

of the depression rather than the depression being the cause of the presence of the indoxyl.

(4) The fact that four typical cases of melancholia had no indoxyl in the urine appears to be evidence that we cannot regard all cases of melancholia as suffering from indoxyl poisoning. We must remember, however, that many toxins may, by linking themselves chemically to the nerve-cells or otherwise altering their functional activity, produce long-continued mental effect after the presence of the toxin can no longer be demonstrated in the excretions of the body. I believe that this is the explanation of our failure to improve the condition of patients who are not placed under treatment sufficiently early.

(5) That the presence of an excess of indoxyl in the urine means a loaded alimentary tract, which should at once be treated by the use of large enemata—two to three pints of normal saline solution by preference—and the placing of the patient on a purely milk dietary or a milk and farinaceous dietary.

The whole alimentary tract can be rendered free from putrefactive processes by seeing that the mouth is kept clean—by the removal of carious teeth and by the use of antiseptic mouth-washes—by placing the patient on small but frequent quantities of milk diluted with aerated water and washing out the large intestine with enemata. The benefit of this treatment is most obvious, especially in patients who show symptoms of alimentary disturbance and toxæmia, and under such treatment indoxyl practically disappears from the urine.

(¹) Read at the Scottish Divisional Meeting held at Glasgow March 23rd, 1906.

Industry and Alcoholism. By W. C. SULLIVAN, M.D.

As a preface to the remarks which I propose to submit for your consideration to-day, I wish to recall to your memory the substance of a paper which I had the honour to read before this Association some two years ago(¹). In that paper I endeavoured to establish a distinction between two opposed types of drinking, which, having regard to the chief factor in each form, I referred to as convivial drinking and industrial drinking; and I pointed out that these two modes of drinking differed widely in their relations to drunkenness and to chronic alcoholism, convivial excess producing drunkenness but rarely tending to cause

chronic intoxication, while industrial drinking, on the other hand, though not an immediate cause of drunkenness, led rapidly and fatally to chronic poisoning. And, as an illustration and proof of the reality of this distinction, I drew your attention to the remarkable differences in regional distribution which are apparent when drunkenness is compared with alcoholic mortality, with attempted suicide, or with the several varieties of crime that are known to be most intimately connected with chronic alcoholism. The accompanying diagram, which I have published elsewhere, will epitomise this statistical evidence. It shows the rate per 100,000 of the population in the agricultural districts, the manufacturing towns, the seaports, and the mining districts of arrests for drunkenness, homicidal crime, and assaults taken together, homicidal crime alone, and attempts to commit suicide calculated on the annual average during the years 1891–1900. The figures below the columns are the comparative mortality figures for a number of the occupational groups which are more or less representative of the industrial conditions in each of the composite areas, viz. for the agricultural districts the agriculturists, for the manufacturing towns the textile and iron workers, for the seaports the dockers, and for the mining districts the coal-miners. The fact which I wish to bring out by means of this table is, of course, that drunkenness and chronic alcoholism are largely independent of one another, and that the more serious evils due to alcohol are connected with the chronic intoxication and not with simple drunkenness. This is most clearly seen in the mining districts, where there is more drunkenness than in any other part of the country, but where, at the same time, there is little chronic alcoholism and, therefore, relatively low rates of alcoholic suicide (as measured by suicidal attempts) and of alcoholic crime. And the explanation which I desire to suggest is, as I have already indicated, that the chronic intoxication is, in the main, a result of industrial drinking and has nothing to do with the convivial excess which produces drunkenness.

So much, then, to emphasise the importance of this industrial alcoholism, to the nature and origin of which I desire specially to direct your attention in this paper.

Essentially industrial drinking means drinking as an aid to labour, and its cause is therefore to be sought in the influence that alcohol exerts on nervous and muscular activity—an

influence the character of which has been made clearer to us within the last few years by the researches of the experimental psychologists. Considerations of time and a sense of my own lack of competence in the matter forbid my attempting anything like a critical summary of their results, but I think that one may venture to say that they have fairly well established the following propositions :

(1) That in the large majority of individuals alcohol in moderate doses acts as a real psychomotor stimulant, increasing considerably the output of muscular work.

(2) That this stimulant action lasts only for a short period, and is ordinarily followed by a phase of depressed activity which more than compensates the initial stimulation.

(3) That on sensory function the action of alcohol is regularly depressant, causing a diminished acuteness of sensation and a diminished quickness of perception.

These peculiarities of alcoholic action determine the primary conditions of industrial drinking. In order that such drinking may be established it is necessary that the labour be predominantly of the coarse, muscular sort so that the advantage of the psycho-motor stimulation may be immediately clear to the drinker, and may not be discounted by the accompanying disturbance of sensory function. And, further, the circumstances of the work must allow of frequent renewals of the stimulant influence so that the reactive depression of energy may be avoided. Where these two conditions are satisfied industrial alcoholism is prevalent. Where, on the other hand, either of them is lacking, as will be the case if the work demands skill rather than force, or if, though involving mainly muscular effort, it is pursued under circumstances that forbid free access to liquor, then industrial drinking will be exceptional.

Under these fundamental influences, which, of course, differ enormously from one trade to another but are relatively constant in the same trade, the alcoholic tendencies in each form of industry have become organised into more or less distinctive drinking traditions, the vigour of which finds a fairly exact measure in the corresponding occupational death-rate from alcoholic diseases.

To illustrate this fact I will invite your attention first to two occupational groups which have been already referred to as lying at opposite extremes on the scale of alcoholic mortality, the dockers and the coal-miners.

Dock labour is the type of crude muscular work demanding a maximum of force with a minimum of skill ; it is, therefore, just the kind of work to show the physiological action of alcohol in the most favourable light. And it is carried on, for the most part, with practically no restrictions on the worker's access to liquor during the hours of labour. The natural result is a tradition of industrial drinking more firmly rooted than in any other variety of manual labour. The average dock hand who follows this tradition will take as a "livener" before he starts work in the morning either a half-pint of "four ale" or a tot of rum in ale or in coffee ; with or instead of his breakfast he will have a pint or more of "four ale" ; after his mid-day meal he will take one or two pints more ; and at least once in the forenoon and once in the afternoon, at what are termed the "bever times"—an archaic word which survives only in this connection, and which is thus an interesting indication of the antiquity of industrial alcoholism—at each of these times he will have one or two half-pints without solid food. A couple of pints on knocking off work will close his industrial drinking for the day, bringing it up to a total of something over six pints of "four ale," which, if we take the alcoholic strength of the liquor to be only 4 *per cent.*, would amount to more than four ounces of absolute alcohol, or over double the most liberal estimate of the quantity needed to set up the tissue changes of chronic intoxication. This is the tradition of industrial drinking which gives to the dock worker an alcoholic mortality second only to that of the liquor trade group, and which, with the similar customs current in other industries pursued in these towns, confers on the seaports their striking pre-eminence in alcoholic suicide and in alcoholic crime.

Now let us look at the opposed group—that of the coal-miners. The distinctive character of their work, from our present point of view, is that it is carried on in eight- or ten-hour shifts, during which access to alcohol is practically impossible. The introduction of liquor into the mine is forbidden, and the rigid inspection to which coal-miners are subjected secures that this prohibition is effectual. Hence the only chance of industrial drinking that the miner can have is immediately before he goes down the mine, and since the effect of a single dose of "four ale" is quickly lost in an eight-hour shift, he soon learns that alcohol is unsuitable for his special form of

labour, that, as the mining tradition has it, it is a "muddling" thing to work on. Abstinence from industrial drinking is, then, traditional in coal-mining, and this abstinence, entailing as it does a relative immunity from chronic intoxication, brings the coal-miner's death-rate from alcoholic disease to the same level as that of the agriculturists, and below that of all the other occupational groups, and it keeps the mining districts, despite their enormous addiction to drunkenness, comparatively free from alcoholic suicide and from alcoholic crime.

In like manner, if time allowed us to examine the drinking customs in the other forms of manual industry, we should arrive at entirely similar results; that is to say, we should find in each trade a regular drinking tradition, determined by the special character of the muscular and nervous effort which the work demands and by the facilities which it allows for frequent access to liquor.

The basis of the tradition of industrial drinking is, then, the influence of alcohol on the working capacity of the average individual. And since we know from every-day experience as well as from the experiments of the laboratory that many persons react to alcohol in a manner which departs more or less from this average, we may expect to meet with individuals in every trade who do not follow its drinking customs. And so, in fact, we do. In trades where industrial drinking is the rule there are always a few men who are pure convivial drinkers and never try to work on alcohol, because they find either that it has very little effect as a psychomotor stimulant or that it produces so marked an impairment of sensory function that it interferes with the performance of even unskilled work. And on the other hand, in highly-skilled crafts, where most workers eschew alcohol on account of its disturbing influence, there are often some favoured individuals who are able to get a stimulant effect from it without any appreciable loss of sensory acuteness, and who may accordingly, if circumstances allow them, become industrial drinkers in spite of the contrary tradition of their trade.

Broadly speaking, however, these exceptions—or, to put it more correctly, these special cases of the same physiological rule—are relatively few, and do not appreciably affect the general character of the tradition in each industry.

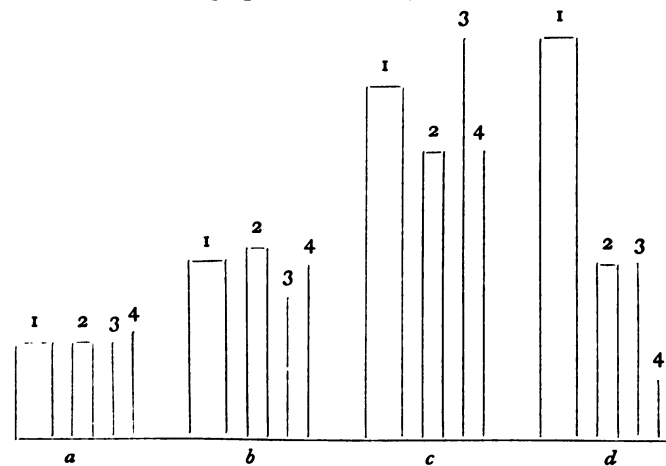
More important variations arise from differences in what we

have seen to be the other factor in industrial alcoholism—namely the facility of access to liquor during the hours of labour. To a large extent this is a matter which depends on the will of the employer. Formerly he had usually no motive for interfering with the drinking of his hands, unless there was some risk of damage to material or machinery from the awkwardness of a fuddled workman; and dangers of this sort of course rarely arose except in industries where the need for skill and accuracy was already sufficiently clear for the men to minimise the alcoholic bent. As a result restrictions on industrial drinking were imposed for the most part only where they were least needed. The introduction of beer during working hours was rigorously forbidden in the highly skilled industries where the men had very little desire for it, and it was freely allowed in the unskilled occupations which involved most tendency to alcoholism. In such a thirsty form of labour as gas-stoking, for instance, a man might have liquor practically as often as he wished, and it is said, indeed, that some years ago a beer allowance was even issued by the employers when the temperature was specially high.

Latterly, however, this state of things has undergone a considerable change, and the natural relationship which made the facilities of access to alcohol depend upon and vary in the same way as the alcoholic tendency inherent in the work has been upset in several forms of industry. The more extensive use of machinery, and the increased stringency of the Employers' Liability Acts have so strongly stimulated the employers' interest in the sobriety of their workmen, that in many trades where industrial drinking was formerly unrestricted the beverage times have now been abolished and effective measures are taken to prevent the introduction of liquor during working hours. Such measures, as we saw in the case of coal-mining, have a far-reaching influence on the drinking habits of the workers, for as they break the continuity of the stimulant action and allow the development of the secondary depression of energy, they tend to destroy that faith in the strength-giving virtues of alcohol which lies at the root of industrial drinking. From the practical point of view, therefore, the growth of these restrictions and the effect they have on industrial alcoholism are a matter of much interest, because they illustrate very strikingly the way in which the evils of intemperance can be most success-

fully dealt with in the conditions prevalent in this country. For if the views which I have urged in this paper are sound—that is to say, if the graver results of alcoholism, those that are a serious menace to the health and order of the community, are dependent on industrial drinking and not on convivial excess—then it is the repression of this industrial drinking that should be the proper aim of our measures of reform. And the recognition of this fact will probably change our estimate of some of the panaceas for intemperance; it will suggest, for instance, that the late opening of public houses is a vastly more important matter than their early closing, and it will perhaps awaken a little healthy scepticism as to the benefit society gets by imprisoning the convivial “drunk” and mulcting itself for his support and that of his family.

Drunkenness, Homicidal Crime and Assaults, Homicidal Crime alone, and Attempts to Commit Suicide in Agricultural Counties, Manufacturing Towns, Sea-ports, and Mining Districts (Annual Average per 100,000 of Estimated Population).



Comparative Mortality Figures.

	Agriculturists.	Textile workers.	Metal workers.	Dockers.	Coal-miners
Alcoholism . . .	4	7	11	52	4
Alcoholism and liver diseases } . . .	21	30	40	78	21
1. Drunkenness.				a. Agricultural districts.	
2. Homicidal crime and assaults.				b. Manufacturing towns.	
3. Homicidal crime.				c. Seaports.	
4. Attempted suicide.				d. Mining districts.	

(¹) "A Statistical Note on the Social Cause of Alcoholism," *Journal of Mental Science*, July, 1904.

DISCUSSION,

At the Quarterly Meeting in London, May 31st, 1906.

The PRESIDENT said the contribution to which members had just listened was one of the most practical which could be expected on such a subject. All well knew the demoralising effect of the habitual absorption of alcohol, an effect which was bad both morally and physically. The last point to which Dr. Sullivan had alluded, the later opening of public-houses, was one which deserved to be fully borne in mind.

Dr. HAYES NEWINGTON said he well remembered Dr. Sullivan's able paper of two years ago, and he congratulated him and the Association on this further contribution. There could be no doubt that eventually an enormous amount of good must be done by a careful study of the habits of the people by one who was so competent to observe and record them. It would be within the memory of members that Dr. Bevan Lewis touched upon the same question, not only from the biological point of view, but also from that of the habits of the people. On each occasion he (Dr. Newington) had ventured to say how very incomplete all inquiries must be until one was prepared to say what was being dealt with under the name "alcohol." Confirmation of this view had recently been supplied by the evidence in the whisky prosecution case. He referred particularly to the character of the inebriation which occurred in a monkey to which pot-still spirit had been given, as contrasted with the result which followed the administration of patent-still whisky to another monkey. He hoped that sooner or later there would be some standard of purity in alcohol, and that people who departed from that standard would be prosecuted. Until there was such a standard laid down he maintained, as he had always maintained, that when speaking of alcoholism one was talking round the whole subject.

Dr. CARSWELL (Glasgow) said he had felt grateful to Dr. Sullivan from the time he read that gentleman's paper, drawing a distinction between industrial and convivial drinking, because it gave one a clearer conception of a somewhat complicated problem—namely, that concerning drunkenness and the habitual drunkard. The only difficulty he had was that he did not know into what category Dr. Sullivan placed the habitual inebriate who did not work and never had worked except casually. He was thinking of one particular class of female inebriate. He had seen a great many such women during his experience as Convener of the Glasgow Corporation Inebriates Committee; and the extraordinary thing about them was that they rarely worked—in fact, many did not know how to work. He remembered a woman in the Home saying to him one day, "We have too much work to do here," and he replied, "If you had worked outside you would never have been here." "But," she said, "I did work outside, only I did not work every day like this." That was the whole point. Those people had never worked day in and day out, and almost all of them were neurotics. They could not be correctly described as the victims of industrial inebriety. Nor were they the victims of convivial inebriety. They were, in fact, persons of unsound mind with the craving for drink and the habit of drunkenness as well as other depraved habits associated with it—not necessarily as cause and effect. But he understood Dr. Sullivan to desire on that occasion to fix attention especially on the question of industrial alcoholics. He entirely agreed with the suggestive remarks with which Dr. Sullivan concluded his paper. He understood the author to say that, from the point of view of tackling industrial alcoholism, closing public-houses at ten o'clock at night, as was done in Glasgow now, did not touch the question at all; but that if public-houses were kept closed in the morning until ten, eleven, or twelve o'clock then, so far as legal measures could affect such habits, one might hope to mitigate some of the evils of industrial drinking. Certainly that aspect of it had not been popularly apprehended, least of all by that class of persons who considered that the promotion of legislation in reference to alcohol was their particular province, namely, the so-called temperance party. He remembered very well a remark by Lord Balfour of Burleigh when Secretary of State for Scotland, which showed that he at least apprehended it. When a deputation went to him asking the Government to accede to a suggestion to close public-houses at ten o'clock—it used to be eleven o'clock—he replied: "I think if

you will ask me to take an hour off the morning and put on two hours at night, I will probably do more for you." He (Dr. Carswell) thought his lordship was quite right in that. In the industrial stretch of Glasgow along the docks, and at Govan, he understood that the early half-hour, from eight o'clock, was probably the best for the publican during the whole day. And a number of publicans, until it was stopped recently, were in the habit, for the purpose of offering extra inducements to drink to the dock labourers and other workers at the port, of supplying boiled potatoes, or cake, or cheese, gratuitously. It was regarded as not at all a bad thing to have a little food with it, but the main business was to keep up the custom and get men to come in early and begin to drink. Undoubtedly Dr. Sullivan had only put into scientific generalisation a fact of experience, that there were certain trades which had their traditions with regard to drinking, and that those traditions were of the most baneful character. He agreed with the remark in the closing part of the paper that it was the convivial drinking which was largely responsible for the noises of the streets and the disturbances which necessitated calling in the police. But he thought "convivial" was too polite a term to apply to it. If it were really conviviality it was a very low grade of it. He did not think that in Glasgow the early closing of public-houses and keeping people out of those houses had resulted in that diminution of the number of cases dealt with by the police which was expected, and he thought Dr. Sullivan had shown why. The convivial drinker would drink, would be noisy and create disturbances, and the services of the police would be required. Yet, whatever restrictions might be placed upon the sale of intoxicants he would get them somewhere. Still, after all, that man was not doing the same grave injury to his nervous system and organs as was the industrial drinker. Glasgow Corporation had gone to the length of framing a Bill for the amendment of the Inebriates Act. It had been submitted to the Government, and a deputation were present at Dover House a short time ago to press their views upon the Lord Advocate and the Secretary for Scotland. The chief point about that amending Inebriates Bill was that in it power was asked for dealing with the non-police offender. The difficulties of legislation were indicated by the Lord Advocate, who recommended that no opportunity should be missed for ventilating public opinion and bringing to bear all the influence possible upon public bodies, to get them to do all they could to bring about such an alteration in the law as would enable the man to be effectively dealt with who was an inebriate but did not come under the control of the police. That was his (Dr. Carswell's) excuse for bringing this subject before the meeting; he desired to act on the Lord Advocate's suggestion to promote on every possible occasion sympathy with such an object.

Dr. ROBERT JONES remarked that one was constantly hearing of two types of drinkers—those who entered asylums and those who went into hospitals. Dr. Hayes Newington had referred to the various qualities of drink sold, and no doubt that had much to do with both the mental and the physical condition of the imbiber. It was an extraordinary fact that one might go round a hospital ward and find in it half a dozen men who would say they had consumed a dozen or two dozen whiskies a day, yet who had their mental functions unimpaired except for that desire for alcohol. That was the commercial traveller type of drinker. There were certain others, going to the asylum and going to mental hospitals, who indulged to less than half the degree of those who went into hospitals. That fact, to his mind, pointed very definitely in support of what had been advanced, that the drinker in asylums was of a very different mental type—*i. e.* he was a potential lunatic or psychopath. He had taken the trouble to analyse the vocations of all those whose insanity was directly or indirectly connected with alcohol in the last twelve months in Claybury Asylum, and they were found to be of two kinds, mostly those whose work had been heavy and others whose work was done indoors. But there was a large proportion of those whom Dr. Carswell had referred to as more or less unemployed and idle. One might mention those who hung about and were described by themselves as having occasional work. They did a little for a few days, and then drank, and were in and out of asylums frequently. He was sure Dr. Sullivan saw many such people. The Congress which was held at Buda-Pesth had the question of unemployment definitely under discussion, and it was pointed out that there was three times as much drink consumed during the period of idleness—*i. e.* between Friday and Tuesday—as during the rest of the week. Patients received into Claybury because of drink,

either directly or indirectly, formed almost 30 *per cent.* of all admissions, and it was difficult to know what was the proper treatment for those people. If there should be any change in lunacy or temperance legislation, he was not sure that some of these people ought not to be kept in some intermediate place and compelled to work in a colony. Dr. Sullivan had referred to industrialism, and it was an extremely interesting subject. Every industry, apparently, had its traditions, and those traditions were very well brought forward at the Leeds meeting by Dr. Bevan Lewis. He was reminded of a very interesting article by Dr. Harry Campbell on the secretions of the body. That authority's view was that there were certain secretions in the body which tended to stimulate and others whose tendency was more or less to destruction. Dr. Campbell pointed out the necessity for keeping the mind fully occupied and the body well exercised so as to keep the stimulating secretions of the body in proper order. It was well known that the effect of thyroid, for instance, was to stimulate practically every organ in the body. Alcohol had a very definitely stimulating action, but if one kept oneself in a good mental and physical condition there was no need for the use of alcohol.

The PRESIDENT said the Association was much obliged to Dr. Sullivan for calling attention to the casual drinker. The difference between such an one and, for instance, the coal-miner was one of the greatest possible importance. The casual drinker could not be a coal-miner; he would be unable to do the work. If by altering the conditions of occupation one's fellow-creatures could be prevented from absorbing alcohol from morning till night, it would be taking a great step forward towards relieving our asylums of something like 30 *per cent.* of their inmates.

Dr. SULLIVAN, in reply, said he was particularly pleased to find himself in agreement with such a high authority as Dr. Carswell, whose interesting remarks agreed with what he (Dr. Sullivan) had himself seen in London. It was well recognised in public-houses in London that in houses doing a low class trade fully half, or at least one third, of the trade was done before eight o'clock in the morning, at a time when houses of what was regarded as "the better class" would not have the shutters down. That was also true of that part of the North of England that he knew. Dr. Carswell had commented on the idea of advocating the late opening of public-houses, and the importance of the matter was fully borne out by statistics; because the results of the difference between the hour of opening of public-houses in London—where it was five o'clock—and in the provinces—where it was six o'clock—and in Scotland, the hour of opening in Scotland being eight, were seen in the mortality. He felt himself to be in entire sympathy with Dr. Hayes Newington in regard to the need for a standard of purity in alcoholic beverage; the matter was one of utmost importance. Dr. Jones' remarks also were most interesting as bearing out the same view, and his patients were probably drawn from the same class of people as his own. He also fully agreed with Dr. Carswell's remarks concerning the neurotic drunkard, but he thought their numbers were comparatively small, certainly small in comparison with the energy with which they obtruded themselves upon public notice. Though they constituted an interesting class, they did not enter much into the broad question of the influence and distribution of the mortality from alcohol.

A Serum Reaction occurring in Persons suffering from Infective Conditions. By LEWIS C. BRUCE, M.D.,
District Asylum, Murthly.

WHILE making observations upon the opsonic indices of the insane I noticed that the serum in many of the cases under observation when mixed with the red blood corpuscles of a healthy person agglutinated them.