No. 1.

titles as "Alcohol and Work," and "Alcohol and Industrial Efficiency," but in the main they deal with the immediate effects of heavy drinking. They support the fact that everyone admits: the intoxicated man is not a good workman. But any importance they might have disappears with the fact that the intoxicated man is not permitted to work.

The employee whom we are interested in here does not come to the factory drunk, or even with alcohol on his breath. He drank heavily after working hours the previous day and is not suffering from the immediate effects of alcohol. He may be suffering from a hang-over. Even if we disregard the lack of scientific study of men in this condition and base on common knowledge the fact that he is a poor workman and one susceptible to accidents, our problem is not solved. It is not solved, because we have no way of knowing how many employees come to work occasionally or frequently or at all suffering from hang-over. The hang-over may be an insignificant problem and it may be a serious problem, but no one can truthfully say which it is. The facts have not been obtained. And no one in the United States has made a serious attempt to obtain them.

Some investigators have tried to estimate the extent of the effects from hang-over indirectly on the basis of the days of the week on which the largest number of accidents occur in factories. To them, the much reported fact that on Mondays there are more factory accidents than on any other day is evidence of heavy drinking over the week-end. The fact that the highest rate of accidents has been reported for Monday from practically all European countries is striking. On the other hand, it does not follow that this increase can be attributed solely to the effects of hang-over. There are other factors which may be responsible, such as the influx of new hands on the first day of the week and the difficulty for many men of readjusting themselves to the factory routine. In this connection it should be borne in mind also that, for many men, Sunday is not a day of rest, but one of more strenuous activity and until later hours of the evening than on weekdays. Consequently they arrive at the factory on Monday more fatigued than on Tuesday. Statistics of daily distribution of factory accidents cannot therefore be regarded as evidence of the

effects of excessive drinking, but merely as an indication that this factor might play a part and that investigation in this direction might be worth while.

The occurrence of factory accidents among workers in occupations in which heavy drinking is supposed to be more common has also been brought into the case. When one studies the figures from an unbiased viewpoint, however, they appear to be so contradictory that the best thing one can do is to disregard them. There is very little acceptable evidence. The best available is from the Labor Health Insurance Group of Leipzig, Germany, for 1939; the data are given in Table 1 and show rates of accidents among heavy drinkers and among all insured workers.

TABLE 1

*Accident Rates of Factory Workers (in the Factory). From Observations Made by the Labor Health Insurance Group, Leipzig, Germany, 1939.*

	<i>Accidents per thousand injured workmen</i>	
	<i>All insured</i>	<i>Heavy drinkers only</i>
Accidents causing up to 28 days hospitalization . . . . .	31.1	86.2
Accidents causing more than 28 days hospitalization . . . . .	9.6	30.1

While these German statistics are reliable, they show us only that, as we have surmised, accidents are more frequent among heavy drinkers than among nondrinkers and moderate drinkers. But there is no indication of the number of heavy drinkers involved in such accidents. Thus while we can conclude that hang-over is a factor in accidents we have no evidence to tell us how important a factor it is.

When we come to evidence relating to the productivity of workers given to excessive drinking, information is even more meager than in the case of accidents. Practically the only so-called evidence is the small output on Mondays as compared with other days of the week. The same remarks apply to this as to the data about accidents.

There are also a few statements to be found relative to the difference between earnings of workmen who are heavy drinkers and others. For instance, in 1929, the British magazine *National*



*Outlook* compared the annual earnings of two groups of miners, there being the same number of persons in each group. The non-drinkers and moderate drinkers earned \$23,580, while the heavy drinkers in the same period earned \$16,900. In a Japanese coal mine 3,200 nondrinkers or moderate drinkers, of a total of 6,000 workmen, worked 4.0 per cent longer and earned 14.9 per cent higher wages than did the habitual heavy drinkers.

These differences, it is to be noted, are not between total abstainers on the one hand, and, on the other, individuals who drink any amount of alcoholic beverages. The difference is really between heavy drinkers on the one hand and moderate drinkers on the other. As one British manufacturer stated in answer to an inquiry during the first World War: "It would be risky to say that teetotalers are better workmen than the others, or that they attend to their work more regularly. Between the total abstainers and the moderate drinkers there is nothing to choose from an efficient workman's point of view. We have a few men who drink to excess, and who by getting drunk every pay week lose a good deal of time."

The effects on accidents and production of ill health from long-continued drinking are even more obscure than are those from the hang-over. As far as the United States is concerned, there are no figures at all on the incidence of sickness among factory workers who are heavy drinkers, moderate drinkers or abstainers. Such information has been obtained only where there is compulsory health insurance and the physicians are acquainted with the habits of the insured workers and have records of their illnesses. We must therefore rely upon what we can learn from other countries.

Some ideas about time lost due to weakened health from excessive drinking can be obtained from statistics published in 1902 by the Australian Friendly Society. Table 2 shows a comparison of the average number of weeks of sickness of members who were nondrinkers and moderate drinkers as compared to that of members who were heavy drinkers.

More recent Australian statistics (1924) compare the sickness rate of three nonabstaining and abstaining societies. In the former, the sickness rate was twice as great as in the latter.

TABLE 2

*Australian Friendly Society*

	<i>Average number of sickness weeks</i>	<i>Average number of weeks of sickness for each member</i>
Moderate and nondrinkers	1.248	6.45
Heavy drinkers	2.317	10.91

We also find that in a Japanese rubber factory the average weekly occurrence of sickness was 18.3 for each 1,000 heavy drinkers and 6.3 for each 1,000 nondrinkers and moderate drinkers.

The most detailed data have come from the President of the Department of Health in Germany who, in 1939, published sickness rates for laborers who were heavy drinkers and those who were nondrinkers or moderate drinkers insured in the compulsory health insurance associations (Table 3). Among the heavy drinkers, diseases of the nervous system were 4 times more frequent than among the nondrinkers and moderate drinkers; diseases of the organs of digestion were 2.85 times more frequent; diseases of the circulatory system, 2.73; and injuries, 2.58.

TABLE 3

*Disease Rates of Heavy Drinkers by Age Groups*

<i>Age group</i>	<i>Per cent more sickness of heavy drinkers than nondrinkers and moderate drinkers</i>
15-24	80
25-34	164
35-44	183
45-54	161
55-64	166
65-74	193

The data bear out the assumption that heavy drinking may be an indirect and unrecognized cause of impaired factory production. It would, however, be a mistake to say that these statistics are evidence of great loss of production. The figures do not give any information regarding the number or proportion of workers

ACCIDENTS PER MILLION MAN-HOURS EXPOSED

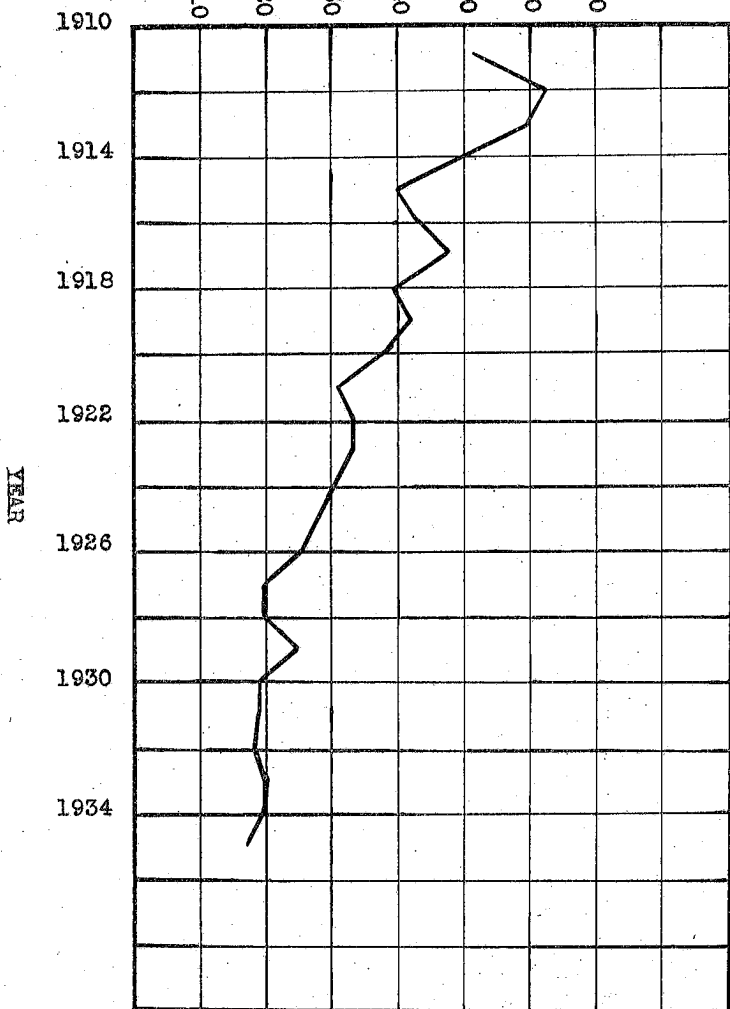


Figure 1. Accidents per million man-hours exposed in the steel industry of the U.S.A., 1911-1935.

who are excessive drinkers. They show only that the heavy drinkers are sick more and absent more frequently than non-drinkers and moderate drinkers. If the number of heavy drinkers is large, the problem is a serious one. But no one knows how large the number is. It is this information that must be obtained before the importance of the influence of drinking on factory production can be correctly evaluated.

### PROHIBITION DATA

So far we have used mainly foreign data. They are far more extensive and more reliable than any collected in the United States. In this country, the statistics on the problem have been limited mainly to changes in production and accidents before and after the introduction of Prohibition. Such statistics, however, cannot be regarded as valid evidence of the effect of drinking habits on factory accidents or production. In both accident and production rates there are certain trends which are due to the operation of a large number of factors other than drinking habits. Relative to accident rates, for instance, as is shown in Figure 1, there is a greatly diminishing rate of accidents from 1910 to 1935. If one suppresses the data before 1918 and after 1933, then one naturally would get the impression that during Prohibition the accident rate decreased. When one goes over the entire data, however, one finds that this trend had been going on before Prohibition began and continued after its repeal and that the lowest point was reached in the post-prohibition year 1935. In the elucidation of our problem, therefore, the Prohibition data are of little use.

As with all other data touching on the problems of alcohol and industrial efficiency they fail to give facts that we need before the problem can be solved. And these facts are in the answers to the questions: (1) Is the problem of alcohol and industrial efficiency an important problem? And (2), if it is an important problem, how important is it? The answers to these questions can be obtained only by unbiased scientific investigation designed with a full understanding of the wide and practical bearings of the problem. The importance of the problem justifies such investigation. And until it is made, no one can give positive answers to any part of the problem of alcohol and industrial efficiency.