

Cases of dementia præcox in the active phase of the disease constantly suffer from extremely severe bacterial infections of various kinds. Neurotoxic diphtheroid bacilli are prominent in most; they are found especially in the nasal passages and the genito-urinary and intestinal tracts. Chronic intestinal infections by pneumococci are very common. In several cases made the subject of a general bacteriological investigation and immunised with autogenous vaccines, the progress of the malady appears to have been arrested.

I have no bacteriological data with regard to epilepsy, and I would merely say that in the present position of knowledge investigations of the intestinal flora by anaërobic as well as aërobic methods would probably throw some light on the toxic factor that is undoubtedly present in this malady.

In cases of senile insanity there are always severe chronic bacterial infections. The most vulnerable tissues are those of the cerebral arterial system, and chiefly, though not exclusively, through toxic injury to this the association centres become involved.

Lastly, in dementia paralytica a spirochæte infection of the brain has been shown to be an essential factor. According to the orthodox view, it is the exclusive cause of the disease. Bacterial infections are, however, always added, and they are, I maintain, of equal importance in the pathogenesis of the malady. Spirochæte infection alone of the brain will produce only cerebral syphilis and not dementia paralytica. It is certainly bacterial infection and not the spirochætal one that kills the patient.

(²) Seventeenth International Congress of Medicine, London, 1913. Section XII, Psychiatry; Pt. II, p. 128.

The Psycho-pathology of Alcoholism and Some So-called Alcoholic Psychoses.(¹) By C. STANFORD READ, M.D., Physician to Fisherton House, Salisbury.

THE social problems connected with alcohol are always before us, but social reconstruction after the great war has brought them into greater prominence than ever, while America having gone "dry" and the prohibition campaign starting in this country have brought the question of alcohol home to even the unthinking section of the community. In the past we have had the physiological effects of alcohol put before us almost *ad nauseam*, and everyone is fully aware of the disastrous wide-spread results of excessive drinking. Well-meaning temperance reformers are continually pointing out the intimate relation-

(¹) Read at the South-Western Branch of the Medico-Psychological Association, Portsmouth, April 23rd, 1920.

ship existing between alcoholic excess and illness, crime and pauperism. Not so very long ago in the press, we had the almost amusing incident of a manifesto issued by a list of eminent physicians, who decried its use in medicine, followed not long afterwards by another manifesto signed by an equally eminent catalogue of medical men, who laid much emphasis on the beneficial effects of alcohol as a therapeutic agent. The personal factor is always apt to colour one's views, and I may be no exception to the rule. It is a common fallacy to suppose that science is free from bias and prejudice, but the facts I shall bring before your notice with regard to the relation of alcohol to mental disease will tend to indicate their presence.

Now in order to have an adequate grasp of any problem, it seems evident that its study should be approached from every point of view, yet until recently the psychological aspect of alcohol has been left mainly untouched. The purport of this paper is to dwell superficially on the light that modern psychology has thrown upon the relation existing between alcohol and the psychoses.

It seems feasible at the outset to presume that mankind all over the globe desires and indulges in fermented liquor for some deep-seated reason. Yet we must, on analysis, come to the conclusion that man rationalises freely on this point when he gives his so-called reasons for drinking, and that it is but seldom that the real impulse lies in his consciousness, but that unconscious motivation is at work which in the main has as its object the saving of individual mental pain. Trotter (²) on this point says, "Alcoholism almost universally regarded as either, on the one hand, a sin or vice, or, on the other hand, as a disease, there can be little doubt that in fact it is essentially a response to a psychological necessity. In the tragic conflict between what he has been taught to desire and what he is allowed to get man has found in alcohol, as he has found in certain other drugs, a sinister but effective peace-maker, a means of securing, for however short a time, some way out of the prison-house of reality back to the Golden Age. There can be equally little doubt that it is but a comparatively small proportion of the victims of conflict who find a solace in alcohol. The prevalence of alcohol and the punishments entailed by the use of the remedy cannot fail to impress upon us how great must be the number of those whose need was just as great, but who were too ignorant, too cowardly, or perhaps too brave to find a release there."

One must lay stress, too, upon the effects alcohol has in promoting the social instincts and in paralysing the repressing forces of social taboos. The pleasure that emanates from its imbibition is by no means mainly physiological in origin. It also is due largely to the narcotic effect exerted on the higher mental processes, especially social and ethical inhibitory, whereby those, which normally are controlled by these and

kept from consciousness through repression, are released. The mere lessening of inhibition, by which means a man feels a greater freedom of his ego, brings a sense of elation.

In the face of this view-point, the question of prohibition takes on a different aspect. Many of us are inclined to prophecy that total prohibition would tend to cause an increase in varying types of neuroses and psychoses, and regret that instead of such a measure some means were not scientifically advocated to remove where possible the underlying defects that render alcohol a necessity, and an apparent menace to society generally. Ferenczi (³) says, "The one-sided agitation of temperance reformers tries to veil the fact that in the large majority of instances alcoholism is not the cause of neuroses, but the result of them, and a calamitous one. Both individual and social alcoholism can be cured only by the help of psycho-analysis, which discloses the causes of the 'flight into narcosis' and neutralises them. The eradication of alcoholism only signifies an improvement in hygiene. When alcohol is withdrawn, there remains at the disposal of the psyche numerous other paths to the 'flight into disease.' And when, then, psycho-neurotics suffer from anxiety hysteria or dementia præcox instead of from alcoholism, one regrets the enormous expenditure that has been applied against alcoholism, but in the wrong place."

Psycho-analytic investigations have shown that the most important of the repressed impulses released by alcohol is a homosexual one, as is illustrated by the fact that excessive drinking usually takes place only in the presence of the same sex, and by the patent affectionate behaviour between drunken men not uncommonly observed. The great function of the social tea in woman's sphere possibly may indicate to some extent feminine homosexuality in a sublimated form, and it has been suggested that the increased share in the world's work to which woman is adapting herself rapidly may tend to lead her to a greater desire for and indulgence in alcohol. If we accept the Freudian theory that in the early ontogenetic development of every individual a homosexual element is normally present which in after years should and usually becomes sublimated, it is not surprising to see hidden manifestations of this impulse in later life, especially when some factor such as alcohol has destroyed that sublimation. Homosexuality is, however, so abhorrent to the ego-ideal that it can only mainly show itself in a veiled form, or through mental conflict perhaps produce symptoms of mental unsoundness which I shall refer to later. It is true that solitary drinking often exists among dipsomaniacs, in which case there probably exists a deeper regression to an auto-erotic stage where the self is all-sufficient for gratification and the external world shut out.

Other factors, though, besides the homosexual one may have intimate relationship with alcoholism, but study has shown that among the

unconscious impulses to excessive drinking discrepancies in the emotional life and sexual desires are mainly concerned. The tendency to this form of indulgence bears testimony, therefore, to the prevalent defects in our psycho-sexual life of which we are otherwise unaware. The moderate drinker may find his mental conflicts soothed and some components of his desires gratified, but in others where the conflict is severe and the soil psychopathic, alcohol, by aiding regression and annulling sublimation, may help to bring about abnormal symptoms well known to the psychiatrist. Yet, even then we constantly see evidence of psychological compensation to the self. According to the amount of alcohol taken, different degrees of regression may occur, and at the level reached different conflicts may be unearthed.

Pierce Clarke,⁽⁴⁾ of New York, whose analytic researches in mental disease have been so fruitful, points out many other repressed sexual factors which he traces in the alcoholic's symptoms and reactions. He draws attention to the fear and restlessness which introduces so-called dipsomaniac attacks, which, as in other nervous conditions, are rooted in conflicts and repressions of the sexual desires, and sees sex symbols in the certain animals which are always visualised by the alcoholic deliriant. Most baldly do we find a sexual content in the projection symptoms of the so-called alcoholic paranoiac, so that to negate this factor in the ætiology seems an absurdity. Another impulse by no means uncommonly laid bare through alcohol is the aggressive or sadistic one. Through the readiness with which some men will quarrel and fight under its influence, the man in the street has himself been led to think that a man's true character comes out when he is drunk, and has quoted "*In vino veritas.*" Clark states that though fortunately all drinkers do not become criminal, still alcohol permits hidden criminal desires to work out, and thinks that many crimes seem to be discharges of the need of a "howling drunk." Whether the repeated urgency of the alcoholic desire is in any way attributable to the desire to stimulate the erogenous zone of the mouth as some Freudians would think in the case of sweet-sucking and smoking is, I think, a very doubtful theory. Clark, too, surmises that the erotic working of the love potion which plays such a great rôle in mythology is really alcoholic in its nature, and thinks that wine, being often a symbol of conception or fruitfulness, drinking to someone's health is wishing that the life principle in wine may do him good.

That alcoholics are the victims of severe mental conflict certainly is confirmed by their not infrequent attempts at suicide. We know very little of the deeper motivation which impels an individual to attempt his life, but it is probable that it signifies a longing for Nirvana, and involves the furthest limit of that flight from reality which in some degree or other tends perhaps to be the most fundamental human trend.

The drunkard's humour is well known. He will never be serious and will turn everything into a joke. This mental attitude is believed to be largely due to the fact that he must keep away from painful complexes which would be apt to come into consciousness did he not adopt such a habit. The affable, joky and hail-fellow-well-met type of patient is not unfamiliar to us in asylums among this class of patient. This compensatory reaction results in the individual becoming oblivious to his degradation, feeling no shame at the loss of the finer feelings he once had, and having no self-reproach for the ruin he may have brought upon himself and others.

Though the ætiological factors connected with alcoholism are manifold, enough has been already said to see that, as psychiatrists, we must no longer be satisfied in future with the banal and superficial explanations of heredity, degeneration, bad educative influences, etc., but see that, in each case, we have an individual problem to face with its own particular life-history, which must be probed and analysed to unearth the sources of the mental unrest which has necessitated alcohol as a refuge.

Let us pass on now to the consideration of some of those abnormal mental states that usually are brought under the grouping of the alcoholic psychoses. Our psychiatric text-books are apt to be extremely conservative, so that the budding student of to-day tends to find therein many superficial and out-of-date conceptions of mental disease which may warp and handicap his future outlook. I refer here mainly to what we may aptly term the "functional" or "biogenetic psychoses." At any rate, the question of alcohol in its relation to mental disease requires much reconsideration when reviewed in the light of modern knowledge. The President of this Association in his Presidential Address in 1918 quoted Sir Robert Armstrong-Jones, who is stated to have said that if only the evils of alcohol and venereal disease were disposed of, then half the problem of insanity would disappear with them. Would that I could think this problem could be so disposed of, even partially. This is precisely the superficial viewpoint I wish to endeavour to combat, and much that has already been said points in a very different direction.

There seems no doubt but that our deductions have been often largely at fault in regarding alcohol as the important causative agent in the production of insanity, incidence being confused with cause, and we now see that it is needful to seek further for more remote and deeper factors. Bevan Lewis, in his studies, showed the relationship existing between poverty, want, anxiety, and associated moral factors and mental derangement. He made a claim of dissociation of alcohol and insanity. He found that the least intemperate communities had the highest rate of pauperism and insanity, while the most intemperate

communities had the lowest rate of pauperism and insanity. That is, when prosperity was greatest and funds for intemperance were available, poverty and mental stress were least and insanity was less prevalent. Statistics from the "wet" and "dry" states in America seem only to confirm this. Mott comes to the conclusion that insanity does not keep pace with the incidence of alcohol, and he has pointed out that hepatic cirrhosis is very rare in asylums, from which fact we may deduce that most people will tolerate any amount of alcohol, up to extensive physical disease, without becoming insane, and that this only happens when there are other important factors present.

Somewhat recent work by Stocker would seem to indicate that alcohol can only bring about acute insanity, and he has shown that the cases of so-called chronic alcoholic insanity of all kinds are really cases of epilepsy, dementia præcox, etc., merely coloured by the added factor of alcoholism. That some acute mental disorders are often caused by excessive drinking is patent, but even here a predisposing functioning must often be present. Such psychoses come little, if at all, into the province of this paper. Nor do I allude in any way to those chronic demented states brought on by long-continued excess in alcohol, and in which the ill-effects are shared by the whole body.

The psychogenic factor is specially prominent in so-called alcoholic hallucinosis and alcoholic paranoia, and it is in these states that the pathogenesis is particularly interesting. Though we always find them grouped under the heading of "alcoholic psychoses," we shall see that there are many factors which should make us doubtful as to the scientific accuracy of this. Certainly from the symptoms portrayed the relation between them and alcohol is nothing like as evident as it is in Korsakow's psychosis or delirium tremens. We find no toxic organic signs, such as tremor, neuritis, and speech defects, while the sensorium is usually unclouded, orientation is undisturbed, memory unimpaired, all or some of which at any rate we should presume to be affected if a potent toxin had been the main ætiological factor. Notwithstanding this, some psychiatrists believe that acute hallucinosis differs only in form from Korsakow's psychosis and delirium tremens. Kraepelin sees no important difference between hallucinosis and delirium tremens, believing that if the more atypical cases of each are studied the more symptoms in common will be found. Bonhöffer has much the same opinion. Bleuler has placed the alcoholic hallucinosis in the category of dementia præcox, and Kraepelin thinks the combination possible and that the rapid development of alcoholism points itself to the disease. We must, however, I think, differentiate these conditions, though we must be prepared to meet with præcox types who have acute mental exacerbations through the influence of alcohol. Much depends on how carefully we study the individual case. Cases have

been reported which failed to recover, and which, though benign at first, eventually were transformed into a serious chronic psychosis not to be differentiated from an ordinary dementia præcox. On the whole, though, the good recovery with insight, the sudden onset, the age of the patient, the general make-up, and the short period of illness, all militate against the so-called alcoholic hallucinosis being classed with dementia præcox. Other observers regard hallucinosis as allied to manic-depressive insanity because cases have been met with where alcohol at one time produced hallucinosis and at others manic attacks, and also because of the personality, the mental precipitating factor, and quick recovery with insight. We need not pursue this nosological discussion further, for it only tends to show the artificiality of our grouping, and how, on deeper study, more and more the various functional psychotic disorders are related.

What I have more in view is to show that the toxin of alcohol is not the main agent in causation but only contributory. We are ever too apt because of the alcoholic history to regard any other element as unworthy of notice, though the most superficial analysis will reveal nearly always an important emotional factor as the real precipitating cause. The patient may have drunk as heavily many times before with no mental ill-effects, but on this occasion with the added psychic factor the hallucinosis is produced, and perhaps after having ceased drinking some days. It is interesting, too, to note that the patient himself often has some idea of the right cause of his breakdown, and he is the more led to do so because the content of his hallucinations has intimate reference to the emotional situation which acted as the psychic trauma. One must also lay great stress on the fact that a precisely similar psychotic picture may be seen where alcohol can be quite excluded as a possible agent. Many observers have drawn attention to this, and Turner⁽⁵⁾ stated ten years ago in speaking of acute hallucinosis, "It is probably within the experience of many who have had a large experience that such a combination of symptoms often arises without alcohol being a factor." Because, then, of the absence of toxi-organic signs, the definite emotional trauma which is practically discoverable in the hallucinatory content, the frequent possibility of excluding alcohol in the history, the onset often occurring some time after alcohol is withdrawn, and the fact that alcohol has often been taken in excess before without mental harm when no mental conflict was present, we must scientifically look upon this hallucinatory condition as of purely psychogenic origin, and not in future group it under the heading of toxic psychoses.⁽⁶⁾ This applies as well to the various paranoid states which are frequently met with and having supposedly an alcoholic origin. In these states we see the well-known psychological mechanism of "projection," which means that the individual projects his inner repressed

desires upon the external world so that he attributes these to others in his environment. Projection is, then, a method of defence, and represents an effort at repression which is only partially successful. Not being able to obliterate the disagreeable desires, the repression does manage more or less completely to prevent the recognition of ownership. That the mechanism is prevalent in our daily life is apparent enough on reflection, but it is seen in its extreme degree in the various paranoid psychoses which often have a distinct relationship to alcohol, this latter being often superficially taken as the sole cause thereof. It has already been stated that Freudian investigators have found that the repressed impulses productive of the paranoiac states are homosexual in nature, and upon this they base their explanations of the various projected delusions or hallucinations which characterise these conditions. The negation and projection of this impulse may thus bring about the morbid states of persecution, jealousy, erotomania and grandeur. Perhaps the most characteristic psycho-pathological result of alcoholism is the delusions of jealousy, which would be accounted for mainly by the psycho-analytic school as follows: By reason of the development of the latent homosexual impulse through probably some emotional situation, the individual's capacity to be attracted by the opposite sex is lessened and he becomes relatively or absolutely impotent, which may be also perhaps augmented by the toxic effect of the alcohol. This feeling of impotency is abhorrent, so that to gain fresh excitation he is tempted to desire, or to actually commit adultery. Through projection he believes that it is his wife who has had this desire, or who has committed the act. The homosexual impulse, only partly repressed, is projected in the same way, and he accuses his wife of being in love with the very men upon whom he has placed his desires—a delusion perhaps later generalised to all men. Alcoholism was not therefore the deeper cause of the paranoiac state, but it was rather that in the insoluble conflict between the conscious heterosexual and repressed homosexual unconscious desires he fled to alcohol as a refuge. This, by sacrificing the sublimations, brought the homosexuality nearer the surface, but the impulses connected with it being so contrary to the ego-ideal, consciousness had to at once keep it away from awareness by means of projection and thus causing delusions of jealousy.

In the late great war I found that paranoid states were particularly frequent among those who became mentally afflicted, and it is interesting to reflect upon the various possible ætiological factors. Some French alienists laid great stress upon alcohol as a causative agent in the war psychoses. Lepine⁽⁷⁾ went so far as to state that it was the primary and sole cause in one-third of his mental cases, and more than half—perhaps two-thirds—were influenced by it. He is supported in his contention by Charon and Hoven.⁽⁸⁾ If the observations and

deductions of these workers are in any way true, and they have not been led away by a conscious or unconscious prejudice against alcohol, I can safely say that the cases met with in the British army have been very different. Reserving under the heading of "alcoholic psychoses" those cases that were purely toxic in nature, my statistics at Netley⁽⁹⁾ only showed a percentage of 1.6, while Eager at the Lord Derby War Hospital found only just over 1 *per cent.*, and remarked thereon that the small percentage of alcoholic cases reflected great credit on the abstinence of our army in the field. In seeming opposition to this, Hotchkis⁽¹⁰⁾ of the Dykebar Hospital, found 18 *per cent.* suffering from alcoholic insanity. He states that this group of his included all the varieties of mental symptoms found in this form of mental disease—as though the term "alcoholic insanity" defined a clear-cut clinical picture. He speaks of cases of delirium tremens and chronic delusional states, and between these two classes those who showed various symptoms such as confusion, depression, subacute excitement, and in practically all cases hallucinations. However, he qualifies his nosological conceptions a good deal by remarking that "though alcoholism was a prominent feature in predisposing to a mental breakdown, of still greater importance was the strain and stress of the campaign, and had it not been for this the breakdown would either never have occurred or would have been postponed." In answer to Hotchkis's findings I can only state that I saw no evidence of the many cases of delirium tremens he speaks of. It is true that a certain number of soldiers broke down very soon after having had leave, some of whom on that occasion had imbibed too freely and others had not. But I aver that the factors mainly causative in the breakdown were certain mental conflicts connected with worry, mainly domestic, brought about while on leave, and not the alcohol with which some of them endeavoured to drown the trouble. The discovery that the wife has been unfaithful, the possible finding of an illegitimate child, the illness of someone near and dear coupled with the dire fact that swift return to the battlefield was imperative and imminent—these were the psychogenic factors that lay at the root of the psychopathic trouble to follow. If instead of using that almost meaningless phrase "stress and strain," which is only useful as a cloak for ignorance, Hotchkis had substituted "mental conflict," his latter remarks which I have just quoted would mostly agree with mine, but they hardly warrant him, in my opinion, placing so many under the heading of "alcoholic insanity," for he definitely states that the alcohol was only predisposing.

In my book on *Military Psychiatry in Peace and War*, I have quoted from my alcoholic paranoid cases in order to illustrate amply the subject-matter of this paper. There I refer to a soldier who had often been crimed for drink while in the army, and who frankly

admitted that he drank freely when on leave shortly before the outbreak of his psychosis because he was so worried, having found his wife unfaithful. It was this psychic factor which tended to render him psychotic. He had drunk as many times before, but retained his mental health when no special mental conflict had been present. I confirm my point of view still more by quoting a case which presented a very similar syndrome, where the psychosis developed after a leave fraught with personal worries—the death of his father and the enforced leaving of an invalid mother—and here no alcoholic history was traceable. Roughly to include these cases under the term “alcoholic psychosis” is clearly hardly defensible. Though I have dwelt upon active service experience, I have only done so because I had in that domain special opportunities for study. My remarks, of course, apply equally to the alcoholic paranoid cases of the civilian.

Dipsomania is an alcoholic disorder that most assuredly has a psychogenic basis. This recurrent and uncontrollable desire for drink, according to Kraepelin and Gaupp, is closely allied to epilepsy, while Ziehen believes, though some dipsomaniacs are of an epileptic nature, others should be placed in the category of periodic melancholia and mania. Here again we see the pity of regarding such conditions as disease entities, and the assumed necessity of fitting them into some recognised nosological pigeon-hole. Juliusburger,⁽¹¹⁾ from the psychoanalytic standpoint, looks deeper, and holds that dipsomania is a peculiar mental state with an underlying psychosexual mechanism and reports analyses in support of his view. Pearce Bailey,⁽¹²⁾ of New York, sees many similarities to epileptic states, such as similar neuropathic antecedents, the quick and exaggerated reaction to even small quantities of spirit, the restlessness and anxiety a short time before the attack, the morbid reproach for long-forgotten misconduct, the premonitory depression, and amnesia for parts of the attack itself. However, he believes that dipsomania can better be explained on some other hypothesis, and that what at first sight seem to be epileptic explosions can frequently be reduced to certain phases of mental disease the clinical characteristics of which soon become blurred by alcohol, or to the influence of some recurring psychic motive.

The probability is that the psychic factors responsible are various and must be studied in each individual case. It is certain that there is always much emotional instability and mental conflict, both of which provoke periodic alcoholic excess.

In this short paper I have endeavoured to point out that as regards many of the so-called alcoholic psychoses we have been far too superficial in our pathological inquiries, and that alcohol largely is only contributory, and more a result of a mental illness than the cause of it. Alcohol is taken to promote the social instincts, and alleviate and

narcotise the many mental conflicts to which we must all to some extent be victims. It thus constitutes itself a psychological necessity in modern civilisation. In excess its effect tends to destroy sublimation and aid mental regression and in this way may help to precipitate a psychosis. The regression may be of various degrees, and thus bring into active conflict with the personality different impulses and desires previously more or less successfully repressed. Of these the homosexual impulse is found by analysis to be the most frequent, the resulting conflict being very liable to result in paranoiac states. A deeper study of the so-called alcoholic hallucinoses and paranoid psychoses reveals psychogenic factors which should be looked upon as the real pathological basis of the abnormalities. It must be noted, too, that by means of alcohol the psyche defends itself against mental pain, pleasure is gained by the freedom from inhibitions, and compensations occur, though so often at the expense of sanity. If such views as I have put forward are in any way true, many of these psychoses should be differently classified. Society, too, must bear in mind the psychological aspect of the drink problem if its solution of it is to be a happy and successful one. Those of us who are academically interested in such a vital subject will watch the results of prohibition in America with intense interest. Karpas, of New York, in speaking of the complexity of mental life and its direct relationship to our longings and cravings, which are determined by conscious and unconscious forces, expressed my views when he summed up the essence of these questions in the following words: "Some of our cravings are gratified; others find realisation in our dreams; still others are repressed and compensated. In fact, our mental life is nothing but a readjustment of complex reactions. The poet finds recourse to his phantasies, the philosopher to his theoretical speculation; the scientist resorts to his inventions and hypothetical theories; the well-balanced normal individual seeks adjustment in healthy activities—art, literature, science, occupations, sports, etc.; but the individual with a poorly endowed constitution finds refuge in neurosis, psychosis, alcoholism, drugs and other vicious habits. We must recognise that the alcoholism is nothing but a compensation for a complex, the fulfilment of which was denied by reality."

Our mental health depends so largely upon our capacity to face the stern realities of life, but how many of us for however short a space of time do not find gratification by dwelling in the land of make-believe? It is by means of alcohol that the stern realities of life can seem for the time less harassing—that our burdens seem lighter. Let us not forget that the underlying motive in all voluntary conduct is the pursuit of a conscious happiness. To so many, and especially those whose emotional life is in conflict, alcohol materially helps towards that goal.

- (²) W. Trotter, *Instincts of the Herd in Peace and War*, Fisher Unwin, 1916.
 —(³) S. Ferenczi, *Contributions to Psycho-analysis*, English translation by Ernest Jones, Richard Badger, 1916.—(⁴) Pierce Clark, "A Psychological Study of Alcoholics," *Psycho-analytic Review*, vol. vi, No. 3.—(⁵) John Turner, "Alcoholic Insanity," *Journ. Ment. Sci.*, 1910.—(⁶) For excellent discussions on the alcoholic hallucinoses refer to articles by Carl von A. Schneider, *Psychiatric Bulletin*, vol. ix, No. 1, and by G. H. Kirby, *Psychiatric Bulletin*, vol. ix, No. 3.—(⁷) Jean Lepine, *Troubles mentaux de la guerre*. Paris: Masson, 1917.—(⁸) René Charon, "Psychopathologie de guerre," *Progrès médicale*, June, 1915; Hoven, "Mental Diseases and the War," *Archiv med. Belges*, Paris, May, 1917.—(⁹) C. Stanford Read, *Military Psychiatry in Peace and War*, H. K. Lewis & Co., 1920.—(¹⁰) R. D. Hotchkis, "An Analysis of Cases admitted during the First Year to Dykebar War Hospital," *Journ. Ment. Sci.*, July, 1918.—(¹¹) Otto Juliusburger, "Contributions to the Psychology of the so-called Dipsomania," *Zentralblatt für Psychoanalyse*, July–August, 1912.—(¹²) Pearce Bailey, *Clinical Varieties of Periodic Drinking*, Nervous and Mental Disease Monograph Series, New York, No. 9.

The Significance of Acidosis in Certain Nervous Disorders.⁽¹⁾

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THE clinical evidence of acidosis is the detection of acetone bodies in the urine. Acetone is formed from diacetic acid by the splitting off of carbonic acid, the origin of diacetic acid being in part from fats and in part from proteins. Oxybutyric acid is also formed from diacetic acid by reduction, consequently the presence of acetone bodies in the urine always means that acidosis is taking place. A delicate test is that known as Rothera's, which is quite simple, and will detect acetone in minute dilution:

To about a gramme of ammonium sulphate in a test-tube add a few cubic centimetres of urine, a couple of drops of a freshly prepared solution of sodium nitroprusside, and a cubic centimetre of strong ammonia. A purple colour develops. Nitro-prusside can also be used to detect diacetic acid.

Synchronously with the production of acidosis there is a retarded oxidation as the sodium carbonate of the plasma, which normally carries off the CO₂, tends to be neutralised, and as a result tissue-cells, for their own protection, set free autolytic enzymes of various kinds, which attack the proteins and lipins of the cell itself in order to liberate ammonia, with the object of neutralising the cellular acidity; imbibition of water by the cell-wall now occurs, and the slowing down of all cellular activities; fatigue consequently comes on much sooner with reduced alkalinity.

Acidosis is by no means infrequently met with. The already published literature on the subject gives the following states in which it occurs:

(¹) Read at the Staffordshire Branch meeting of the British Medical Association, February 26th, 1920.