mentally enfeebled to the sound and normal subject, my experience at Wakefield Asylum where a home for the systematic training in school is adopted for weak-minded and mildly imbecile children, shows that ten hours' sleep has not been found extravagant for the restorative effects required for the succeeding day's work.

(10) With respect to the psychomotor centres as *histologically* defined I would add that Sir Lauder Brunton ([25]) in 1882 gave us a most suggestive article in *Brain* on the motor centres in regard to their nutritive and social functions; and although there is reason to believe the motor centres to be far more limited in their range over the cortex than as was then assumed to be the case, such restriction as I have defined *histologically* ([24]) by no means impairs the force of the argument advanced by Sir Lauder.

([1]) Read at the Physiological Section of the British Association at York, 1906, in connection with the discussion on "Sleep in School Children," opened by Dr. T. Dyke Acland.—([2]) *Archiv f. Anat. u. Phys.*, 1893.—([3]) "Das leitende element des Nervensystems und seine Topographischen Beziehungen zu den Kellen," *Mitth. aus d. Zool. Stat. Neap.*, Bd. xii, 1897–1898.—([4]) *Arch. f. mikr. Anat.*, Bd. li, 1898.—([5]) *Brain*, 1896.—([6]) *Nuevo concepto de la Histologia de los Centros nerviosos*, Barcelona, 1893.—([7]) "Croonian Lectures," *Lancet*, 1899, vols. i and ii.—([8]) *Lancet*, July, 1906.—([9]) *Bibliographie Anatomique*, tome xiv, 1905.—([10]) *Anat. du Système Nerveux de l'Homme*, 1897.—([11]) *Monitore Zoologico*, 1897, No. 4.—([12]) *Pathologie de la Cellule Nerveux*, Paris, 1897.—([13]) *Riv. di Patol.*, 1897.—([14]) *Arch. de Phys.*, 1893, 3.—([15]) *Journ. of Morphology*, vol. vii, 1894.—([16]) *Lo Sperimentale*, xlix, 1895.—([17]) *Riv. di Patol. Nerv. e Ment.*, May, 1896.—([18]) *Journ. Anat. and Phys.*, xxix, Oct., 1894.—([19]) *Text-Book of Mental Diseases*, 1899.—([20]) *C. R. Soc. de Biologie*, Nos. 4 and 5, 1895; also *Rev. Sci.*, 1898, ix.—([21]) *Journ. of Phys.*, xxiii, 1898–1899, and *Arch. de Biol. de Brux.*, 1896.—([22]) *Riv. di Patol. Nerv. e Ment.*, 1898.—([23]) United States Depart. of Agriculture, *Bull.* 44, 1897.—([24]) "Cortical Examination of Motor Area of Brain," Bevan-Lewis and Henry Clarke, *Proc. Roy. Soc.*, No. 185, 1878.—([25]) *Brain*, 1882, vol. iv.—([26]) *The Johns Hopkins Hospital Reports*, vol. vi, 1897.

Alcohol and Insanity.—The Effects of Alcohol on the Body and Mind as shown by Asylum and Hospital Experience in the Wards and Post-mortem Room.

By F. W. MOTT, M.D., F.R.S., Pathologist to the London County Asylums; Director of the Pathological Laboratory; and Physician to Charing Cross Hospital.

So much has been written on this subject, that I trust it will not be considered disrespectful to previous observers if I refer more particularly to my own experience and observations. As out-patient physician to Charing Cross Hospital, and

latterly physician in charge of wards, I have had a considerable experience in seeing the effects of alcohol in the production of bodily diseases; but as Pathologist to the London County Asylums I have had a much larger experience in seeing the effects of alcohol in the production of mental diseases. I can safely say that in quite one fourth of the male cases which come under my observation at Charing Cross Hospital, and in a considerable proportion of the female cases, alcohol has been an efficient cause in the disease, or a very important coefficient. In conjunction with venereal disease, especially syphilis, it is responsible for many degenerative processes, which will be alluded to. My house-physician, Mr. Reade has kindly made a tabulated statement referring to the influence of alcohol in the medical cases admitted during the year 1905, which is appended.

The cases coming to Charing Cross Hospital of which intemperance has been the main cause of the disease are especially numerous on account of the situation of the hospital, and the class and the occupations of the patients who seek relief there. Located amidst the theatres, restaurants, music halls, and places of amusement and refreshment, it becomes the receiving-place for those who are intemperate in the pursuit of pleasure; also for a number of people engaged, either directly or indirectly, in the liquor traffic, or whose occupations lead to prolonged intemperance. Among such are potmen, barmen, barmaids, publicans, prostitutes, waiters, cooks, and kitchen servants from hotels, stage carpenters, scene shifters, cabmen, 'bus drivers and conductors, and particularly numerous, the Covent Garden porters, who are addicted to drinking large quantities of beer. As a rule, all these people are, at the time they are brought to the hospital for such relief, in employment. I regard this as a very important point in connection with the nervous symptoms which may be manifested as a result of prolonged intemperance, because to the casual observer certainly, and to the skilled observer often, no mental deterioration may be discoverable in a large proportion of those chronic inebriates. Occasionally a head or other injury, slight or severe, the onset of disease, especially pneumonia or other infectious processes, or an extra bout of drinking may result in delirium tremens, for which the patient may be brought to the hospital, or which may develop after he has been admitted.

A few cases proportionally of polyneuritic psychosis occur, especially in women, and the majority of these leave the hospital completely cured. All the mental symptoms pass off by withholding the alcohol and by careful diet and nursing, the paralysis caused by the neuritis persisting, as a rule, long after the mind has cleared. It is, however, difficult to judge whether the patient really is the same as before the onset of the mental symptoms.

This form of polyneuritic psychosis met with in hospital, occurring especially in women but also in men, is identical with that met with in asylums, although not very common in either. It is far more frequently met with in women than men in both asylums and hospitals, the proportion being about one male to seven females. In hospitals it is the paralysis and the neuritic symptoms which obtrude themselves, whereas in asylums it is the mental symptoms. Very seldom in any case, however, are the mental symptoms completely absent if the patient be carefully examined in hospital cases. Conversely in asylums (in spite of the fact that the knee-jerks may be present or increased instead of absent) some evidence of neuritis is almost invariably present and may form an important causative factor in the production of hallucinations and delusions. Examples of these various types will be given and it will be observed that often it is a mere chance whether a patient suffering with polyneuritic psychosis be treated in hospital or asylum (*vide* cases).

Many of these cases with characteristic mental symptoms arise in married women who, without perhaps ever having been drunk and incapable, have acquired the habit of continuous secret tippling. I may here remark that grocers' licenses have facilitated secret drinking to an enormous extent among women. They drink because they feel miserable and depressed. Sometimes they commence the habit after an illness. Usually, according to my experience, it is married women who suffer with polyneuritic psychosis, and I have observed that it is so frequently associated with some other morbific factor—*e. g.* septic infection from a miscarriage or abortion, gonorrhœa, endometritis, parametritis, salpingitis, syphilis, pneumonia, or tuberculosis—that it is difficult to assert in these cases how far the mental and the neuritic symptoms are partially due to such cause and not solely to the direct effects of the alcohol on the nervous tissues.

In some cases a gastritis occurs, and the patient is unable to digest and assimilate food and takes only drink. I have found so often rotten teeth and pyorrhœa alveolaris that I am inclined to think that gastritis may become infective in nature and consequently microbial toxins may be absorbed and damage the tissues.

The mental symptoms, both in hospital and asylum cases, are especially liable to arise at the climacteric period. Here alcohol may be merely a coefficient, a small quantity only of drink being the exciting factor in a person in whom there is an inherent unstable mental condition, and the symptoms might have arisen if the patient had not taken any stimulant. Again, in people who are the subjects of arteriosclerosis in later life and renal change, of quiescent organic brain disease, especially syphilis, softening, and oncoming paralytic dementia, small quantities of alcohol become an important exciting factor. Again, alcohol, even in comparatively small quantities, may convert the potential lunatic into a raving maniac, and it is specially dangerous to the epileptic and feeble-minded, leading in the former to the production of motor and mental fits and making him irresponsible and anti-social and sometimes very dangerous to himself and others. There can be no doubt that drinking in pursuit of pleasure in the well-fed is far less liable to produce insanity than drinking in flight from despair and misery by the ill-fed, emotional, and neurasthenic or neuropathic individual.

The quantity of alcohol which is daily consumed by the pillars of society is quite sufficient to convert an epileptic or potential lunatic or certain feeble-minded individuals into criminals or certifiable lunatics. Alcohol thus serves to select and weed out those who are potentially unfit, and there is, from this point of view, much to be said in favour of the theory of Haycraft and Archdall Reid.

One would, however, think from the statements which have been made by persons in high and responsible positions, and from statistics quoted by an intemperate zeal for temperance, that if there were no alcohol there would be no insanity. While yielding to no one in the desire to see temperate measures adopted for the control and regulation of the liquor traffic, the care and segregation of chronic inebriates, and the prevention of inebriety, I am of opinion that there is no proof that insanity would diminish to anything like the extent that is believed by

some enthusiasts if alcohol were abolished. The President of the Local Government Board has recently pointed out that the drink bill is diminishing, yet the ratepayer knows that insanity is increasing. I am not sure, indeed, that if an island could be set aside for all those who were total abstainers whether there would not eventuate still a high percentage of insanity there. I feel certain, however, that there would be less disease and *far less crime and pauperism* than in the general population of this country. An important paper, by Dr. Bevan Lewis of the West Riding Asylum, Wakefield, supports this statement. He has shown by tabulated statistics that the admixture of a maritime with a mining and manufacturing class was fatal to the sobriety of the community; that, in fact, inland and *agricultural* communities were the least inebriate, but had the highest ratios of pauperism and insanity; that inland and maritime *mining* and *manufacturing* communities were the most inebriate, and had the lowest ratios of pauperism and insanity, while maritime *mining* and *manufacturing* communities, above all others, were the most intemperate and revealed the lowest ratios of pauperism and insanity. A dissociation between alcoholism and insanity was thus indicated, whilst the latter was allied with pauperism, want, anxiety, and other moral factors. He expressed his belief that alcoholism was not, in the true sense of the word, *inheritable*, but indicated the neurotic features which favoured its operation, and dwelt on its prejudicial action on the germplasm and ovum as evolving convulsive forms of mental disease—epilepsy, chorea, hysteria, etc., and also the degenerate forms of idiocy, imbecility, and the criminal type as emphasised in the offspring of an alcoholic parentage. He expressed his adherence to the doctrine of Weissman that *acquired* characters are not transmitted.

It may be observed that these very valuable and interesting observations of Dr. Bevan Lewis present points in similarity with the observations of Sir Hugh Beevor on tuberculosis.

He showed that an industrial population often exhibited a lower death-rate from tuberculosis than the surrounding agricultural population. He rightly attributed this to deficient nutrition on account of wage-earning capacity. There is another and still more important factor, and that is the poor mental and physical state of the agricultural population near to large industrial centres. The mentally and physically capable

migrate to the large towns for higher wages, leaving the physically and mentally feeble and unfit behind. Dr. John Macpherson, Morison Lecture, 1904, showed that in Scotland generally the ratio of insanity to population tended to be low in those communities with a rising population and high in those with a falling population, confirmed by Dr. Easterbrook. It is a well-known fact that the feeble-minded are especially prone to tuberculosis, which is a fortunate circumstance, for it tends to rid the race of poor types. Imbeciles and idiots are often unfertile, which is another reason for the dying out of a degenerate stock, but a degenerate stock frequently contains feeble-minded in all grades, some of which will not die out but propagate in considerable numbers, and it is probable that no class of the community produces insanity to such a degree as the feeble-minded. The progeny begotten of a feeble-minded mother by a drunken father, according to my experience, is much more likely to be born mentally defective or become insane in later life than when both parents are intemperate but neither of inherent mental deficiency.

It is my opinion a sound stock may degenerate from stress of town life, with all its attendant evils of over-stimulation of nervous structures associated with a deficient nutrition engendered by an impoverished quality of blood and a diminished specific energy of cell-protoplasm. Alcohol is not the only stimulant: there are many other stimulating substances which are daily consumed by a large proportion of the population—the extractives of an excessive meat diet, tea, and coffee; but these are of comparatively little harm as compared with alcohol, for the reason that while they may stimulate the nervous system, they have not the same devitalising action on the living blood and tissues. The prolonged abuse of alcohol lowers the defences of the body against microbial invasion (Metchnikoff has shown that alcohol produces a diminution of the phagocytes); and the poisonous effects of alcohol are the result partially of the alcohol entering the system, but also to toxins absorbed from the alimentary canal owing to the devitalising effect of the alcohol on the mucous membrane of the stomach and intestines, causing chronic catarrh, failure of the action of the digestive juices, and liability to microbial infective inflammation of the stomach, especially if there exist rotten teeth and pyorrhœa alveolaris. When one important vital organ suffers, then the whole

chemical processes of the human laboratory become deranged and the blood vitiated. It is a question whether cirrhosis of the liver is not due as much to the absorption of various microbial and other toxins as to the actual effect of the spirits absorbed.

Again, alcohol inflames the emotions and excites the sexual passions, and many a young person under its influence (perhaps for the first time) contracts venereal disease, and this fact is of great importance in the consideration of the effects of alcohol in relation to the infertility of intemperate women.

But alcohol is not only directly responsible for the spread of venereal infection; it is also responsible, in a large measure, for the ravages of the disease when acquired, by lowering the natural defences of the organism. It is a matter of common experience how intractable a severe syphilitic nervous affection becomes if the patient is an alcoholic subject.

All thinking people are agreed that *the abuse of alcohol* among civilised nations is directly or indirectly the most fruitful cause of over-full prisons, workhouses, infirmaries, hospitals, and asylums. According to the President of the Local Government Board, drink and gambling in this country are the curse of the industrial classes. Mr. Rowntree stated at the dinner of the Temperance League given by Viscount Peel that two months' wages of each year of the working man are consumed in liquor. Mr. Whittaker stated that only one in eight voters were total abstainers, and that it was necessary to enlist the sympathy of the great majority of people who were temperate in the use of alcoholic beverages. That leads up to the great question Why do the great majority of intellectual, sensible, and moral people, men and women of as high civic worth as total abstainers, drink alcoholic beverages? Dr. Parkes, than whom no one was more competent to speak, remarked, in connection with moderate use, "The strongest argument, however, is that it seems incredible that a large part of the human race should have fallen into an error so gigantic as that of attributing great dieettic value to an agent which is of little use in small quantities and is hurtful in large." In my opinion alcohol is of little value on account of its direct dietetic value; but if it stimulates the flow of "appetite-juices" of the digestive apparatus it indirectly becomes of important dietetic value by assisting the digestion and assimilation of food. Is a natural alcoholic

beverage, such as pure wine, beer, or cider, taken in moderation with food, to be considered a poison to normal healthy people? If so, why do the vast majority of civilised people, who know perfectly well the evil effects of the abuse of alcohol, take it in moderate quantities? Why do they not prefer tea, coffee, and other stimulants? They appreciate and know full well the truth of what Shakespeare makes Cassius say—"Oh that man should put into his mouth a poison to steal away his brains!" Is it simply the force of a bad national habit and an evil example, as total abstainers who are satisfied with tea and coffee for stimulants would say? For they would cite the fact that experiments have been made by German professors on their students to show the evil effects, even of small doses of alcohol in any form, upon the mind; but the argument against any logical inferences being drawn from such experiments is that they are artificial and conducted under artificial conditions. It requires no series of experiments to show the effects of alcohol in large doses, for, as Maudsley truly says, "A drunken man notably exhibits the abstract and brief chronicle of insanity, going through its successive phases in a short space of time. First, a brisk flow of ideas, inflamed emotions, excited talk and action, aggressive address, unusual self-confidence, a condition of stimulated energy with weakened self-control, so like the sort of mental excitement which goes before an outbreak of mania that the one is sometimes mistaken for the other; next, as in insanity, sensory and motor troubles, incoherent ideas and conversation, and increasing passion, which, according to the previous temperament, is expansive, quarrelsome, melancholic, or maudlin, and which may sometimes, as in insanity owning no cause, go through these stages in succession in the same individual; lastly, a state of stupidity or stupor, which might be called, and is, essentially a temporary dementia."

The beautiful experiments of Professor Pawlow show beyond question the importance of the appetite-juice in digestion and assimilation. He has also shown how this flow depends upon psychical influences. Every physician knows the important influence of a happy and contented mind upon digestion, assimilation, and good bodily nutrition. If a moderate quantity of alcohol taken with food leads to good digestion waiting upon appetite—and by many thinking men this is the case—then it may serve to explain its widespread use. But at all times,

and among all peoples, there has been a desire to be able to alter their mental reaction to their environment. What considerable part this has played in the human evolution of civilisation it is impossible to say. Archdall Reid would say that the widespread resort of the individuals which make up a nation, to alcohol or other stimulating drugs would eventuate racial immunity. Haycraft points to alcohol as a great agent in the prevention of the perpetuation of poor types, and there is much to be said in favour of this view if we regard all chronic inebriates as moral imbeciles, and therefore compulsorily segregable, although the law at present does not recognise them as such. Moreover, it will be shown beyond question that neuropathic and psychopathic degenerates, and criminals, lunatics, epileptics, and feeble-minded under the influence of alcohol, in many cases even *in small and moderate quantities*, become actively anti-social, thus leading to their detainment in infirmaries, prisons, and asylums. Still more obvious is it that all persons with a *locus minoris resistentiæ* of the nervous system, whether inherited or acquired, whether by injury or disease, are unable to withstand the effects of prolonged inebriety. They must either become anti-social or die from the effects of the drink. The survival of the fittest in the struggle for existence depends more and more upon mental capacity than physical strength. Natural selection thus always tends more and more to place the *locus minoris resistentiæ* of the individual in the nervous system, and in that part of the nervous system which has been latest evolved—the cerebral cortex, the seat of consciousness. If Nature made no failures it would make no successes. Variations must occur, and like in the parable of the sower, some seeds fall upon good ground and some upon stony ground. That inherent neuro-potential instability which may on the one hand in a well-balanced mind lead to constructive imagination and genius of the highest order—Nature's success—may on the other hand lead to epilepsy, insanity, degeneracy, and mental perversion—Nature's failures.

Between the two extremes is a wide and increasing class of eccentric and neuropathic individuals, often combinations of cleverness and crankiness, possessing imagination but lacking calm judgment, zealous, well meaning, and egotistical, but generally vain and unreasonable in their mental attitude

towards those who disagree with them, noisily clamouring for rights when they should be attending to duties, bulking largely in the public Press: they fulfill a mission sometimes good, more often bad.

We may ask, Does alcohol act as a test of fitness and sift out the possessors of inherent unstable neuro-potential, eliminating those in whom will-power is deficient and therefore insufficient to control and restrain the readily excitable feelings and easily aroused passions of a neuropathic or degenerate stock?

Still, we have not answered the question, Why do the majority of people of civic worth in all classes and stations take alcoholic beverages as a stimulant? Why do commercial travellers, brokers, and many business men find it necessary for their business to drink with their customers? Because alcohol, even in moderate quantities, removes prudential scruples and a man tends to act in accordance with his natural feelings.

White ("Alcoholic and Drug Intoxication," *Handbook of Medical Science*,' vol. v, p. 81), has well said, "The causes of drinking are infinitely varied and intimately bound up in the heart of man, at once an expression of his strength and his weakness, his successes and his failures."

It is not my purpose to justify the use of alcohol on these grounds, but in my opinion its moderate use may act beneficially by tending to remove that prudence and selfishness which restrain the natural and spontaneous feelings of human sympathy and sociability which spring from the affective side of man's nature. We can thus understand how wine maketh glad the heart of man. But moderation in one individual is excess in another, and it is easy to pass the line which carries from the region of safety into danger if alcohol is habitually taken as an article of food. Probably the teaching of Parkes is the correct attitude to take up on this question: "It produces effects which are often useful in disease and sometimes desirable in health, but in health it is certainly not a necessity and many persons are much better without it. As now used by mankind *it is infinitely more powerful for evil than for good;* and though it can hardly be imagined that its dietetic use will cease in our time, yet a clearer view of its effects must surely lead to a lessening of the excessive use which now prevails."

In *La Revue* (February, 1903) the opinion of the leading

French specialists is given upon the question, "L'alcohol est il un veritable aliment?" The general consensus of opinion of the majority of these savants is that in a wine-growing country like France the *natural fermented juice* of the grape, taken in moderation, is not injurious but even necessary for a people whose ancestors have dwelt in a wine-growing country from the earliest periods. But they are of opinion that the abuse of alcohol in the form of distilled liquors, essences, and fabricated wines has had a most pernicious influence upon the people, causing alcoholism, with its mental and bodily defects, far more frequently than formerly.

The Influence of Alcohol upon the Nervous System as exhibited in the Post-mortem Rooms of Hospitals and Asylums.

For a long time past I have been struck with the few cases of alcoholic liver that I have seen in the *post-mortem* room of the asylum as compared with my hospital experience in the wards and the *post-mortem* rooms. I can only remember seeing one case of hob-nailed liver with abundant ascites in my asylum experience, and this experience is very different to that which I have had in the hospital.

The case I refer to was that of Jane Cakebread, who was convicted nearly four hundred times before she was found incapable of taking care of herself and certified as insane. She was a constant object-lesson to society of the inadequacy of control of the liquor traffic and of our law to deal with chronic inebriates, for she was not in the ordinary sense insane. Mr. Holmes, in his *Pictures and Problems from London Police Courts*, strange to say, states, "The smallest amount of drink roused the worst elements in her; a pennyworth of four ale was quite sufficient, and after the nearest policeman she would go." Her liver, as the photograph shows, was the most pronounced hob-nailed liver I have ever seen, and suggested prolonged spirit-drinking, and I can hardly believe Mr. Holmes' statement.

I came to the conclusion that, as a rule, only people with an inherently stable nervous system could drink long enough to acquire advanced alcoholic disease of the liver, and I therefore instituted a comparative inquiry of clinical and *post-mortem* results of patients dying in Charing Cross Hospital and Clay-

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bury Asylum. Dr. Candler, my assistant, has undertaken this, and I have told him not to be in any way biassed in his opinions by my theories, rather to err the other way. I will now give his results, but I may remark that I have been over his statistics and findings with him, and I can vouch for the fact that he has exercised the greatest care and diligence in making them as accurate as possible. The error of the personal equation comes in to a much less degree in collating the *post-mortem* results, for at the asylum the notes have been made by two or three skilled pathologists in a systematic manner; at the hospital, although the notes are not so systematically kept, so that in a few instances the weight of the liver is not mentioned, yet they are the records of skilled pathologists whose opinions are authoritative. Moreover, in a number of instances the opinion of hepatic cirrhosis was confirmed by microscopic examination. As far as possible the *post-mortem* findings have been correlated with the clinical records. Here naturally we found the hospital notes more precise as regards the quality, the quantity of, and the length of period of alcoholic indulgence. The hospital results, which will be published in full in the *Archives of Neurology*, vol. iii, show a very close agreement with similar observations made by Drs. Rolleston and Fenton at St. George's Hospital.

The differences in the results are so striking that without claiming any precise scientific accuracy for these statistics it may be fairly deduced that my *a priori* premise is true. Alcohol in small or even moderate doses, and certainly alcoholic abuse even for comparatively short periods of time, as a general rule is sufficient to bring the epileptic, the imbecile, and the potential lunatic to the asylum long before he can drink enough to produce a cirrhotic liver.

I shall now compare the clinical differences of alcoholics in hospital and asylum practice. The people who are admitted into the medical wards of the hospital suffering with disease directly due to alcoholic abuse are cases of delirium tremens, neuritis, with or without psychosis, dilated stomach and gastritis associated with hæmatemesis and enlarged liver, and cirrhosis of the liver with ascites, also heart failure, the patient being often in a dead or in a dying condition. Alcohol often is an important coefficient in many other diseases for which patients are admitted, viz. arterio-sclerosis and degenerative processes

	Charing Cross Hospital.				Claybury Asylum.			
	Males.	Per cent.	Females.	Per cent.	Males.	Per cent.	Females.	Per cent.
Number of *post mortems* examined	735	—	364	—	627	—	644	—
Number with definite liver affection . . .	67	9·1	18	4·9	14	2·2	9	1·4
Number of cases with ascites	25	37·3	12	66·6	—*	—	—	—
Number of cases without ascites	42	62·2	6	33·6	13	—	9	—
Paracentesis abdominis	13	19·4	4	22·2	—	—	—	—
Average age at death— With ascites . . .	49	47·5	47	47·4	51	—	46	—
Without ascites . .	46		48					

* In one case there was a pint of fluid noted, but there was cardiac failure in this case. It will be observed that the age of the male insane patients is higher than that of the hospital cases, the reason being that a number of old men suffering with arteriosclerosis under the influence of drink are sent into the asylums. One striking fact was the much greater frequency of atheroma in asylum cases as compared with hospital cases. This may be explained by the fact that nearly half the total male cases in asylums are general paralytics. The relation of syphilis to general paralysis is probably associable with this result.

accompanied or followed by chronic Bright's disease, cerebral hæmorrhage, and cerebral softening, bronchitis, and emyphsema, and heart failure, fatty degeneration of the heart and vessels, coronary sclerosis and angina pectoris, and aneurysm. Degenerative processes affecting the aorta and large arteries are most frequently the result of a combination of three factors, alcohol, syphilis, and occupation stress, but there may be also an inherent germinal deficiency.

Chronic alcoholism by devitalising the blood lowers the defences of the body against microbial invasion; consequently micro-organisms of pneumonia, tuberculosis, and other specific germs of infective diseases, as well as the ordinary septic and pyogenic microbes, find a suitable soil. A slight general depressing influence, such as a chill or local injury, which would have no harmful effect upon a healthy individual even if micro-organisms were present—because the vital reaction of the

living tissues would prevent a general infection—to a chronic alcoholic may be most dangerous and lead to fatal illness.

Abridged Statistics of Notes of 781 Cases admitted to the Medical Wards of Charing Cross Hospital during one year, 1905.

The notes of 781 cases have been examined; these include all classes of patients—*i.e.* 375 males, 183 females, and 183 males and females under 20 years of age; deducting the latter, there remain 598 persons over 20 years of age. These have been divided into:

(1) Alcohol as a direct cause.

(2) Alcohol as an indirect cause.

(3) Doubtful cases where in all probability alcohol has played a considerable part in the causation of the disease.

In the first class there were 48 cases—*i.e.* 8·02 *per cent.*

„ second „ „ 48 „ „ 8·02 „

„ third „ „ 32 „ „ 5·03 „

Total 128 cases (111 males, 17 females) 21·3 „

Of these cases the heart and vessels were affected in 23 cases, the liver in 21, the lungs and pleuræ in 19, the kidneys in 12, the joints in 11, the stomach in 10, the nervous system, manifested by neuritis and generally mental trouble, was affected in 8, delirium tremens occurred in 5.

Occupation was found to have a very considerable influence:

(1) Those who drink because their occupation makes them thirsty—as dustmen, stokers, labourers, Covent Garden porters, actors, stage carpenters, scene shifters, cooks, scullions, etc.

(2) Those who drink because it pays them in business—as publicans, those engaged in the wine trade, commercial travellers, etc.

(3) Those whose work brings them in contact with drink—as waiters, bus and tram conductors and drivers, draymen, cabmen, cellarmen, employees in distilleries and breweries, barmen, potmen, barmaids, prostitutes, etc.

Alcohol in Asylum Cases, with an Appendix of Cases admitted to Hanwell, 1905.

A large proportion of the recoverable cases admitted to the

London County Asylums consists of pure drink cases, and of these 50 *per cent.* (1) are discharged within three weeks to six months of admission. They often return again in a short time and some cases, termed "recurrent mania" and "recurrent melancholia," are discharged and re-admitted many times, thus fictitiously raising the recovery rate. Many of these people would not come to the asylum were they not subject to the temptation of drink, for which they have an inborn or acquired intolerance. A certain proportion of the recoverable drink cases are delirium tremens, cases similar to those met with in hospital practice, but generally affecting persons of an inborn or acquired unstable nervous organisation; some of them, however, are pure drink cases sent to the asylum when nearly of sound mind, owing to the fact that the hallucinations and delusions have either entirely or nearly left them since the admission order was signed by the magistrate. The motor restlessness when they were admitted to the asylums may have proportionately subsided, and it would have been better for the individual and the ratepayer had such patients not been sent to the asylum. Such people may lose their employment if it is known that they have been in an asylum; it casts a stigma on their families; lastly, it costs the ratepayers from one to several pounds for each case transferred from the infirmary to the asylum.

Leaving out these quickly recovering cases, there still remain a large number of cases of alcoholic insanity which may or may not have had previously symptoms of delirium tremens, but affecting persons of an inborn or acquired unstable mental organisation, epileptics, degenerates, imbeciles, potential lunatics, general paralytics, subjects of head injury, local brain disease, syphilis, and arteriosclerosis; in all such cases the symptoms caused by the poison are liable to be prolonged and even become permanently installed.

According to the predominant features of the mental derangement, cases are diagnosed "alcoholic mania," "alcoholic depressive mania," "alcoholic melancholia," "alcoholic dementia," "acute hallucinatory insanity," or, as the Germans term it, "alcoholic hallucinosis" "alcoholic delusional or paranoidal insanity," "epileptic insanity" or "pseudo-paralytic insanity." If alcohol is the essential factor, however, in the production of the insanity there will be certain specific indications in all these varied forms

of insanity pointing to the more or less specific action of the poison. Even in the absence of a history of alcoholic indulgence there are certain physical signs and mental symptoms which point to alcohol as the cause. The more certain these signs and symptoms, the more certain can we be that the cause is removable and the more hopeful the prognosis. These signs and symptoms are found most pronounced in the two conditions of mental and nervous disorder which occur in hospital practice, *viz.* delirium tremens and polyneuritic psychosis. The symptoms are in such cases the results of the more or less prolonged action of the poison upon a more or less stable nervous organisation—that is to say, drink is the essential cause. Although every form of mental derangement may be closely simulated by alcohol when an insane temperament is acted upon by a sufficient quantity of the poison, yet when alcohol has been an efficient cause in the production of the insanity there are certain indications in the character and constancy of the illusions, hallucinations, and delusions, in the mental state as regards orientation in time and space and loss of memory of recent events, in the existence of a purposeful motor restlessness impelled by the hallucinations and delusions, and in the existence of tremor. Moreover, alteration of the deep reflexes, tenderness on deep pressure of the muscles, anæsthesia, paræsthesia, and hyperæsthesia indicative of neuritic affection are frequently present singly or combined.

The affection of the neural structures subserving kinæsthesis, both central and peripheral, has been pointed out by Bevan Lewis, and is evidenced, not only by the objective and subjective signs and symptoms of neuritis, difficulties of gait and station, in the performance of fine muscular movements, but probably also by the frequency of creeping, crawling, odious things being the subject of the hallucinations. It may be supposed, indeed, that the primary seat of the hallucinations of rats, mice, snakes, spiders, beetles, and bats, such frequent characteristic features of delirium tremens, may arise in the neurons subserving the kinæsthetic sense. Possibly awakened by peripheral paræsthesia, the kinæsthetic cortex revives, by association with the visual cortex, images of creeping, crawling animals, black, grey, and shadow-like, the images of which are projected outwards by the mind on to the wall or, in some instances, to the near point of distinct vision; hence the purposeful movements and

psycho-motor restlessness occasioned by these terrifying visions which are so characteristic of acute alcoholic poisoning. The following case is instructive. A general paralytic was admitted with signs of *mania a potu* to one of the asylums; he saw black devils, which flitted round him and lighted on his nose, putting stinking things in his nostrils and mouth. When the effects of the alcohol had worn off he passed into a state of marked euphoria, and angels now came and moistened his lips with honey and put sweet perfumes into his nostrils.

Visual hallucinations, also of a terrifying character, are the spectres of dead persons associated with coffins, of burglars, of policemen and detectives, of men hidden in the house, of people who follow, accusing the patient of crimes or indecency, and calling him opprobrious names. The visual hallucinations arise probably in the visual cortex and excite by association verbal auditory hallucinations. These terrifying hallucinations of vision and hearing may lead to the patient running into the street in a semi-nude state and being taken up by the police. The more systematised these hallucinations, and the more they tend to the development of fixed ideas of persecution while the mind clears up in other ways, the more certain can we be that the patient is of an insane temperament, and that the alcohol has been the exciting factor in converting a potential lunatic into a probable subject of chronic insanity.

The existence of hallucinations of smell and taste are rare; generally speaking, they are strongly in favour of an insane temperament. The frequency with which delusions of poisoning occur is possibly, in some instances, due to an insane interpretation of the pains caused by dyspepsia, occasioned by acute and chronic gastritis. I am the more convinced that this hypothesis may be true in not a few instances by the frequency with which one finds *post-mortem* evidence of morbid conditions of the stomach in the insane. In some instances, no doubt, the compulsory swallowing of drugs to make them sleep, or to quiet them, has given rise to delusions of poisoning.

That insane interpretations of the pains associated with inflammation of the cutaneous nerves may cause dangerous delusions is shown by the following cases: Several women who had the physical and mental signs of polyneuritic psychosis had delusions that they were on fire, that they had been set on fire with torches, and one patient, who was not then paralysed

in her limbs, tried to jump out of the window. The proof in this case that there was a neuritis was afforded by the fact that a bullous eruption occurred shortly after on the limbs and trunk, a condition which I have histologically shown to be due to a neuritis of the cutaneous nerves. Another woman tried to get bangles off her wrist that were not there ; she developed wrist-drop the next day. Neuritic pains may also be insanely interpreted as the work of electrical machines.

Perhaps some of the most characteristic delusions are those related to the sexual functions, jealousy and suspicion of fidelity of the husband by the wife and the wife by the husband, which may end in murderous assaults. It must be, however, remembered that there is sometimes a basis of truth in these accusations. Not infrequently a woman takes to drink because of the cruelty or infidelity of the husband, and the converse is also true.

Women suffering with polyneuritic psychosis often have the delusion that a baby is in the bed. One woman saw two babies. The several hallucinations arouse appropriate auditory hallucinations ; they hear the baby crying. This may in some instances be correlated with a recent miscarriage. In fatal cases of this affection, often known as Korsakoff's disease, I have observed the frequency of uterine and tubal disease, and this leads me to suppose that there may be a peripheral origin to this delusion. Again, women sometimes complain that they have been violated at night. The frequency with which married women have hallucinations and delusions about babies and, in their delirium, talk about babies, finds a parallel in the occupation delirium of men suffering with delirium tremens. The carman drives his horses, the publican serves and talks to his customers, and the actor performs his tragedy and shouts, " All the world's a stage," etc. But nearly all these hallucinations and delusions, especially auditory and visual, may occur in insanity in which there is no alcoholic factor. It is, therefore, difficult to decide simply by the hallucinations and delusions alone whether alcohol is the cause. Should they persist *while the mind otherwise becomes clear*, it is probable that the case is one in which alcohol has only played a subordinate part and the outlook of chronic insanity is probable. This is all the more likely to be so if the hallucinations and delusions become systematised and there is a complete absence of any peripheral cause.

While the effects of alcohol are still operating there are certain signs of mental derangement which are very characteristic; the patient may be depressed or excited, according to his temperament. The majority of cases which come to the asylums, who either do not recover speedily or not at all, exhibit signs of mental depression, and the history of the case frequently shows that they drank because they were miserable, worried, and had lost their employment, or their money and business, or had family troubles. Not infrequently this has led to attempted suicide. These cases of mental depression may be associated with excitement and motor restlessness, and be termed "alcoholic mania," or the delusions of poisoning and melancholy may lead to their refusal of food, and they are termed "melancholia." The alcohol taken may be merely a co-efficient with other conditions, such as the critical periods of life, climacteric, combined with worry and trouble acting upon a potentially insane person. To ascertain whether alcohol is the essential cause of the insanity it is desirable to look for those characteristic signs of alcohol poisoning found in delirium tremens and polyneuritic psychosis, and in proportion as these are present or absent we may gauge the probability of alcohol being an essential and efficient cause of the mental disorder. We distinguish between delirium tremens, so common in males as compared with females, and polyneuritic psychosis, in which the converse obtains, but it must be remembered that there is no hard and fast line between these two manifestations of nervous and mental disorder, the result usually of chronic alcoholism. I have seen cases of delirium tremens which, after the delirium had passed off, manifested well-marked symptoms of polyneuritic psychosis, and some cases of polyneuritic psychosis have symptoms like delirium tremens at the onset. This latter form of chronic alcohol poisoning may terminate in a permanent paralysis and contracture and marked alcoholic dementia, and the *post-mortem* findings in such cases reveal organic changes in the central and peripheral nervous system in measure proportional to the loss of function. Still, it is astonishing what improvement can occur in such cases if they are carefully nursed and properly treated to prevent permanent contracture and wasting. (2)

Chronic alcoholism may be manifested in the patients' conversation in various ways. There is often a tendency to

wit and humour, the mental association is rather by rhyme and repetition of well-worn jokes, abusive epithets, and coarse, vulgar stories than keen, logical repartee. Again, boastful loquacity, untruthfulness, and the tendency to relate *pseudo-reminiscences* is a common symptom of chronic alcoholism. Especially characteristic is the mental confusion associated with the narration of pseudo-reminiscences.

A boastful loquacity frequently leads them into trouble, and of being suspected lunatics with delusions of grandeur. Their conversation may show a great deal of mental confusion and a tendency to wander incoherently from one subject to another without logical sequence, displaying a marked forgetfulness of what they had uttered a few minutes before. If their attention can be obtained it cannot be maintained, and there is a tendency to repeat themselves. They will talk unreservedly and unceremoniously in a familiar manner with either inferiors or superiors. This tendency to confabulate is a striking feature of chronic alcoholism in its manifold aspects. Personal illusions and affixing wrong names to persons are very common. Patients suffering with mental derangement from chronic alcoholism frequently are unable to correctly name the place where they are, or give the correct date or even the time of the year. Often a patient will tell you that she came to the asylum yesterday when she has been there months. Women suffering with polyneuritic psychosis are particularly liable to this loss of orientation in time and place. They may even forget where they live, although they remember where they went to school.

Loss of knowledge, or perhaps more correctly speaking, loss of recollection of events that happened since the patient had shown mental signs of the poisoning, is common in women with polyneuritic psychosis. One woman, a cook, with signs of syphilis, had been in Hanwell four months and told me that she came "last night." The curious part of her story is that she had been married twice; when her second husband visited her she believed him to be her first husband, who had been dead many years. Although this is strange it is not altogether unexpected, for it is the rule that these patients, who are unable to revive in consciousness any recent events, yet are quite able to recollect all the events of their childhood and early life. A bookmaker who was suffering with chronic alcoholic dementia could not remember the name of the horse that won the last Derby,

although he was told several times, yet he could repeat the winners for each year from West Australian up to a few years ago. Again, as showing the peculiar features of alcoholic poisoning, I may cite the following case: A woman at the climacteric period was admitted with alcoholic mania and suicidal tendencies. She was a good type physiognomically, although the flushed face with dilated venules on the nose indicated chronic alcoholism, to which she freely confessed. She said she wished to leave the asylum, there was nothing wrong with her, and the cause of her drinking was grief caused by the death of her husband, who fell in the dock and was drowned.

As many of these patients are not scholars I apply simple tests of memory, of attention, and of calculation involving simple judgment and reason. I applied the following tests to this woman, who was able to give a coherent history of her life and knew the date she was admitted to the asylum, how long she had been here, and where she came from. I said to her: "You want to leave the asylum?" "Yes," she replied. "Then you must remember the name of the superintendent; it is Dr. Jones." She struck up a rhyme, "Oh Mr. Jones, oh Mr. Jones, he broke his bones by falling over cherry stones." I then asked her to remember the name, which she said she would have no difficulty in doing.

I then applied the second test · "You are given half a crown and you go to a shop to buy half a pound of tea at 1*s.* 6*d.* per pound and a pound of sugar at 2½*d.*, how much change will you have?" She was quite unable to state the correct amount.

Again, they may be able to repeat the multiplication table correctly, but if you reverse the multiplication sum they will give wrong answers. Thus, they will give 7 by 5 correctly, but 5 by 7 they will make different. I now returned to my previous question "Who is the Superintendent?" She had quite forgotten. When I said, "Who broke his bones?" she replied, "Why, Mr. Jones," and finished the rhyme, but was unable to reason from it that that was the name of the doctor who would be able to discharge her. Another test which I have found useful for detecting slight mental impairment in cases that are recovering is that used by Marie in testing cases of aphasia.

Take three pieces of paper of unequal size. Tell them to carry out three separate and distinct operations for each piece.

They will be able to carry out each order when given separately to them, but if before they commence any one the orders for the three are given together, they will forget and carry out the orders imperfectly. Thus, tell the patient to fold up the large piece and put it in his pocket, the middle-sized piece to be folded and handed to you, and the small piece thrown on the floor. Whether it is the lack of power of attention or inability to recollect more than one order I know not, but the frequency with which failure occurs in alcoholic subjects shows mental impairment which is not discovered if only one order is given. With respect to this test I may remark that I recently had under my care in the hospital a case of polyneuritic psychosis complicated by syphilis, in which the patient on admission was apparently hopelessly demented, passing urine and fæces under him and showing marked mental confusion, tremors, and paresis, yet withdrawal of the poison and energetic anti-syphilitic treatment for a fortnight led to a complete clearing up of the mental state, so that he performed this test correctly and also the calculation test. This made me think of the dictum of Dr. Savage, " With alcohol all things are possible." Another very severe case of paralytic polyneuritic psychosis is now under my care in the hospital and is making a most remarkable recovery. After eighteen months in hospital she was considered by the students to be free from any mental defect, yet she was able to perform neither the calculation test nor the combined three-order test. I have not the slightest doubt that if we could see the patient's brain we should find some thickening and opacity of the membranes and atrophy of the tangential and supra-radial fibres. I have invariably found this condition in fatal cases of alcoholic dementia. The change however, is not so profound as would be expected. The question may be asked, " Are there any morbid microscopic changes pathognomonic of toxic polyneuritic psychosis?" I maintain this condition is not peculiar to alcohol; lead, arsenic, and other toxic conditions produce similar symptoms and similar pathological changes, and it makes me suspect that they are not caused by the direct effect of the alcohol, but rather by auto-toxins the result of a deranged metabolism. I have examined a good number of alcohol cases and several lead cases, and in all of these cases where there was a pronounced neuritis there were characteristic changes in the motor cerebral

cortex affecting the large psycho-motor cells. The changes in these cells are similar to the changes seen in the anterior horn-cells of the spinal cord and are very evident; the nucleus is large and clear, dislocated to the side, sometimes extruded altogether, and there is a marked cell chromatolysis. The Nissl granules may be almost entirely absent or only found at the periphery. Sometimes the cytoplasm is vacuolated or shows excess of pigment. It may be asserted that these changes in the cerebral and spinal motor neurones indicate a toxic action upon the whole motor efferent path. Seeing that in extreme cases I have found diffuse degeneration in the crossed pyramidal tract, it may be concluded that these changes are not solely due to a *reaction à distance* due to destruction of the peripheral nerves. Still, if the neurones are to recover we must afford them the necessary stimulus, and this can only be effected by preventing contracture and atrophy of the muscles by massage and passive movements. Examination of the sensory path in severe cases often shows profound changes in the posterior spinal ganglion cells and degeneration in the posterior roots and columns of the spinal cord. In one severe case there was a portion of the spinal ganglion destroyed and only a cavity left. It was the fifth lumbar ganglion, and there was glossy skin of the foot on that side and a trophic sore on the sole. In some cases there is polio-encephalitis hæmorrhagica; owing to the fatty change in their walls the small vessels give way and lead to numerous hæmorrhages in the cortex and in the grey matter of the third ventricle and *iter*. Of course, if the patient survived a sufficient time—ten days—this would give rise to widespread Marchi degeneration. In two cases of delirium tremens I have found widespread Marchi degeneration as Bonhoeffer did, but both of these cases were complicated by pneumonia, and I found evidence of fibrinous thrombosis of vessels and hæmorrhages about the basal ganglia which would have accounted for (in these cases at any rate) the widespread Marchi degeneration; I do not think this degeneration occurs in uncomplicated cases of delirium tremens.

It is a well-known fact that a person in getting drunk may either become excited, boastful, and grandiose in his ideas and conversation, as the French term it, "*vin gai*," or melancholic, maudlin, and sentimental—"*vin triste*"; so the cases of alco-

holic insanity fall into two groups. The majority of the cases are either mania frequently with depression or melancholia, but a few cases are exalted, boastful, loquacious and have actual grandiose delusions so pronounced as to simulate general paralysis. In fact, these cases are often diagnosed as general paralysis, and no wonder, for in most cases of alcoholic poisoning in the early stage the pupils may be sluggish in their reaction to light, the facial expression altered, the tongue and lips tremulous, the speech is often slurred and syllables may be left out, the handwriting tremulous; and not only may the spelling be incorrect and the words cut up into separate syllables and letters and syllables left out, but marked mental confusion may show itself in the matter expressed. The knee-jerks are altered, sometimes exaggerated, sometimes diminished or lost. To these objective signs and symptoms must be added the symptoms of mental derangement. Loss of memory, loss of knowledge of time and place, hallucinations of sight and hearing, but most marked and perplexing in this class of case are, sometimes instead of delusions of persecution, delusions of wealth and grandeur, and it is the existence of these grandiose delusions which so often leads to an erroneous diagnosis of general paralysis. The dementia is, however, not progressive; the pupils, although at first sluggish in reaction, are usually not unequal, and the patient does not babble unsolicited of his wealth and grandeur as a general paralytic does, but only on questioning does he exhibit such delusions. The symptoms most alarming in their similarity to general paralysis may entirely disappear and the patient be discharged recovered; not infrequently, however, the opportunity of examining cases of this affection arises from death by intercurrent complications —*e.g.* pneumonia, dysentery, or heart failure. The naked-eye and microscopic appearances are quite unlike those of general paralysis. Although the membranes may be opaque and thickened, there is but little wasting of the cortex, the floor of the fourth ventricle is not granular, or only slightly so, in the lateral sacs. There is microscopically no disorganisation of Meynert's columns, and no evidence of lymphocytes or plasma-cells in the perivascular lymphatics of the cortex. The only definite microscopic change is some neuroglia cell proliferation in the subpial and septal structures of the cortex and replacement by it of the association fibres in the tangential and supra-radial

layers. Generally there is evidence of chromolytic changes of the pyramidal cells and active proliferation of young glia cells.

Dipsomaniacs are occasionally brought to the hospital and asylum. These are persons who have periodic cravings for alcohol who in the intervals lead a sober and respectable life. Suddenly, for no accountable reason, save an unnatural and insane craving for drink, dipsomaniacs neglect their home and their business, take little food, do not attend to their personal care and comfort, and drinking continuously to satisfy their morbid craving, sink into the lowest depths of moral degradation, and for a time lead an unnatural and vagabond life. Some reason or other may bring such a patient to the hospital or infirmary, or they of their own free will return home and in a short time recover and resume their normal life. A respectable photographer with all the signs of delirium tremens was admitted under my care this week at the hospital. He had a bottle of cyanide of potassium with which he wanted to poison himself and wife. He had delusions that he was followed by a man named N—. A hypnotic gave him a long sleep, and when he awoke all his delusions had disappeared, and he told me that he was not habitually intemperate, but that during the last few years he had had periods of craving for drink which he could not overcome. In the intervals he hardly touched anything and lived perfectly happily with his wife and family. Curiously enough, he had had a similar attack two years ago and had been brought to Charing Cross Hospital, when he had the same delusion about being followed by a man named N—. He informed me that this man was dead and that he had nursed him.

Epilepsy and alcohol.—It is well known that epileptics are particularly intolerant of alcohol even in comparatively small quantities. The fits occur more frequently and are more severe, and it is certain that men who have even never had fits become epileptics in later life by the abuse of alcohol. I have observed both in hospital and asylum practice numbers of such cases; in some the epilepsy is the direct effect of the alcohol upon an inborn, potentially unstable, nervous system; in others it is the action of the poison upon a brain damaged by syphilis, arteriosclerosis, or injury. One very interesting case of this was a soldier, who was entirely free from any hereditary taint,

and who rapidly rose to be a non-commissioned officer; he acquired in South Africa *multiple cysticercus cellulosæ*. He had several fits and was invalided home. About the worst thing possible was done for him; he was put in charge of a canteen, acquired habits of drinking, eventually resulting in his developing alcoholic epileptic mania. He became a patient of Sir Victor Horsley's, who discovered the cause of the multiple tumours he had. He is now in Hanwell Asylum, and he is quite rational and does not suffer with any fits while he is unable to obtain alcohol.

It is not, however, in respect to the motor fits that alcohol is so dangerous to epileptics and potential epileptics; but in respect to the development of an impulsive automatism, causing them to commit indecent acts, crimes of violence, murderous assaults, and attempts at suicide, of which they may have no recollection. Some of the cases, however, of homicide and of attempted suicide remember perfectly well, and the question of responsibility for their action arises.

Many of these epileptics are quite sane when they have been in the asylum a short time and have to be discharged; frequently they are readmitted more than once owing to drink.

Other types showing intolerance to alcohol are imbeciles and degenerates. They are sometimes in prison, sometimes in the workhouses, sometimes in asylums. A good example among many I could cite is Case E. J—, who was sent to hard labour for three months and six months; subsequently he was sent to Hanwell, and he is there now, but he has been discharged and readmitted six times. In the statistics such cases bulk large in the recovery rate. It may well be asked, From what have such cases recovered? Not infrequently history shows that such cases belong to a family of criminals, lunatics, and feeble-minded. A considerable number of the prostitutes on the streets belong to the defective class, and it may well be asked, How many are brought there by drink and *failure to obtain employment?*

All the evidence of the law courts, prisons, hospitals, and asylums point to the necessity of *educating the public conscience* to the terrible evils caused by alcoholic abuse, and nothing will attain the end so certainly as the movement instituted by Viscount Peel of enlisting the sympathy and support of that large section of the community who use, but do not abuse, alcoholic

stimulants. Judging from the members of this Association who dined together last night, I should include in this section the majority of its members, men who have a practical knowledge of the effects of drink when abused, but who are able to use it as a luxury in moderation. The public conscience should be aroused to many of the existing evils of the liquor traffic and the necessity of temperance legislation to control the same. But that is hardly the purpose of this paper. We must confine ourselves to the discussion of the best means of dealing with the chronic alcoholic, who is not at present in the eyes of the law considered insane, but who, in my opinion, may be quite as anti-social and dangerous to the community as the certifiable lunatic.

Let us commence with the chronic inebriate who, if he does not manifest delusions, hallucinations, or suicidal tendency nevertheless is dangerous to himself and others. The vicious indulgence of an unnatural craving for drink may cause the greatest poverty, misery, and despair of his wife, family, relatives, and friends; he is therefore anti-social, a moral imbecile with weakened and disordered will, and liable at any time to commit crime. It is desirable that such persons in all classes of society should be placed under control, whether they desire so or not. At present it can only be done by voluntary application.

Next, all drink cases admitted to the hospitals and infirmaries should be made to pay the expenses of their maintenance, by weekly deductions if they are not able to pay in one sum. There is no more reason why they should be let off paying some fine than the person who is charged with being drunk and disorderly at the police-court. If such people on discharge continue their drinking habits and do not pay the weekly sum to the relieving officer, other measures should be adopted. It might be asserted that the wife and family would suffer; but if a man is a chronic drunkard, too often the wife and family have to maintain themselves, and not infrequently the drunken husband takes the wife's earnings. Some more efficient means are required to protect the sober and industrious ratepayer from supporting the drunkard and his family. Committal to labour colonies would be preferable to sending such people to prison.

It would be desirable to extend the time of detaining drink cases before sending them to asylums. This could be done by

receiving-houses associated with the asylums, or by making all the infirmaries of cities and large boroughs have proper acute insane wards, with properly qualified attendants.

In this way the pure drink cases could be separated more efficiently from the insane in which drink has been a coefficient rather than the essential cause. I am informed that this is practised at the Bellevue Hospital, New York.

Lastly, it behoves society as far as possible to remove the temptation to alcoholic abuse. The secret tippling of women of all classes is a fruitful cause of nervous and mental disease, and it should be made a statutory offence for a grocer or dealer with an off-licence to supply any form of alcoholic beverage to a woman, while charging it up in his account under the head of groceries or other provisions.

We cannot hope that people engaged in the liquor traffic will remit the custom of allowing their employees a daily quantum of liquor, but steps could be taken to make it a statutory offence for a publican to supply anybody intoxicated with liquor when he was engaged in any occupation concerned with the public safety. So that publicans should not only not be allowed to supply drivers of motors when intoxicated, but all persons who are engaged in vehicular traffic. The publican who supplied the last glass to a drunken driver should be heavily fined.

The municipalisation of tramways will do much to prevent drunkenness by not allowing the tramcars to stop opposite public-houses, as the 'buses universally do, and by not allowing their officials while on duty to go into public-houses. I am given to understand that conductors become intemperate by running into public-houses to obtain change or to dispose of excess of coppers. A 'bus conductor at Colney Hatch Asylum informed me that his drinking habits, which ended in his being sent to the asylum, were acquired by his going into the public-house at the end of each of his six out and six return journeys to obtain change. If this is a fact, it could easily be remedied. But the great remedy for intemperance is to provide something better than the public-house for the people's enjoyment and happiness.

Hanwell Statistics.

I have not only seen many of the cases at Claybury Asylum, but I wrote to the Superintendents of three other London County Asylums—

Banstead, Colney Hatch, and Hanwell—to let me see cases which they considered were in the asylum on account of alcoholic intoxication. I was surprised how few really typical cases they could produce. No doubt their explanation was the correct one, that alcohol patients form a large proportion of the recoverable cases. At Hanwell, however, Dr. Acherson, an extremely able clinician who has long interested himself in alcoholic polyneuritic psychosis, examined with me a number of female cases which were termed alcoholic cases; we came to the conclusion that in a very large proportion of these patients alcohol was not the efficient cause of the insanity, but a coefficient of less importance than the inborn temperament.

By the kind help of Dr. Sparkes and Dr. Daniel, who have charge of the male and female sides respectively at Hanwell Asylum, I have obtained the following statistics concerning admissions in 1905:

Admissions: 230 males, 237 females; total 457.

Of the 230 males alcohol was the alleged cause in 44 cases = 19 *per cent.*; of the 237 females alcohol was the alleged cause in 32 cases = 13·6 *per cent.* Total 76, or 16 *per cent.*

9 of the 44 male cases had suffered with previous attacks, or 20 *per cent.*; 9 of the 32 female cases had suffered with previous attacks, or 28 *per cent.* Total male and female cases with previous attacks, 24 *per cent.*

In 13 of the 44 male cases there was a family history of epilepsy or insanity = 30 *per cent.**

In 11 of the 32 female cases there was a family history of insanity = 35 *per cent.* Total of these alleged alcoholic cases 35 *per cent.* family history of insanity.

In 17 males of the 44 there was a family history of drink; in 6 of these 17 it was combined with a family history of insanity.

In 7 females there was a family history of intemperance; in 2 of these it was combined with insanity.

In 17 of the total 24 cases with a family history of drink it was in the fathers, the mother was a drunkard only in a few instances, and then generally both father and mother were intemperate.

These statistics are small, but they tend to show that the sons follow the intemperate habits of their fathers rather than inherit a drink craving. I saw myself personally a large number of these cases, especially those which had not been discharged. I came to the conclusion that a much larger percentage of the males were pure drink cases than among the females. Twenty-eight of the males might be put down as cases of alcoholic insanity—that is to say, alcohol was the efficient cause, or rather, that if alcohol was unobtainable these people would not have come into the asylum. In a large percentage of these, however, there was an hereditary taint, quite 35 *per cent.* Eleven of the 32 females were considered by Dr. Daniel to be pure drink cases. In 3 of the 11 there was an hereditary taint of insanity in the family; 8 of the male cases were described as delirium tremens cases; 19 of the 28 pure drink cases among the males were discharged within twelve months, thus:

* In 5 cases the family history was either not obtainable or not taken, so that probably it should amount to 35 *per cent.*

Males.		Females.	
1 month or under . . .	3	2 months or under . . .	1
2 months or under . . .	5	3 ,, ,, . . .	2
3 ,, ,, . . .	5	4 ,, ,, . . .	4
6 ,, ,, . . .	2	5 ,, ,, . . .	2
4 remaining in asylum more than six months, but discharged within the year	4	6 ,, ,, . . .	2
Total	19	Total	11

Six of the females are noted as having had polyneuritis, none of the males.

Various worries in business, domestic troubles, love affairs, head injury, brain disease, inherent instability, imbecility, criminal degeneracy, and intolerance of alcohol, as manifested by previous admissions to the asylum, are among the other causes which, together with a family history of insanity or intemperance, one or more of which conditions were associated with a history of intemperance in the patient, make it extremely difficult to decide how far the insanity was due to the effect of the alcohol and how far to other causes. Of one thing I am convinced—that in a large majority of these cases the alcohol is a coefficient rather than direct cause, particularly in women. The purely alcoholic cases are especially those which have toxic affection of the peripheral as well as the central nervous system, and all cases of delirium tremens, which, as Bonhoefer states, in the majority of cases occurs in the subjects only of chronic alcoholism.

(1) *Vide* appendix.—(2) In connection with these polyneuritic cases the pains in the limbs and the weakness, progressive in character, are generally wrongly understood by the patient and sometimes by the doctor she consults. Port-wine and spirits are occasionally ordered by the doctor, but still more often taken by the patients in the belief that it will relieve the pain and strengthen their feeble limbs.

Discussion

At the Annual Meeting of the Medico-Psychological Association, held in London, July, 1906.

The President said Dr. Mott always had a very hearty reception before this Association, and a very interested audience. He noticed that no less than six past-Presidents were present to hear Dr. Mott's paper. The question of alcohol and insanity, or alcohol in relation to the body politic, whether from hospital or asylum experience, was one of perennial interest, and he was glad to find that Dr. Mott had anticipated some remarks that he had made in his presidential address the day before. He (the President) referred therein to the National Temperance Legislation League, of which Viscount Peel was President, and he was glad to find that Dr. Mott agreed with him as to the line to be adopted in any temperance reform, viz. that it was best to be temperate even in regard to temperance itself, and that it was better to attract people from the public-house than to lock them out. Dr. Mott's paper was extremely valuable as showing the difference in the effects of alcohol upon individuals, which was another way of expressing the well-known and ascertained fact that the reaction of individuals to alcoholic stimulation also varied. The author had referred to his experience at Charing Cross Hospital in regard to bodily disease resulting from alcohol, and he (the President) believed that this experience was not very different from the experience in asylums.

Dr. Mott had a large number of cases which came under his care through over-indulgence in alcohol. The Strand Union had also a higher ratio of insanity than any other union in the whole county of London, not even excepting Mile End, Whitechapel, and Stepney Unions, areas in which poverty, privation, and want were extreme. No doubt the pursuit of pleasure in the Strand district was a very prominent factor, and a most trenchant comment upon this point is supplied by the Annual Report of the London County Asylums Committee for 1904, which gives the ratio of lunatics per thousand of the population in the Strand as 14·1, as against an average for all the Unions of London of only 5·36! It recalls William Perfect's paper, published about 1770, in which it is stated that insanity was particularly traceable to idleness and gluttony—that is to say, to inordinate sensual gratification of all kinds. He (Dr. Jones) referred to idlers who were in pursuit of banal pleasures, and not to those who were more or less irregularly employed. The cases of insanity caused by alcohol and which came to our asylums did not, as a rule, find their way into the *post-mortem* room, and what Dr. Mott had suggested in regard to reception-houses was a very strong argument in their favour, for they would deal with all the transient toxic cases at present admitted into the asylums, and which almost inevitably relapsed and were re-admitted. Dr. Mott referred to there being two effects of alcohol. One was the direct effect of alcohol as a nerve poison, and he was reminded in this connection of the remarks of Dr. Hayes Newington, that the system reacted to alcohol according to the quality of the alcohol itself, as to impurities and deleterious constitutents created by the method of manufacture. He was sure there was much in this view. There was also the indirect effect of auto-intoxication through digestive abnormalities, and from such states as pyorrhœa alveolaris, which was most destructive to health, not only among the insane, but also among the sane. There was a recognised and well-known stomach derangement caused by alcohol which poisonous germs from the mouth tended to aggravate. Dr. Mott referred to that lying propensity which was rather characteristic of the alcoholic subject, but he (Dr. Jones) believed that those who lied as the result of alcohol—and these were mainly women—did so for three reasons: first, because of a forgetfulness of recent events which was so often found in these cases—and here Dr. Mott's suggested test for memory and attention was very valuable, and it should be in regard to those things which the patient had been in the habit of doing; second, there was in consequence the desire to cover forgetfulness; and third, there was the actual moral impairment which caused them definitely to assert that which was not. As a rule they did not like to be caught lying, and Dr. Jones thought actual lying only a third part of the defect. Dr. Mott referred to the effects of alcohol in asylum cases in regard to recovery, and very rightly pointed to the fact that recovery was more probable if the cause of insanity was alcohol alone rather than alcohol and a temperamental condition, such as an insane heredity. In the latter case recovery was much less likely to occur, and the prognosis was less favourable. There was also the question of diagnosis, some alcoholic cases, especially senile ones and those where syphilis was recorded, greatly resembling those of general paralysis. In his (Dr. Jones') opinion, there was a sex difference also in regard to alcohol. In asylum practice it was rare to find polyneuritic psychosis in a man, whereas it was not infrequent in women. There was also the frequency in women of affections of the generative organs, *e.g.*, salpingitis, which might account for the delusions in regard to infidelity and to the supposed presence of babies in bed with them. With regard to delusions and especially those of the sense of taste and of smell, his opinion was that they were very rare, and he did not think they were primarily peripheral and due to lesions of the terminal sense organ, and he thought the mind, which in all these cases was the interpreting machine, gave the colour to the delusion. He believed it was the cortical area which falsely interpreted peripheral impressions. For instance, a man had delusions of persecution, believing that people were against him. He sought for methods which were usual for an enemy to adopt, and immediately began to suspect his food, which he carefully smelt and imagined to be poisoned. It was the projecting peripherally of central impressions, and not an originally peripheral lesion. He was glad to hear Dr. Mott support the idea that the neurons would improve by peripheral excitation, such as massage and muscular exercise; and that supported his opinion of the advantage of drill and marching such as Dr. Ewart had carried out at Claybury, and which he con-

sidered very valuable adjuncts in the treatment of mental cases generally, and not only those caused by alcohol. It was quite interesting to see the patients taking part in physical drill several times a week, partly to the accompaniment of music or with singing. He was sure that by awakening dormant ideas in the association area we produced a beneficial effect upon the mental condition. He had previously stated in that room that there were a certain number of patients who were apt to lapse into incurable dementia unless they could be interested by some form of mental or physical stimulus, and he felt the difficulty that there was in large asylums, where a great number of apparently hopeless cases were collected together, in bringing individual attention to bear upon them and in consequence of which they could not be roused. He strongly believed that by waking up old dormant paths in the cortical area we had the means to resuscitate decaying neurons. He had listened with very great interest to Dr. Mott's paper and he felt sure there would be a good discussion upon it, because all felt very strongly on the subject of alcohol. There were no less than 20 *per cent.* of the male cases in our asylums there through drink, and probably more than half that proportion *per cent.* of women, and this subject had an economic and a sociological as well as a purely mental interest.

Dr. CONOLLY NORMAN said he, in common with every one else in the room, had listened with the greatest pleasure and interest to Dr. Mott's contribution. Nevertheless, there were still some matters on which he felt there was necessity for elucidation. In regard to the relation of cirrhosis of the liver to alcoholic excess, the table exhibited by Dr. Mott was apparently taken for granted; and yet he (Dr. Norman) was informed by those who had a better opportunity of judging than he had, and were more capable of speaking on pathological questions, that a cirrhosis of the liver indistinguishable from what was commonly called alcoholic cirrhosis of the liver had been observed in cows, occasionally in dogs, and sometimes in young children who had not been poisoned by alcohol. His friend Dr. Norman Moore recorded a case in the *Bartholomew's Hospital Transactions* some years ago of alcoholic cirrhosis of the liver occurring in a child who had been habitually sent out by his parents for gin, and used to take a small nip out of each supply. But, exclusive of cases of that kind, he was informed that cases had been found in children in whom there was no history of alcoholism. Again, the experiences of their colleagues in India seemed to point to the fact that alcohol, which exercised such a bad effect on Europeans in that country, rather produced a large fatty liver than a cirrhotic liver. So that there still seemed to be some doubt about the connection of so-called alcoholic cirrhosis with alcohol. It was many years ago that he pointed out the extreme rarity of cirrhosis of the liver in asylum *post mortems*. He pointed out that rarity at least as early as 1893: he was then working with Dr. Bevan Lewis at Wakefield Asylum, and told him in the presence of a surgeon to a large convict prison in the North of England. His own experience was there confirmed in this surgeon's words: "It is remarkable that a great number of the persons who die with me are drinkers, and yet I never see a case of cirrhosis of the liver." Shortly after Dr. Mott was first appointed to the position he now occupied at Claybury with such benefit to science and humanity and such distinction to himself, he (Dr. Norman) mentioned the matter now under discussion to him, and expressed the hope that he would look into it. He did not know whether Dr. Mott recalled that circumstance, or whether, as one would naturally expect, he took up the inquiry on his own initiative. It was one which would occur to him at an early stage of his investigations. Dr. Mott spoke of the injurious effects of alcohol in those who suffered from an insane or epileptic inheritance. But he did not say anything about alcoholic heredity. He supposed that was because it was the fashion nowadays not to believe that acquired characteristics could be transmitted. Yet was there anyone who doubted that the children of alcoholics were far more liable to alcoholic trouble than were other people? If there were any present who doubted it, their experience must have been small, or they must wear some peculiar kind of spectacles which prevented them seeing what took place under their noses. It was difficult to be sure, when coming across a person of unsound mind who had also been a hard drinker, how much of the condition was due to the alcohol alone, and how much could be attributed to other causes. And he (Dr. Norman) considered it his duty to report every month, for the purpose of educating the public, the number of cases which had come into his asylum in the previous month in which

alcohol was a cause. Of late years, however, he had taken to saying that alcohol was an important factor in production; further than that he had ceased to go. Intolerance to alcohol had long been noted as an indication of nervous instability, a fact to which he thought Griesinger first drew attention a long time ago. Dr. Mott had spoken of alcohol causing gastritis and altered metabolism, and thus auto-intoxication, and so bringing about cirrhosis of the liver. Did not the same apply to changes in the brain? He did not know why that point was particularly dwelt upon by Dr. Mott, because it would appear as if the same would apply to the brain. Among the many interesting topics which had been dwelt upon in the contribution—too many for one to venture to review them all—was the necessity for preventive measures. Receiving-houses were spoken of, and he (Dr. Norman) would like to know how receiving-houses were to act in the way of preventing alcoholic trouble. Brief abstinence was of no use, and receiving-houses would bring about a condition of things in which the alcoholist had two or three weeks in which to recover himself, then went out and began his drinking again. That already occurred far too frequently in asylum patients. In another part of his paper Dr. Mott spoke of labour colonies. He (Dr. Norman) would for other reasons advocate receiving-houses, and would combine with them labour colonies. But receiving-houses were no better than asylums with regard to the special object in view to-day.

Dr. JAMES STEWART said he felt he was voicing the opinion of a very large number of members when he said that there were very few occasions during his forty years' membership when a more suggestive paper had been read than that to which the Association had just listened from Dr. Mott. He said that it was pre-eminently to that Association the public would look for some actual and definite assertion with regard to the difference between the chronic excessive alcohol drinker and the inebriate. That distinction he laid down positively. He said, just as Dr. Mott had laid it down that day so admirably and succinctly, there were men constantly coming under notice who, time after time, indulged excessively in alcohol, but yet became perfectly well mentally in the intervals; but there was another set of men who, no matter how well they got over the immediate effects of bouts of drinking, were yet people of such a character of brain that they could not exercise their will power, so that when any special trouble came upon them they would drink to excess. Moreover, that class of people was supplemented by another class, which included those people who, from birth, had got a condition of brain which made it difficult for them to bear even a small amount of alcohol at any time. He asserted that drunkenness was a vice, inebriety a disease. Drunkenness was a thing which ought to be punished; inebriety he considered a disease which ought to be taken under the care of the practical physician.

Dr. HOLT, who was present as a visitor, kindly gave an interesting account, based upon wide observation, of the habits of a mining population. He cited examples of longevity, and of recovery in a case of hemiplegia and in another case of fractured clavicle, in alcoholic subjects. He regarded alcohol as a useful agent in certain conditions—*e.g.*, as an aid to digestion when meals were imperfectly masticated, and as being helpful in various mental and physical crises. He gave it as his experience that those who became drunkards had originally taken alcohol owing to some skeleton in their cupboard, and he argued that we ought to have fuller knowledge of the existence or non-existence of such determining factors, and be better equipped for investigating their possible pathological effects before we condemn alcohol as being even a coefficient in the causation of the sad result.

Dr. CARSWELL said he understood Dr. Conolly Norman to say that if the children of alcoholics were said not to be more liable to disease than were other children, those who made this statement were incapable of seeing what was before their nose. With that bold statement he did not agree. If Dr. Conolly Norman meant that the children of alcoholics brought up by their parents were more liable to disease than other children he agreed with him; but the other unqualified remark he did not think accorded with experience; it was not true if the children of such parents were taken in hand and brought up under other conditions. Probably Dr. Conolly Norman agreed with that, and his (Dr. Carswell's) rendering of it was simply an elucidation of what Dr. Conolly Norman meant. The point was an important one in many directions, which there was not time to elaborate; he would give only one instance, which would perhaps appeal to Dr. Conolly Norman.

In Scotland the authorities believed in boarding out; he was not now referring to boarding out lunatics; they boarded out pauper children. If one took the statistics of a large parish, such as Glasgow, with 600,000 population, relative to boarded-out children, children of depraved and drunken parents who had come into the charge of the parish because the parents were incapable of caring for their children, then the results of transplanting those children and bringing them up under the guidance of other adults had been most admirable. Those children got into situations and performed the functions of life indistinguishably from other children in the villages in which they had been brought up. That was a most encouraging feature of social effort. And while it was perfectly true that if one took the death certificates it would be found that the children of alcoholics, brought up by their alcoholic parents, certainly died in larger numbers and suffered more from debilitating diseases, it was encouraging to know that there was not such a handicap placed upon such children if the environmental conditions had been satisfactory. He thought the Association and the profession were under a very special debt of gratitude to Dr. Mott for contributing the paper to which members had just listened; it summarised the position from the hospital and the asylum points of view in regard to alcohol in a very demonstrative manner—in such a way, indeed, as only one well equipped from the pathological, bacteriological, and clinical points of view could have done. No mere clinician could have made the contribution which Dr. Mott had just given. In that paper he (Dr. Carswell) thought there were two distinct contributions. He had given a very valuable summary of the main clinical features of alcohol in producing mental disorders, and had also given one or two suggestions of a very practical character, and he would be very glad if those suggestions were homologated, to use a Scotch phrase. He had no criticism to offer, but, on the other hand, much to express gratitude for, in connection with the summary of the clinical varieties which Dr. Mott had put forward. Only one thing he would like the author to make clear, as it was not yet clear to his mind. The words used seemed to indicate that Dr. Mott's view was that *delirium tremens* was a pure alcoholic affection, the continued effect of an alcoholic bout. His own impression—and he thought it was supported by at least some pathologists, including Forbes Robertson—was that the delirium tremens (usually thought of as such), with the acute motor symptoms, hallucinations of vision, and so on, running an acute course for an average period of five or six days, was a disorder which occurred in alcoholics, but was probably primarily produced by an auto-intoxication from the gastro-intestinal tract. That view was supported by the fact that one occasionally, and from his experience he would say fairly frequently, saw cases presenting symptoms of delirium tremens in which there was no alcohol at all. He had two women under care recently, one a phthisical subject and the other took no alcohol. He showed the last of the two to a certain physician who was visiting, and asked him what he made of the case. He replied by asking whether she had not been drinking. She had not been drinking, and yet she exhibited all the symptoms of a depressing attack of alcoholic insanity. He thought the view he had tried to indicate was the correct one regarding the causation of delirium tremens, and it was very desirable that the correct causation and condition should be known. He heard recently of a man who had been absent from duty rather frequently for some time, and somebody was inquiring as to the cause of his absence from his subordinate, but it was difficult to get at the cause from the subordinate until at length he said, "You see, sir, old Wulley is a fair martyr to delirium tremens." The second distinct contribution was that Dr. Mott had suggested—and it was the first time Dr. Carswell had heard the suggestion—that the cost of treatment in the Poor-Law infirmary or asylum, or whenever it came out of the rates, should be a civil debt; that the patient treated should be called upon to pay, and that in default some disability should be placed upon him. He did not know that it was necessary to go the length of saying there should be imprisonment, but some distinct disability. He (Dr. Carswell) thought it high time that the Association expressed an opinion in favour of that position; the time had arrived for saying definitely that it was a point upon which those who had experience of such matters were agreed. Another point was that Dr. Mott would establish reception-houses, and he made that an argument in favour of such establishments. He (Dr. Carswell)

did not intend to elaborate that; he was satisfied, as Dr. Jones had said, to observe the progress which the movement was making. During the last year, out of the 621 cases which he had had under care in his hospital, which for present purposes might be called a reception-house, there were 133 cases which might be called delirium tremens, alcoholic insanity, and a very few of those had ultimately to go to the asylum—only eight. Eighty-seven males and twenty-seven females were discharged recovered. He thought one was on rather dubious ground when making suggestions as to colonies, etc., for alcoholics, as the majority of the cases were acute. His experience of cases of delirium tremens was that the majority of them got well and returned to their duties; they did not come back for treatment. A certain proportion of them came back, but it would be a serious undertaking to place such people for long in an inebriate reformatory or labour colony. He had had enough experience to prevent his being so enthusiastic about inebriate reformatories and colonies as he once was, and he entered that as a criticism upon the proposal. In general terms, the drunkard who made difficulties through perpetually getting drunk and had delirium tremens was a problem, and he thought he should be placed in a labour colony. Speaking for the public asylums in Glasgow, he was sure that, supposing such cases were taken from the asylums and placed in labour colonies, the asylum population would not be materially reduced; there were not many people in the Glasgow asylums suffering from alcoholic forms of mental disorder who were sane enough to be placed in a labour colony. He did not know how it applied elsewhere. He believed any suggestion to remove such cases to a labour colony would be met by the objection he had stated, and that they would not be found in sufficient numbers and quite suitable for such places; and the superintendents of the asylums would be reluctant to part with them because they proved very useful patients. Of all Dr. Mott's suggestions he thought the most important was that it was time the profession spoke out definitely in favour of temperance as defined by Dr. Mott—not extreme demands, but suggestions in favour of a rational movement of public opinion, such movements as were so eloquently referred to at the dinner the previous night by Sir William Collins and another speaker, who quoted from John Morley, that the thoughts which came from the heart must go round by the head. He thought the feelings and sentiments of those present, aroused by their practical experience, certainly suggested from their hearts certain proposals. And he supposed the Association might be taken to represent the head. It had arrived at the stage of consideration, and he thought the Association should give a very definite expression of opinion that such movements as the President referred to on the previous day, and as Dr. Mott had spoken of now, should receive the hearty and unanimous support of such a body as the Medico-Psychological Association.

Dr. McDOUGALL said that if a man had been drinking heavily and his alcohol was cut off suddenly, he got delirium tremens, and continued in it four or five days. He also wished to ask a question in regard to alcohol and epilepsy. Was it possible to distinguish two classes of cases in epileptics, those who were not affected by alcohol and those who were? It was pointed out to him in an epileptic colony that certain patients were taken in and for fifteen days afterwards they had epileptic fits, but they would not have another in fifteen years. Still, if they took alcoholic drink the fits recurred. It was because those cases were not distinguished that alcohol was supposed to do harm in all cases of epilepsy. He had no experience of it himself, because his patients were teetotalers before they came to the institution, and there was no alcohol on the premises, except for visitors. He had never seen any distinction made in books between the case in which a fit was set up by alcohol and by nothing else and the ordinary epileptic, in which, though the alcohol was cut off, fits still continued.

Dr. HUBERT BOND said he only rose in response to a request of Dr. Mott, who asked him to give his experience of Ewell Colony. The paper was interesting to him, and particularly that part which referred especially to epilepsy. He largely agreed with what Dr. McDougall had said. He had pointed it out in each of his annual Reports; but he thought that if Dr. McDougall would examine the age at onset of the epilepsy, he would find that cases which were apparently caused by alcohol were of later origin. And he had been accustomed to divide his cases into those two groups, namely, those in whom the epilepsy developed in the adolescent or pre-adolescent period and those in whom it developed subsequently.

With very few exceptions had he seen cases of epilepsy with an onset subsequent to the adolescent period in which alcoholism was not if not the prime, at least one of the ætiological factors—that, or syphilis, or both. It was very difficult to differentiate which was the part which each played when in conjunction. One had to remember that, taking the general insane population of a large asylum, something like 20 *per cent.* had had syphilis at some period of their life. At all events, that had been his own experience. He agreed with what had been said about heredity. He was inclined to place that on a higher and more important plane than the alcohol itself, and he thought that the more opportunities one had of getting at family histories and details the more one must get back to that. One's opportunities were limited, but the more one could get hold of, not only the father and mother, but the various other members of the family, not only their record on paper but an opportunity to actually see them, the more largely would heredity loom in the picture of causation. His own experience of the cases in the colony was that the figures of insane heredity were not really as high in the case of epileptics as they were in regard to other classes of the insane. But if insane heredity and epileptic heredity were grouped together, the percentage of cases in which there was one or both would be found to be very high indeed. He had not the figures with him, but he believed the percentage was as high as forty. Dr. Mott did not appear to make much allusion to alcoholic heredity, but one or two other speakers had touched upon it. He had a considerable number of such examples. One's difficulty was to ascertain whether the alcoholic excess occurred before the patient was born, and he had not always been able to satisfy himself on the matter. His impression was that an alcoholic heredity did not produce such great liability to alcoholism in the children as Dr. Conolly Norman suspected, but produced a liability to other psychoses. But there were certainly cases which, in the ordinary course of statistics, would have gone down as examples of alcoholic heredity in which he had subsequently discovered alcoholism was developed in the adult subsequently to the birth of the child; and that of course would to some extent reduce its significance. There were a number of points on which he would have liked to have touched, but time was short. With regard to the amount of drunkenness in the patients, his experience was that they did not take any great excess daily. They confessed their habits fairly frankly, and it had been a moderate amount of drinking, otherwise they would not have been able to keep their work. But they would confess to big drinking bouts at the end of the week. His own experience when he was pathologist and assistant medical officer at Banstead Asylum was very much the same as Dr. Mott's with regard to the proportion of cases with severe liver trouble. Out of the 450 cases on which he made *post-mortem* examinations, there were eight only in which there was any "hob-nail" condition of the liver.

Dr. McDowall said there was only one point about which he desired to say a word, namely, reception-houses. One was quite familiar with the fact that acute alcoholic cases were received into asylums which, under other circumstances, need not go there. It was very much a question of locality and the arrangements for treating the insane generally. In large cities like London and Glasgow, where there were large workhouses with elaborate medical wards and all appliances for the care of every kind of case, he was quite satisfied in his own mind that the arrangement of taking those alcoholic cases to suggested parochial hospitals was an exceedingly good one. But in many districts, such as his own in Northumberland, he did not know that any advantage would be derived from erecting reception-hospitals. Except on Tyneside, the whole of the county was agricultural, and the small country workhouses were quite unfit, both medically and officially, for the reception of those people. And on the Tyneside, in the Tynemouth Union there was a large workhouse and quite a good infirmary in connection with it. As a matter of fact, a good number of acute alcoholics were detained there; but he did not think they did any better by them than if they were sent to Morpeth. If those people were to be detained in workhouses or reception-houses, the method in which those houses were to be officered, and the class of men, as well as many other things, would require very serious attention before they of the Association, as medical superintendents and men accustomed to the difficulties of asylum administration, would be ready to extend to them their whole-hearted support.

Dr. Mott, in reply, thanked those present for listening so attentively to his

paper. He felt it was somewhat impertinent of him to come and speak before those who had had a great deal more experience than he had in many matters on which he had spoken; but perhaps he had more leisure for looking up a number of cases and going fully into them than some of the gentlemen who had had more experience than he had in treating them. That must be his apology. It was such a very important question that the difficulty he felt was not as to what he should say, but as to what he should leave out. He feared he had left out much of what he might have said. He had to thank the President very much for his remarks, and he was interested to learn that the Strand Union sent a large number of alcoholic cases to the asylums. He presumed they were the recoverable cases which were soon discharged from the asylums; because he thought that people who got drunk in the pursuit of pleasure were more likely to recover than were those who drank because they were miserable, worried, and depressed. Moreover, the great majority of those who suffer from the effects of alcoholic intemperance in the Strand district do not belong to that parish; indeed, one might say they belong to the whole world. The people who come to the *asylum* from the Strand district he should have thought are those who minister to the pursuit of pleasure. With regard to the quality of the alcohol, he was travelling not long ago with a member of the London County Council who was a great temperance reformer; and he said he could not see the difference between Martell's "Three Star" brandy and alcohol coloured with burnt sugar. He told that gentleman that it was clear he had never tried them. He (Dr. Mott) knew the difference next morning, and he was sure the physiological test was much more subtle than the chemical test. At the same time, he thought it must be recognised that enough alcohol of any form whatever would produce toxic effects; and it did not much matter in what form it was taken provided the quantity was sufficient. Still, he could not help thinking that many of the effects of alcohol were produced by the deranged metabolism of the body, particularly by setting up a gastritis; then the patient was unable to take food, suffered from morning vomiting, and resorted to drink instead of food to keep him going. Such cases were very liable to develop delirium tremens, because the vitality of the system was lowered, and, as Metchnikoff said, the number of phagocytes which formed the first line of defence against microbial invasion was diminished by alcohol. There was no doubt that most of the cases of delirium tremens which came into hospital were cases in which there was injury, which might be either slight or severe, or in which there was some disease, such as pneumonia. When the patient was admitted he did not show signs of delirium tremens. One saw a process of selection taking place with regard to the people who had had delirium tremens in the infirmaries, and in whom symptoms of alcoholic poisoning persisted. As a rule it was not possible to send patients to the asylum who were suffering from severe disease or injury; so that the class of case which came to the asylum was not the same as one saw in the hospitals, because they were not kept in hospital if they had no bodily disease but had mental symptoms; they were transferred to the infirmary, unless one was particularly interested in alcohol, as he had been lately, and, therefore, he had kept a few cases. But in general hospitals there were not facilities for treating such cases. With regard to Dr. McDowall's remarks on the subject of reception-houses, it would be absolutely necessary that any system which adopted interception of patients to prevent them going to asylums should have thoroughly equipped institutions; not only equipped in the matter of suitable accommodation, but also equipped with men who had had practical experience in dealing with the insane. He was sure it was absolutely necessary; that the care of such people required special medical officers and attendants. Dr. Conolly Norman reminded him of a conversation he had with him many years ago. He (Dr. Mott) had forgotten about it. In his *Croonian Lectures* he mentioned the extraordinary liver of Jane Cakebread, and that there were few liver cases in asylum patients. He thought it very likely that, knowing what a large experience Dr. Conolly Norman had, the conversation may have had something to do with continuing his work. At any rate, he had a very high opinion of any statement of Dr. Conolly Norman, because he knew him to be a very observant man, and that he had had unusual opportunities of studying the question of alcohol in Ireland, where there was a good deal of indulgence. But there were one or two points in the speech of Dr. Norman which he would notice. He referred to the influence of a family history of drink and

the transmission of acquired characteristics. He (Dr. Mott) did not believe that a tendency to drink was transmitted. What was transmitted was the deficient will-power and lack of higher control. One might almost as well say that the quality of the liquor was transmitted, that because the father liked brandy, the children would also like it. He (Dr. Mott) thought the truth was much nearer in what Dr. Carswell had said. If the children of chronic drunkards could be taken away from them and put under proper conditions, they would grow up as healthy children, without a craving for alcohol. But if a drunkard married an imbecile or otherwise defective woman, the children were likely to be insane. He had seen many instances of congenitally defective women married to drunken men, or not married to them and having illegitimate children by them, and those children were of defective mental capacity. He felt sure that in such cases there was mental insufficiency developed by the inborn tendency to a defective brain from the mother, combined with an inborn tendency to a defective will-power from the father. Dr. Stewart had asked him in what part of the brain he would locate chronic inebriety, or where was the function of will-power located. He admitted with Dr. Stewart that the trouble was defective will-power, but it was impossible to find anything macroscopically, and very often impossible to find anything microscopically, in the brain in cases of true insanity. His own opinion was that more would be learned as to the functions of the mind by studying simple reflex processes in the living state in the lower animals than by observing dead tissue in the higher, because, after all, the highest volition was simply the last term of a series of which a simple reflex was the first. And possibly from the chemical side more information might be obtained than the microscopical side had yet yielded. He was very glad to hear Dr. Stewart's remark about the importance of distinguishing between inebriety and drunkenness. There could be no doubt that dipsomania was a distinct condition. The person who had a periodical craving for drink had a form of insanity which was different from the state of the chronic drunkard who drank continuously, and about whom the only insanity was a lack of will power to control his feelings and his vicious habit of self-indulgence. That was the kind of people who came into hospitals, and who went on to develop cirrhotic liver. Many people occupying high positions in society, who manifested insane symptoms, got into that condition. He had been especially interested in the remarks of Dr. Carswell about delirium tremens. There could be no doubt that in the cases of delirium tremens seen in hospital the cause of the nervous phenomena was not so much the drink, but some added factor in a person who was a chronic inebriate; because he thought nearly all those cases occurred in chronic inebriates, and it was curious how differently alcohol affected various people, as shown by the morbid changes which were found. It was found impossible to produce in animals by the continuous administration of large quantities of alcohol either neuritis or cirrhosis of the liver. He thought the cause must be some auto-intoxication, or possibly also the absorption of toxines of microbial origin. The cases of polyneuritis in women were particularly instructive in that respect, because half of those examined had some uterine affection, or tubal disease, or pneumonia, or something of the kind, at the time that the degeneration of the nervous system occurred. He thought Dr. Holt took a little different view of the effects of alcohol generally, and its influence on the body, to his own. There was no doubt that some men could drink heavily and still live to a good old age; but he thought the results arrived at by insurance companies showed that drink did play a very important part in inducing death at an earlier stage than would otherwise have been the case. Moreover, every hospital physician knew that a slight head injury, or even a slight ordinary wound, in a chronic inebriate, was liable to lead to most disastrous results; in fact, one could never prognose what was going to happen, even with the slightest injury, or in an acute disease, if the patient had been a chronic drunkard. What he believed Dr. Holt wished to emphasise was that alcohol counterbalanced, in a measure, those deleterious effects by improving the man's sense of well-being for the time, so that he could very often digest his food and look at life in a more cheerful way than he otherwise would. He (Dr. Mott) would suggest that alcohol in the form of good wine taken in moderation may exercise a beneficial influence—*i.e.*, as it was taken by members of this association at their dinner the previous night. A little wine, to people

who had been accustomed to it, if it promoted digestion and assimilation, was a good thing. He was not prepared to discuss, on the present occasion, the arguments of Archdall Reid, though there was much to be said in favour of those arguments.

Amentia and Dementia: a Clinico-Pathological Study.

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PART III.—DEMENTIA (*continued*).

Varieties of Dementia.

The description of the varieties of dementia which is contained in the present section is based on the clinical classification of 728 cases of mental disease referred to in

https://doi.org/10.1192/bjp.52.219.673 Published online by Cambridge University Press