

THE PSYCHOLOGY
OF ALCOHOLISM

GEORGE B. CUTTEN



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THE PSYCHOLOGY OF
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BY
GEORGE B. CUTTEN

B.D., M.A., Ph.D. (YALE)

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TO MY WIFE

MINNIE W. CUTTEN, B.A.

WHO HAS ASSISTED IN THE PREPARATION OF
THIS WORK NOT ONLY BY SYMPATHY AND ENCOURAGE-
MENT BUT BY MANY HOURS OF PAINSTAKING
AND SCHOLARLY LABOUR

THIS BOOK
IS AFFECTIONATELY DEDICATED

INTRODUCTORY PREFACE.

THE study of alcoholism from the psychological point of view which the author now brings before the public, may be said, I think, to have considerable scientific value, and no one interested in humanity will be inclined to dispute the value of whatever practical suggestions may be derived from the same study for the relief of the victims of this physical, mental, and moral disease. In even larger measure than most pathological conditions, the phenomena of alcoholism suggest lines for investigating almost all the inquiries which concern the general relations of body and mind; they also raise and illustrate certain more specific problems connected with the mental life of memory, imagination, and the emotions.

With regard to the physiological and psychophysical conditions and laws of the first two of these three classes of psychoses, little that is suggestive of new views seems to be connected with the study which Dr. Cutten has made of the subject. In a word, the effects of the excessive use of alcohol upon memory and imagination, through the histological and functional changes which it works in the central nervous system, are, in the main, such as might be *à priori* anticipated. In respect to the emotional peculiarities of the victims of alcoholism, however, the case seems to me not to be precisely the same.

This study contributes something of importance towards establishing the truth that disturbed central conditions are the determining causes of the changes which occur in the habitual *feelings* of the alcoholic patient; and that the "reverberations" of the peripheral organism, such as are brought about by a degenerate musculatur, disordered centres of the sympathetic system, etc., are of only secondary, although real importance. From the physiological, as well as from the more purely psychological point of view, then, the profound nature of the disturbances which alcoholism effects in all the emotional life, higher and lower,—passions and affections, and also moral, artistic, and religious sentiments,—is more readily comprehensible. The poison is subduing the physical citadel of the higher life,—of those motives which inspire, elevate, and sustain the spiritual nature in its struggle against the lower, animal nature.

Turning now, for a moment, to the more practical side of this investigation, it is no surprise to find that the suggestions looking toward the relief of the sufferer from alcoholism are almost entirely of the psychological order. General sanitation is, without doubt, here as everywhere else in the field of pathological conditions, of great and indisputable value. But it is doubtful whether the beneficial effect of administering drugs is not chiefly, if not even wholly, due to their *psychological* rather than to their primarily physiological value. Almost certainly the same must be said—and said *à fortiori*—of all hypnotic practice in the case of alcoholic patients. And, really, from every point of view, theoretical and practical, physiological and psychological, the most interesting and astonishing of all the phenomena are those connected with the cure of alcoholism by religious conversion.

The indubitable facts of experience upon which Dr. Cutten dwells in some of these chapters, and which show the remarkable results that follow from abrupt and decided changes in the life of feeling through religious ideas and influences, are deserving of an even more detailed and critical treatment than he has been able to give them in this book. The confessions and actual performances of reformed alcoholic debauchees require, and are worthy of, a much more thorough discussion from the point of view of psychology, and by the methods of the trained psychologist, than they have as yet ever received.

It is for these and other reasons, which have regard both to the advancement of science and to the improved welfare of humanity, that I take pleasure in introducing Dr. Cutten's investigation to the entire public of readers.

GEORGE TRUMBULL LADD.

YALE UNIVERSITY,
NEW HAVEN.

PREFACE.

IN 1902 there was presented to Yale University by the writer, in partial fulfilment for the degree of Doctor of Philosophy, a thesis under the title of *The Psychology of Alcoholism*. Portions of Chapters II., III., V., VI., VIII., and XI. of this work were there included. The following year, in partial fulfilment for the degree of Bachelor of Divinity at the same university, Chapter X. of this work was presented as a thesis, in very nearly its present form. In July 1902, the former thesis was among those selected for publication in 1903, by a committee of the faculty appointed for that purpose. Owing to some interruptions, the enlarged study was unfinished at that time, and it was thought best to defer publication until it was more nearly complete. This pathological study is now presented to the public in the hope of its filling a need among thoughtful men and women who wish to know the relation between the use of alcohol and mental states.

In the preparation of this work willing and valuable assistance has been rendered by Professors Ladd, Ferris, and Mendel, and Doctors McAllister, Defen-

dorf, Alling, and St. John—all of Yale University; and Dr. T. D. Crothers and Mr. Fred L. Emmons, as well as many others, to all of whom indebtedness is acknowledged and gratitude expressed. I also wish to tender my thanks to the authors and publishers who have so kindly allowed me the use of illustrations for this volume.

G. B. C.

January 1907.

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CHAPTER I.

INTRODUCTION.

Historical and present use of alcohol—Awakening regarding alcohol—Former attack on alcohol almost wholly of a religious character—The awakening among different classes of people—Men of science—Physicians—Anti-alcoholic congresses—Legislators—Society—The economic phase—Cost in different countries—Pauperism—Attitude of business—Death-rate—Disease—Purpose and plan of the following chapters.

THE use of alcohol is universal, and is coeval with the history of the race. The earliest Egyptian, Babylonian, and Hebrew writings show drunkenness to have been common, and from this we infer that it existed long before the art of writing was known. Some form of intoxication has always been found by the investigators of the most primitive people, and it was also discovered that the early races were excessive and violent drinkers, their debauches accompanied by uncontrolled excitement, rather than steady and habitual imbibers. The warnings found in early Egyptian and Hebrew writings show that the danger of drunkenness was apparent over three thousand years ago. With the boasted wisdom and intelligence of our advanced civilization, when we clearly recognise the ever-increasing danger, we seem as powerless as they to prevent the increase of the use of alcohol.

In addition to the increase of its consumption, the effects upon the body seem to be getting more injurious and to be developing new forms and types. Moderate drinking has rarely been carried out successfully, for it almost inevitably develops into excess; but to-day there appears to be less and less control, the moderate drinker passing very quickly into the impulsive, violent consumer. It has been stated, evidently on sufficient historical basis, that the nations which have longest used alcoholic drinks have become partially immune to their effects, the Jews and the nations of Southern Europe being pertinent examples. It seems hardly necessary, and certainly not profitable, for any people which is seeking its own highest development, to go through this process in order to be able to drink alcohol with comparative impunity.

What the solution of the problem will be is uncertain, but with safety we may predict that with the great number of men and women now devoting thought and energy to the subject, some lessening of the abuse must come, especially when we consider that it is a battle for the highest good of both individual and race. The proportionate increase of drunkenness seems to be greatest among women, and England has the disgrace of furnishing the greatest proportion of female inebriates of any country in the world. There the women drunkards equal or exceed the men in numbers. In America the drinking is largely confined to males; the proportion in continental countries falls somewhere between these extremes. The Committee of Fifty computes that in America not more than 20 per cent. are abstainers, and on the other hand the percentage of excessive drinkers is only placed at 5. The latter figure is not too large.

Within the past few years there has been a great awakening on the subject, and the reasons for this awakening we wish to consider in the remainder of this chapter. The nature of the attack upon alcohol was formerly of a religious character. Drunkenness

was regarded as a sin, and dealt with from that standpoint only, so that clergymen, the more religious of the church members, and those who suffered most from its effects—the wives and children of the drunkards—were the principal opponents. The character of this movement was largely of an emotional nature, gross and exaggerated statements being made, which were easily refuted. The more recent allies have contributed much of a scientific and solid nature, many very prominent physicians and other able investigators adding valuable knowledge concerning the subject.

It has not been on account of any particular principle at stake, or to uphold any theory, that these men have assembled to the anti-alcoholic cause; but because their observations showed them the injury which alcohol is doing, and their scientific desire for the sway of truth compelled them to warn the people, and in other ways endeavour to decrease the use of alcohol as a beverage. The attitude of the physician has changed so greatly that it is especially noticeable. In the days of Dr. Ford, in England, alcohol was almost universally prescribed for every disease; to-day the bill for alcoholic liquors at some hospitals is almost zero, and it is difficult to find a physician who orders it to his patients to any great extent.

The British Medical Temperance Association numbers about six hundred, and, in addition, over four hundred students belong; this is evidence of the awakening among the physicians. The International Medical Manifesto on Alcohol would have been an impossibility a few years ago, but it met with encouragement on every hand with scarcely a dissenting voice to be heard. The physician should be, as he is, the greatest enemy of alcohol, because he, more than any other, comes in contact with its disastrous physical and mental effects. As Sir Victor Horsley so well says, "We think that the (British) nation ought to refrain from spending £179,000,000 per

annum on drink. The medical profession, more than any other, sees the working of that expenditure of £179,000,000. It sees more than any other profession the working of physical laws and conditions on the morals and on the welfare of the nation; . . . but whether under one guise or the other, the medical profession knows well that it is a potent cause of disease, crime, poverty, and death." The significant words of Dr. Lorenz, the eminent Austrian surgeon, when declining wine at a banquet tendered to him in New York, would indicate the position of many physicians. "I cannot say that I am a temperance agitator, but I am a surgeon. My success depends upon my brain being clear, my muscles firm, and my nerves steady. No one can take alcoholic liquors without blunting these physical powers, which I must always keep on edge. As a surgeon I must not drink."

Viewed from the standpoint of a half-century ago, one of the wonders of the twentieth century was the Eleventh International Anti-Alcoholic Congress, held at Budapest in September 1905, which was attended by 1400 members, composed of some of the greatest scientists, most noted physicians, and men and women of repute from all the countries of Europe and America. The Anti-Alcoholic Congress of France, which convened in Paris during January 1904, is another example of the awakening. Attending this were about five hundred representatives, including pastors and priests, officers in the army, university and lycée professors, judges, physicians, and others from the leading and influential circles. With a place for the sale of liquor for every eighty-one inhabitants, France has become aroused, and it is the purpose of this congress to educate the people to the dangers, as well as to restrict the sale by legislation. Professor Foulet, of Lille, began a scheme of education by posting large placards all over his town to warn the people of their danger, and to acquaint them with the scientific facts concerning

the action of alcohol on the body. When the writer was in Paris in 1903, the same scheme was in evidence there. Large placards on all the billposting boards were very conspicuous, and must have inevitably attracted the attention of all classes. Some Danish physicians have lately formed a total abstinence society, and have posted warning notices in railway stations and other public places so that they can be read by every one.

It is not only the men of science, but also the legislators who are awakened on this subject, and in all countries we find political parties or sections of parties endeavouring to restrict or prohibit the manufacture and sale of alcoholic liquors. In the Anti-Alcoholic Congress of France, just referred to, the Social Democrats participated, with the pronounced statement that they owed it to the welfare of the working man. In some sections a prohibitory law has been enacted, and has been enforced for years, and not petty politicians, but leaders in legislation are considering the question of alcohol. Note the forceful words of Lord Rosebery: "I view the uncontrolled condition of the liquor traffic as a serious danger. . . . No one can deny that there is a great deal too much drink in this country; and that much of the crime, much of the pauperism, and almost all the degradation prevalent in this country are attributable to the curse of drink. . . . If the state does not soon control the liquor traffic, the liquor traffic will control the state."

The German Emperor appointed a commission to inquire into the drinking habits of his subjects. This commission has recently reported to him, and the results of the investigations were a revelation to both Kaiser Wilhelm and the people. The knowledge thus gained will probably be the occasion of restricting legislation. The Russian and other European governments are also aroused. There comes the report that the Imperial Russian Minister of Finance has offered a prize of 50,000 roubles

(\$25,750) to the person or persons who will invent some way of making alcohol undrinkable. Pamphlets giving the exact requirements governing the competition have been printed in the French language and sent to the Russian consulates in foreign countries. In Canada and Australia, India and Ireland, Europe and America, all over the world there seems to have been a spontaneous awakening, the laws of the land proclaiming the progress which has been made, and acting as harbingers of a public restriction of the manufacture, sale, and use of alcoholic beverages.

The changed attitude of society during late years, concerning alcohol and the alcoholic, is another form in which we notice the awakening. No longer is the inebriate tolerated; no longer the admiring onlookers proclaim the staggering drunkard to be "as drunk as a lord." While drinking still flourishes, it is with less public encouragement, less manifestation of noisy revelry, and with less pride in drinking as an enviable accomplishment than in the days of our fathers. Public sentiment is reflected in the words of King Edward, "An officer does me as much honour in drinking my health in water as by using wine." How unthinkable these words would have been a few years ago. For the sake of civilisation we may well be pleased that the man who made his boast that he could "drink his companions under the table," is a relic of the past, and the society which could tolerate such a man is dead and buried. The excuse of necessity has now been abolished, for experiments in the French army show that under all circumstances the French soldier is 40 per cent. more efficient when subjected to a régime of total abstinence. Generals Roberts and Kitchener in Africa have made very practical demonstrations of the same fact with the English army. The labouring man who used to feel the necessity of having his dram regularly in order to do his work and do it well, now knows that he was formerly deceived, and that he is the better workman without it.

The economic phase of the alcoholic question has attracted much attention, and has had a great influence on the recent awakening. Look at the United States, which is far less drunken than some European countries. It was estimated that in 1905 the sum of \$1,325,439,074 was spent directly for alcoholic beverages. This estimate was made from government excise statistics, but if one adds to this the additional amount which the consumer pays for adulteration, and the product of illicit stills, the amount would probably approach nearer \$1,500,000,000. The indirect expense must also be counted. It has been computed that 1,500,000 men and women are daily either mentally or physically disabled for work as the result of drinking. In addition to this, let us compute the public expenses for the extra number of the judiciary, the police force, the jails, the prisons, the poorhouses, and the insane asylums. The value of grain wasted, and the labour used in the manufacture and sale of alcoholic beverages, although already included in the annual drink bill, should again be added, inasmuch as it would increase the wealth of the country if put into some useful business. The total cost of alcohol to the United States, directly and indirectly, cannot be less than \$3,000,000,000 per year.

The commission appointed by the German Emperor, which lately reported to him, estimated the annual drink bill of Germany to be 3,000,000,000 marks (\$720,000,000). This great sum is one-eighth of all the German people earn, and is four times the amount which Germany spends yearly for her immense army and navy, under which the people are supposed to be greatly burdened. Add to this the indirect cost and we have another great sum, the worst feature of which is that of this amount there has been a direct increase of 800,000,000 marks during the last five years. Sweden for defence spends annually 35,000,000 kroners; for alcoholic beverages 80,000,000. Denmark's military bill is 17,000,000

kroners; her alcoholic bill amounts to 63,500,000 kroners. With a population of only three million, Switzerland spends 264,000,000 marks per year for liquor. In regard to England, the Rev. John Watson says, "It is calculated that an average English working-class family spends six shillings per week in drink, or about one quarter of their wages." The drink bill for the United Kingdom for 1905 was computed to be no less than £164,167,941 (\$797,856,193); computing the population of the United States at 86,000,000, Britain's bill is comparatively larger. James D. Whelpley, writing in *The Saturday Evening Post* on the terrible destitution in England, says: "It is at these times that the terrible evil of drink, the curse of Great Britain, comes prominently to the fore. The liquor bill of England and Wales amounts to about twenty-two dollars per capita. It is all incurred, however, by about one-half of the population, and over two-thirds of the amount by people whose incomes are less than \$750 (£152) a year."

The enormous sum of money spent for alcohol must inevitably cause much poverty. The amount of drunkenness caused by poverty cannot be estimated, but the amount of poverty caused by drunkenness can approximately. The replies to questions sent to every almshouse-keeper in the United States show that at least 51 per cent. of the inmates of almshouses became paupers through drink. To put this into statistical form, about 1,530,000 persons who have come to poverty through drink are dependent upon the taxpayers of the country. Warden Roberts, of the New York almshouse on Blackwell's Island, told the writer that he considered nine-tenths of the inmates, of whom he then had 2,593, came there through drink. Mr. Tudor Trevor says that 70 per cent. of the paupers of England, costing the nation ten million sterling annually, are the result of alcoholic drinking. Japan, with practically the same poor laws as Great Britain, has only 24,000 paupers, while Great Britain has 100,000. A Japanese states-

man, being asked to explain this difference in results, replied: "The Japanese drink tea; the British drink alcohol."

Large business concerns have discovered the danger and economic loss in employing drinking men. This increasing demand for sober and reliable men is destined to be a great reformatory force. Railroads all over America, large railroads—as, *e.g.*, the Northern Pacific—have prohibited the use of alcoholic liquors by their employees at all times. Only a year or two ago the French Governor-director of Railroads said that all the Government roads had agreed to discharge all employees who persisted in using spirits and wine while on duty; all persons who continued to drink should be dropped from the pension rolls of the company, and would not participate in the endowment funds in case of an accident. Restaurants on the road were forbidden to sell spirits to workmen. The *Christian Endeavour World* is authority for the statement that the marine insurance companies doing business in New York city now offer a reduction of five per cent. in rates to ships on which no ardent spirits are drunk during the voyage. It may be the economic loss, rather than the physical or moral, which will be the occasion of the remedy.

Leaving out all other considerations, and counting the cost only in dollars and cents, the price we pay for alcohol is astounding. If the alcohol were manufactured and poured into the sea, the world would be much poorer because it was made; but how much better it would be than, in addition, to pay for it in the lives of men, sickness and disease, misery and sorrow—this is the greatest price which we pay, this price which cannot be expressed in terms of money. Matti Helenius, in a thesis presented to the University of Copenhagen, Denmark, in 1902, as a partial fulfilment for a degree of Doctor of Philosophy, estimated that during the last thirty years 7,500,000 persons died in Europe from alcohol-drinking, this number being greater than the total of all who died as the

result of wars during the nineteenth century. He further states that in Denmark one out of every seven of the men who die between the ages of thirty-five and fifty-five die of alcohol-drinking. Further computations have been made by him concerning other European countries. He computes the annual number of deaths from alcohol to be as follows:—

Great Britain	40,000
Belgium and Holland	20,000
Russia	100,000
France	40,000
Germany	40,000
Scandinavia and Switzerland	20,000
	260,000

Dr. T. D. Crothers computes that 10 per cent. of all mortality is due to the abuse of alcohol, and 20 per cent. of all disease is traceable to this cause. Dr. Carter, of Liverpool, says that the mortality from almost every disease has fallen in England, but that from alcohol is an exception. The direct death-rate has risen from 45 per 1,000,000 of those living in 1878 to 77 per 1,000,000 in 1897. Dr. Charles Macfie, of Edinburgh, says that there are yearly 60,000 deaths from consumption and the same number from alcoholism; many place the latter at 100,000, and both of these are preventible complaints. These figures must be largely matters of opinion, as the death certificates show only the cases where alcohol is the direct cause. As Whiteing well says, "Half the certificates we write are mere anodynes for the public conscience."

The following suggestive figures are taken from *Temperance*, August, 1905:

The experience of the Sceptre Life Assurance Society, Limited, for the twenty years from 1884 to 1903, inclusive, gives the following figures: For abstainers, expected deaths, 1,440; actual deaths, 792; being 55 per cent. of the expected. Non-abstainers, expected deaths, 2,730; actual deaths, 1,880, or 79 per cent. of the expected.

The experience of the Scottish Temperance Life Assurance

Company, Limited, for the twenty years from 1883 to 1902, inclusive, gives the following figures: Abstainers, expected deaths, 936; actual deaths, 420, or 45 per cent. of the expected. Non-abstainers, expected deaths, 319; actual deaths, 225, or 71 per cent. of the expected.

In another company they have kept the figures for over sixty years, and the results are as follows:

Non-Abstainers, Male Lives.

Total number of years of exposure to risk, all ages	-	466,943
Expected deaths by O ^M table	-	8,911
Actual deaths	-	8,947
Per cent. of actual to expected	-	100.4

Male Lives; Abstainers; Whole Life Policies; "Transfers To" Excluded.

Total number of years of exposure to risk	-	398,010
Expected deaths by O ^M table	-	6,899
Actual deaths	-	5,124
Per cent. of actual to expected	-	74.3

The non-abstainers are not all drunkards, but include all persons who take alcohol in any quantity.

The evil effects are shown in disease as well as in death, both in the drunkard and his offspring. This Oliver Wendell Holmes expressed a number of years ago as follows:—"When nature has made up her mind that she has had enough of a particular stock, and that its room is better than its company, the work of patching up the constitutions of its offspring and keeping them sober is one of the most desperate tasks assigned to the healers of men." So many men think that there is no harm in drinking so long as they never get drunk. The business man at the close of the day must have his "bitters," and thinks that only good comes from his temperate indulgence; but Dr. W. H. Riley has made the statement that he "has seen scores of cases of paralysis caused by alcohol in those who never became intoxicated. Man does not need to be so intoxicated as to dethrone his reason in order to have the drug do him harm."

It is well known that injuries, which to other people would be but slight, are apt to prove serious even in

moderate drinkers, and the risk of death is much greater in surgical operations. The direct relation of alcohol to disease can be seen in the words of Dr. Alexander Lambert, when he said, "Of the 24,300 patients in Bellevue Hospital (New York) in 1900, over one-quarter went through the alcoholic wards." Indirectly we know the very close relation which alcohol bears to fatal cases of consumption, pneumonia, and many other diseases. It has been found that out of every one hundred alcoholics attacked by pneumonia seventy die, while out of every one hundred non-alcoholics so attacked only twenty-three die. In addition to these facts already mentioned, the great prevalence of crime and insanity as a result of alcohol-drinking has contributed to the awakening.

On account of the awakening concerning alcohol, of which we have just been speaking, and the interest in the subject as a result of this, it was thought that a treatise on the relation between alcohol and the mental states would be beneficial, especially as nothing of this kind has come to the notice of the writer, and no author has treated the subject except in an incidental way. In this work only the more permanent mental effects have been treated, and hence only the effects of a continued use of alcohol. In using the title *The Psychology of Alcoholism*, we mean it to be an account of the mental changes brought about by the continuous and excessive use of alcohol, and an attempted explanation of the changes. Added to this, in the latter part of the book will be found two chapters on the effect of the mind upon this condition as far as cure is concerned. In treating the mental effects it is necessary to approach through the physical and examine the effect upon the brain. To this Chapter II. is devoted. The whole of this chapter may not be perfectly clear to the lay mind, but an attempt has been made to put it in form so that it might be comprehensible. It is difficult to find terms which will convey the idea without using technical ones. Chapters III., IV., V., VI., and VII.

deal with the more strictly psychological aspects of the subject, with attempted explanations based on the results found in Chapter II. Chapters VIII. and IX., dealing with psychological morals and insanity, while necessarily using some technical terms, have been made as popular as possible; the last two chapters, X. and XI., deal with the psychological cures. In the following chapters the writer has endeavoured to take an unbiased position, sifting the testimony, and when two sides are presented to give both.

CHAPTER II.

PHYSIOLOGY.

Relation of mind and brain—Chemical affinity for and action of alcohol on the nervous tissue—Theories regarding the physiological action of alcohol—Stimulation—Paralysis—Different effects upon the various parts of the nervous system—Injury to the neurons—Condition of the cerebrum—Dendrites—Cell body—Axis-cylinder—Spider cells—Neuroglia—Cerebellum—Spinal cord—Peripheral nerves—Changes in the vascular system—Effects on the different walls of the arteries—Injury to the brain on account of changes in the vessels—Spinal cord—Effect of alcohol on the quality of the blood—Pathological growth—Relation between the different lesions—Quantity and quality of the blood—Direct effect of alcohol on the nervous system—Difficulty of investigation—Effects of large and small doses vary—Results differ according to conditions—These differences augment our problem.

IN the examination of the "Psychology of Alcoholism" we are necessarily led into physiological psychology, because the mind is affected indirectly by the action of a chemical substance upon the brain, and directly by the changed condition of the brain. Throughout this work the discussion will be confined as much as possible to the psychological aspect, but it is necessary to speak, at least briefly, upon the physiological import.

We immediately meet the controversy concerning the relation between the mind and the brain. It is not our intention to enter into this discussion, but simply to state our position. Considering the facts as we now have them, it is impossible for us to agree with the idealist in his attempt to minimise the importance of the brain and its influence upon the mind. It is equally difficult for us to depreciate the

value of the mind as a distinct entity and its power over the brain, and hence over the whole body; thus we are also forced to differ from the materialist. Our position is the medium one: we recognize the truth in both, but accept neither one to the exclusion of the other. The interaction of the mind and the brain is hard to doubt, and is equally difficult to explain. At most we know very little of the true relationship, but we do know that there is a real reciprocal action, pathological cases, some of which we will discuss, proving this. Since our subject deals almost exclusively with the influence of the brain over the mind, it seems necessary to state our position in the controversy, especially as many of the publications on alcoholism have been contributed by men who have been able to accept only the view of a one-sided relationship.

As we are dealing with the continued effects of alcoholism on the mind, the physiology of acute alcoholism will not be treated, except in so far as it may throw light upon the chronic effects; for we know that a single action, if repeated, tends to change the organism so that it will remain permanently in the same condition as that brought about by the temporary effects of the single action. Many volumes have been written upon the physiological aspects of alcoholism, but it is obvious that in a work on psychology we can give only an epitome of the results of the investigations in physiology.

For a long time it has been known that an "elective affinity" existed between nervous tissue and narcotics, including, of course, alcohol; but it remained for E. Overton¹ and H. Meyer² to define more clearly the nature of this affinity. It has been noticed that all substances which are soluble in fats and do not injure animal tissue are narcotics. The action of these narcotizing substances is shown most plainly where

¹ E. Overton, *Studien über die Narcose*, Jena, 1901.

² H. Meyer, "Zur Theorie der Alkoholnarkose," *Archiv für experimentelle Pathologie und Pharmakologie*, Bd. 42.

fatty tissue predominates, and this tissue is most affected by narcotics. The power of a narcotic is noticed to bear a direct relation to its affinity for fats, and an indirect relation to its affinity for water. By testing the relative solubility of olive oil and water with any narcotic, the exact narcotic effect can be calculated. Thus ether, which is not readily soluble in water, but is speedily soluble in fatty substances, is a quick and powerful narcotic. Alcohol, on the contrary, while soluble in fat, is also soluble in water, and therefore its narcotizing effect is slower and less powerful than that of ether.

When we consider the proportion of every nerve cell which is made up of fatty substances,¹ we can see the bearing of these observations upon the affinity of alcohol and other related narcotics for nervous tissue. The narcotic is taken into the blood, and must reach the nerve cell through this medium. If there is comparatively a greater affinity for the blood than for the nerve cell (for the water than the oil), comparatively less of the narcotic enters the cell than if the contrary is the case, and hence the narcotization is slower in its action.

We naturally ask how these substances act on

¹ No two of the analyses of brain tissue agree, but we present two from C. Richet, *Dictionnaire de Physiologie*, vol. iii. p. 42. They are from Baumstark and Petrowsky respectively, and deal with the grey matter only:—

Eau	769.97	Eau	816.
Protogon	10.80	Albumine and gélatine	102.
Albumine and gélatine	60.79	Lécithine	35.6
Cholestérine libre	6.30	Cholestérine et graisses	34.5
Cholestérine combinée	17.51	Cérébrine	9.2
Nucléine	1.99	Matières extractives insol-	
Neurokératine	10.43	ubles dans l'éther	12.
Substances minérales	5.62	Sels minéraux	2.56

Of the different factors, Protogon (Lecithin and Cerebrin) and Cholesterin are soluble in alcohol. These substances are collectively termed "lipoids" by recent writers. See also O. Hammarsten, *A Textbook of Physiological Chemistry* (trans. Mandel), p. 364, and W. D. Halliburton, "The Croonian Lectures—On the Chemical Side of Nervous Activity," *British Medical Journal*, June 15 and 22, 1901, vol. i. pp. 1,461 and 1,536.

nervous tissue. It was formerly considered that the narcotic exerted its effect because the fatty substances were soluble in the narcotic, and that the narcotic dissolved these fatty substances, and thus the nervous tissue was for a time more or less devoid of fatty material. This theory had to be discarded in view of the fact that large amounts of fatty substances exist in the neuron,¹ and if these were dissolved such speedy recovery as is experienced with most narcotics would be impossible. The opposite theory accords best with the facts, and is now most commonly accepted—viz., that the narcotic is dissolved in the fatty substances, and the changes caused thereby in some way stop interaction between the neurons, and interfere with the conduction of impulses. This is true of all narcotics, but each narcotic has special symptoms, and an excessive use causes a distinct set of injuries. Why alcohol selects a certain set of cells we do not know, but, as has been contended by Nissl, each poison gives rise to special lesions because it affects certain kinds of cells to the exclusion of others. There remains much yet to be accomplished in the chemistry of the nervous system, for here is hidden the secret of nervous processes.

Not only is there a difference in opinion regarding the chemical action of alcohol, but the exact physiological action caused by the chemical changes is disputed by the devotees of different theories, divided for the most part into two classes. Up to the last century it was thought that alcohol was a powerful stimulant, quickening and strengthening all mental and physical action, very much as the popular mind

¹ *Neuron*.—On account of the frequent use of this term in this chapter, it is thought best to have it defined. Formerly it was thought that the nervous factors, cell, nerves, and dendrites, were separate parts, but now the neuron has become the nervous unit. It consists of the cell body, dendrites, and axis-cylinder process, which are considered to be only different parts of the one structure. The part known as the nerve is now looked upon as the axis-cylinder process of the cell, as much a part of the cell as the dendrites. The diagrammatic drawing on the following page gives a comprehensive idea of the neuron and its constituent parts.

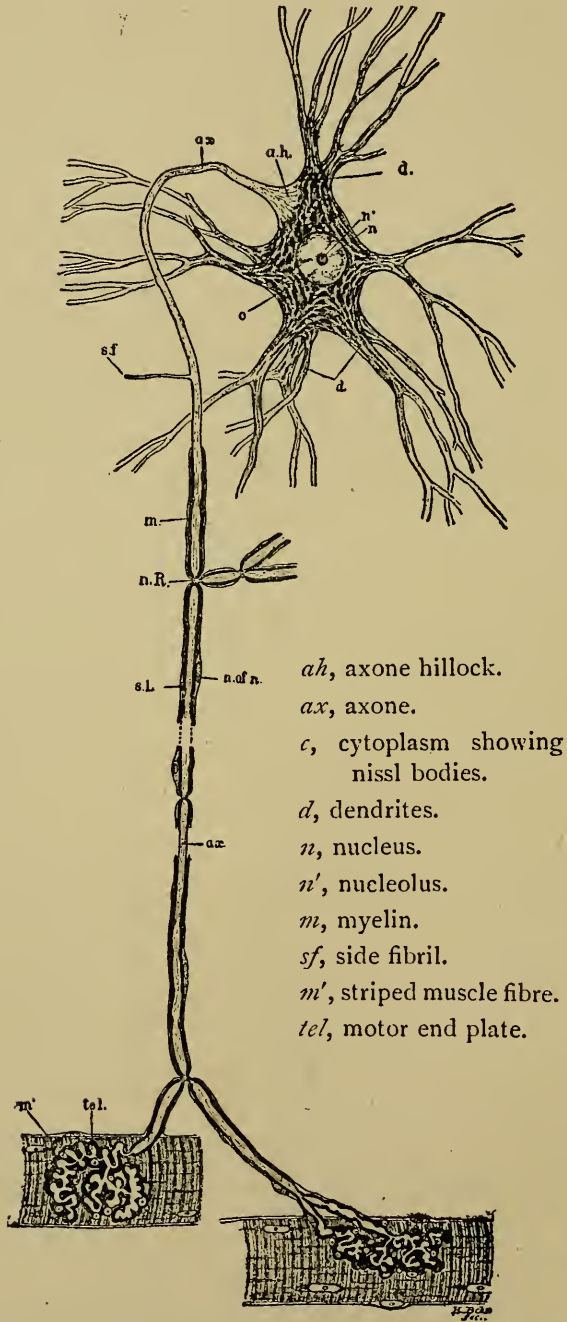


FIG. 1.—Scheme of lower motor neuron from Barker, *The Nervous System*, p. 41.

to-day views its effects. The view of the stimulating power of alcohol is still held, notably by C. Binz.¹ He affirms that alcohol stimulates the nerve cells before it induces depression of function; but in this opinion he has comparatively few followers.

Schmiedeberg² suggested that the facts do not carry out this view, and that alcohol is devoid of stimulating power, its whole effect being that of a powerful paralyzer. Instead of stimulating the mental powers, it paralyzes the regulative apparatus of the mind, so that the subject is not able to judge correctly, or to discern his real weakness. Schmiedeberg has been supported in his theory by Bunge, Mitscherlich, Filehne, and Kraepelin, the last proving by experiment that the stimulation was only apparent, because the work, both mental and bodily, was lessened under the influence of alcohol. This theory is probably the one most widely accepted among specialists on the subject, and even Binz leaves room for the same, although he does not support it. He says:—"The stimulating effects which small doses of alcohol produce in different parts of the body may, here and there, possibly be due to paralysis of the inhibitory apparatus. This is a point, however, about which we know nothing."³ In a recent address one of the supporters of this theory spoke as follows:—

"An acceleration of motion may be due to increased power of the engine (stimulation) or to the brakes being raised (paralysis), and it may be very difficult for an onlooker to determine which is the true explanation. The apparent evidence of increased mental activity under alcohol, however, has proved for the most part illusory, when carefully investigated. . . . One argument against the stimulant action of alcohol is the narrow limits to which it is confined.

¹ *Der Weingeist als Heilmittel, Sonderabdruck aus den Verhandlungen des VII. Congresses für innere Medicin zu Wiesbaden, 1898.* See also *Lectures on Pharmacology*, by the same author.

² *Grundriss der Arzneimittellehre, 2te Auflage, s. 25-27.*

³ C. Binz, *Lectures on Pharmacology*, vol. i. p. 384.

. . . Alcohol, on the other hand, appears to have only a depressant action on nervous tissues, except in the human cerebrum. . . . But when the excitement stage is more closely investigated, it becomes apparent that all the cerebral functions are not facilitated by alcohol. It is common knowledge that under the influence of alcohol an individual may be more brilliant in conversation, more witty, more social, more generous in sentiment; but that he is not so careful in his statements, and has not the consideration for his own position or that of others which he usually manifests. He loses his self-control and self-restraint, and thereby often proves more entertaining and social than in ordinary life; but he also loses the sense of responsibility, and his power of discriminating between the trivial and the important or between the merely plausible and the actually proved. In a word, it is generally recognized that some of the highest functions of the brain are thrown out of action by alcohol administered in quantities which induce the phase of exhilaration. The further question is, what functions are actually increased in activity and how far is this increase dependent upon the reduced activity of the processes which are depressed by alcohol. The question is, of course, a psychological one, which can be answered only by a psychological analysis, which is as yet very far from complete; but it is obvious to every one that the exhilarations may be due to a loosening of the associations which ordinarily control our actions and feelings."¹

Lately there have appeared those who oppose this view and again uphold the stimulation theory. They do not claim for it what was formerly asserted—viz., that alcohol is a general stimulant of great power; but while admitting the facts of recent experiments which prove that less and a poorer quality of mental and bodily work is done under the influence of alcohol,

¹ A. R. Cushny, "The Basis for the Use of Alcohol in Therapeutics," *Boston Medical and Surgical Journal*, vol. cxlvii. p. 35, July 10th, 1902.

they present the stimulation theory in a new light. They say that alcohol is not a depressant but a stimulant; it is selective in its stimulation, affecting principally the inhibitory mechanism and not the motor, hence the apparent paralyzing effect. The flushing of the skin under the influence of alcohol is accordingly not due to the paralysis of the vasoconstrictor nerves, but to the stimulation of the vasodilator nerves. An adherent of this theory says:—

“Alcohol favours the irritability of the inhibitory mechanisms. I do not doubt in the least that alcohol stimulates also motor sensory nerves, or the organs of activity in general. I only suggest that in a certain dilution and at a certain stage, alcohol, when in contact with the nerve cells, either directly stimulates preferably some of the normal inhibitory mechanisms of the body or increases their irritability. As a consequence of this stimulation the perception for finer differences becomes decreased, the reaction time is prolonged, the formation of associations and the irradiation of stimuli within the central nervous system become restricted. Also the tonicity of all the muscles is reduced and the execution of motion is rendered difficult. . . . Strychnine is a stimulant, and alcohol is a stimulant; but strychnine stimulates preferably the motor or active mechanisms, while alcohol stimulates preferably the inhibitory mechanisms.”¹

Between these two principal theories we have nothing to choose, since they both admit the facts, and this is of greatest consequence. These facts will form the basis of the discussion which will follow on the psychology of alcoholism, and either theory may provisionally be accepted. The paralysis theory is more widely recognized and has more influence in its favour; and since the final effect appears to be that of paralysis and to coincide with general paresis, it seems natural to attribute the initial form to that of

¹ S. J. Meltzer, “The Influence of Alcohol upon Infection, and its Use in the Treatment of Acute Infectious Diseases,” *Boston Medical and Surgical Journal*, vol. cxlvii. p. 69, July 10th, 1902.

paralysis also, rather than to that of inhibitory stimulation. This consistency is not necessary, however, for we have the example of other substances, which in small doses and initial effects give results the reverse of those obtained from large doses and continued use.

Not only is it true that alcohol has an elective affinity for nervous tissue, but its effects upon the various parts of the nervous system differ both in manner and degree; further, as we shall see later, even the different portions of the individual neuron are affected in a variety of ways and with more or less destructive results. The part of the nervous system to be injured first is the cerebrum, which ministers to the highest mental functions. Following this the cerebellum, the part of the system which controls co-ordination, is impaired. The spinal cord next suffers, and thus many reflex movements are interfered with; finally the medulla oblongata is affected. It is through the paralysis of the medulla that alcohol directly causes death, for in the spinal bulb are contained the respiratory and cardiac centres. The cerebrum may be so affected by alcohol that a person is unconscious, or the cerebellum so influenced that walking is impossible; but respiration and circulation continue, and life does not cease provided that the medulla is not seriously affected. As soon as the respiratory and cardiac centres are injured, death immediately follows. Alcohol seldom causes death directly—*i.e.*, through its effect upon the medulla oblongata, but usually indirectly by interfering with the other vital functions.

Of course it will be recognised that when we speak of a regular sequence of the effect of alcohol upon the different portions of the nervous system, we do not mean that the first portion is totally destroyed before the second part is affected—*e.g.*, that the functions of the cerebrum are destroyed before the cerebellum is affected at all, but rather that this is the order in which the effects of alcohol are noticed. The de-

generation continues in each part after it begins, and proceeds simultaneously in the portions already affected, probably more rapidly in those parts in which the injury first appears. While alcohol affects the nervous system most injuriously, there are set up in other portions of the body, as the alimentary tract and the liver, structural changes which indirectly cause further injury to the neurons.

The degenerating effects of alcohol upon the nervous system may be classed under three heads: first, Injury to the Neurons; second, Change in the Vascular System; third, Pathological Growth. These will be discussed in order.

I. *Injury to the Neurons.*—During the last few years much valuable histological work has been done in the *post-mortem* examinations of the brains of persons who have died directly or indirectly from the effects of alcohol. There has also been some careful work done in comparative histology, where animals have died from the effects of alcohol systematically administered for a greater or less period of time, ranging from a few hours to a year or more. From the results of these investigations we know some of the disastrous effects¹ of alcohol on the nerve cells and their processes. How far all the lesions in the following description are due to chronic alcoholic excess is doubtful, but the more serious ones, such as the destruction of the cells, undoubtedly are attributable to this cause. The lesser injuries may be traced to the acute effects. Concerning this point Professor W. H. Welch says:—

“Two different kinds of lesions of the nerve cells have been found . . . the former designated as ‘moniliform change’ . . . the other designated ‘chromatolysis.’ . . . There is reason to think that these

¹ “No poison except the virus of syphilis, plays so extensive a rôle in the morbid affections and degenerations of the tissues, nervous or non-nervous. Yet as regards its effects on the nervous system, it is possible to trace its march with a fair degree of accuracy.”—W. B. Lewis, *Text-book of Mental Diseases*, pp. 327f.

changes belong, even in the chronic cases, to the more immediate acute effects of alcoholic poisoning, for in Friedenwald's experiments they were often absent in animals which did not die, but were killed in the course of the experiments, and they were not observed in animals allowed to live a few days after the alcohol was stopped."¹

Dr. J. H. Kellogg gives further evidence along this line:—

“Kleefeld has shown that the retraction of the cell branches and the development of a beaded and varicose appearance is the immediate result of the presence of alcohol in the blood, appearing within fifteen minutes after alcohol has been introduced into the circulation of the animals, showing that the condition which is found permanent in the habitual drunkard exists temporarily in a man or in an animal subjected to the influence of this drug.”²

In examining the condition of the neurons in their different locations, it is in order to begin with those of the cerebral cortex. Here, even in cases showing the greatest degeneration, not all the cells are injured, but probably the most of them are; the exact proportion is difficult to determine. Of those injured, more are found in the deepest layers, some cases showing no morbid indications in the uppermost layers.³ Why particular kinds of cells are selected for an attack by alcohol and others are immune we do not know at present, neither is the significance of this selection clear.

The dendrites are the first parts of the cell visibly affected, the change here being quite startling. The “thorns” or twigs, on which are situated the contact granules, soften and swell, at first very slightly so as

¹ W. H. Welch, “The Pathological Effects of Alcohol.” *Physiological Aspects of the Liquor Problem*, edited by J. S. Billings, vol. ii. pp. 353 and 359.

² J. H. Kellogg, “The Baneful Effects of Alcoholic Medication as shown by recent Experimental Observations,” *Quarterly Journal of Inebriety*, vol. xxiv. p. 266.

³ W. B. Lewis, *Text-book of Mental Diseases*, p. 583.

to give the mere appearance of roughness. Concomitant with the smallest tumefaction or swelling, there seems to be a decrease in the number of buds, and as the swelling increases these gemmules become less and less in number until they entirely disappear. The swellings enlarge and spread rapidly, soon covering the entire dendrite, and forming rough botryoidal masses or bunches, which resemble the fungus growth called "Black Knot," seen upon diseased plum-trees. With the swelling comes softening and dissolution, the outermost branches disintegrating. These degenerative changes continue until all that is left is a knarled, knotted stump, deprived of nearly every branch, and lacking in gemmules. (See Fig. 2.) Finally, the apical processes entirely disappear, together with most of the basilar ones, leaving only one or two enlarged branchless stumps.¹ (See Fig. 3.)

In cases where degeneration is advanced, the cell body shows signs of decay and disintegration; but before this, even before the least swelling or symptom of decay in any part of the neuron, the cell shows a lack of nutriment. The coagulating albumen thickens and clogs the cell membrane, thereby hindering endosmosis and the assimilation of nutrient materials on the one hand, and exosmosis or excretion of broken down, effete products on the other.² After the formation of this cell wall so foreign to healthy nerve cells,³ a considerable amount of pigment is deposited between this and the shrunken protoplasm,⁴ making the centre tough and giving it a wasted appearance.⁵

¹ W. L. Andriezen, "On some of the Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 669.

² E. Stuver, "Alcohol in High Latitudes," *Quarterly Journal of Inebriety*, vol. xxiii. p. 332; also, J. D. Quackenbos, *Hypnotism in Mental and Moral Culture*, p. 188.

³ W. B. Lewis, *Text-book of Mental Diseases*, p. 584.

⁴ T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 324.

⁵ N. Kerr, "Alcoholism and Drug Habits," *Twentieth Century Practice of Medicine*, vol. iii. p. 41.



FIG. 2.

(After H. J. Berkley and W. L. Andriezen.)

EXPLANATION OF
FIG. 2.

6. Advanced moniliform tumefaction of apical dendrites ($\times 560$, enlarged). 7. Small irregular nerve cell from the outer portion of the second cell layer with advanced moniliform swellings of all the principal dendrites, and roughening of the cell corpus ($\times 560$, enlarged). 8. A medium-sized pyramidal cell showing disappearance of the long dendrites and great roughening of the thicker stems, as well as complete loss of the gemmulae; the cell body has a very irregular contour and is shrunken; the axon is intact ($\times 560$, enlarged). 9 and 10 exhibit similar phenomena. — From H. J. Berkley, "Studies on the Lesions produced by the Action of Certain Poisons on the Cortical Nerve Cell — I. Alcohol," *Brain*, vol. xviii. p. 496.

a, b, c, d, e, f. Terminal tufts and endings of the protoplasmic apical processes in the first layer (human brain cortex). Showing bead-like and moniliform swellings, coalescence of fine miliary granules in place, and loss of fine granulation in the most

affected parts. The dotted line marks the limit between the first and second layers. (Alcoholic insanity.)—From W. L. Andriezen, "On some of the Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 669.

Following the degeneration of the dendrites, the cell body becomes irregularly shrunken,¹ and also begins to waste away. The side of the cell decays

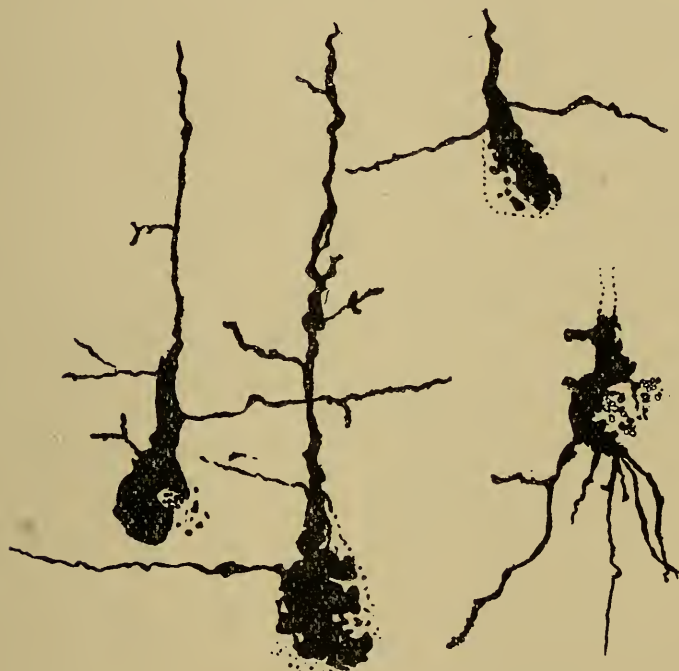


FIG. 3.—Four nerve cells from the human brain cortex (occipital region); situated in the deeper part (polymorphic layer) and showing various stages of disintegration. (Alcoholic insanity.)—From W. L. Andriezen, "On some of the Newer Aspects of the Pathology of Insanity," *Brain*, xvii. p. 670.

until a vacuole is formed in the cell, near which is usually found a mass of débris.² Nor is the disinte-

¹ H. J. Berkley, "Studies on the Lesions produced by the Action of Certain Poisons on the Cortical Nerve Cell—I. Alcohol," *Brain*, vol. xviii. p. 491; also, A. R. Cushny, *Pharmacology and Therapeutics*, p. 146.

² W. L. Andriezen, "On some of the Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 671.

gration confined to one place; frequently it will begin at several different parts at once, destroying almost the entire interior of the cell, so that nothing is left except perhaps a small crescent and fragments of waste matter. (See Fig. 3.)

Sometimes the total remains of the cell body are a



FIG. 4.—Granular degeneration of the nerve cells in fifth layer of motor cortex with proliferations of pericellular and perivascular nuclei in a case of Chronic Alcoholic Insanity ($\times 210$).—From W. B. Lewis, *Text-book of Mental Diseases*, p. 584.

a, Small angular cells of fourth layer. *b*, Perivascular nuclei. *c*, Perivascular nuclei. *d*, Motor nerve cell and its nutrient vessel. *e*, Degeneration of apex process. *f*, Nerve cell undergoing granular degeneration. *g*, Diseased arteriole.

mere shell, the decay starting from within and working outward;¹ but however the disintegration may start, the cell outline becomes very irregular and ragged, and especially where the decay starts from

¹ W. L. Andriezen, "On some of the Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 671.

within, considerable areas of the cell become transparent. Not only this, but some cells after becoming vacuolated undergo fatty degeneration and entirely disappear. Among those which remain, a distinct diminution from shrinkage, apart from the decay, is noticed in some.

Degeneration is also very apparent when histological stains are applied to the cells. These show a disappearance of reserve nutriment, pigment granules being substituted for the protoplasm. The chromatic network does not stain easily, and the chromatic bodies are either granular, absent, or indistinct, showing chromatolysis unmistakably. (See Fig. 10.) A further and very serious abnormality is the diffuse staining of the achromatic portions of the cell.

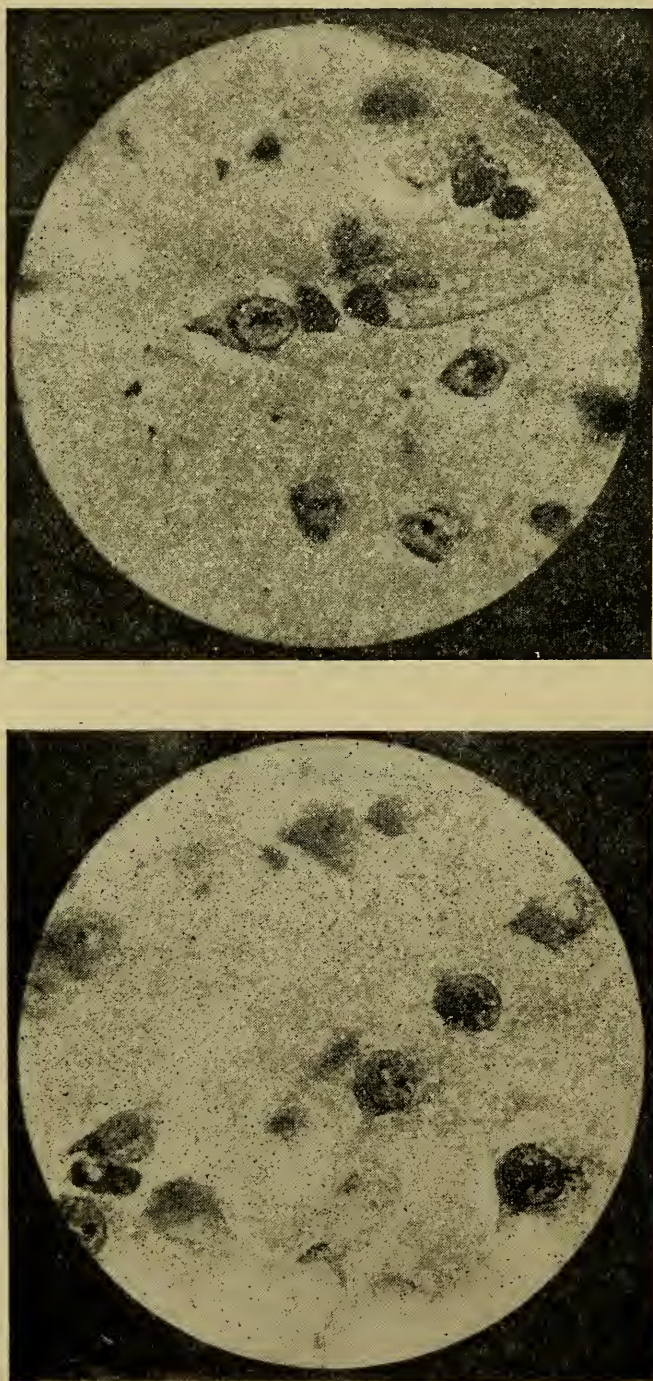
In the general destruction and dissolution of the cell, the nucleus does not escape. Frequently it is contracted and granular in appearance.¹ When the process of decay has advanced, the nucleus becomes eccentric, and later when the cell is further destroyed, may even protrude beyond the cell membrane. The nucleolus stains deeply, the outline is rough, with elongated processes projecting from its surface. Further along in the disintegration it becomes enlarged and spongy, and finally disappears.² (See Fig. 5.)

The axis-cylinder processes apparently remain intact the longest, with the exception of some of its collaterals, which soon degenerate.³ The protection of the axis-cylinder process by the medullary sheath probably accounts for this; but finally this sheath becomes granular and wrinkled, with here and there small irregular swellings of a fatty nature. In other

¹ T. B. Hyslop, *Alcoholic Insanity, A System of Medicine*, Allbutt, vol. ix. p. 325.

² H. J. Berkley, "Studies on the Lesions produced by the Actions of Certain Poisons on the Cortical Nerve Cell—I. Alcohol," *Brain*, vol. xviii. p. 483.

³ W. L. Andriezen, "On Some of the Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 671.



1. Nuclei of normal pyramidal cells of the rabbit's cortex, showing the nucleoli smooth and sharply defined ($\times 1100$). 2. Nuclei of the pyramidal cells of the alcoholic rabbit's cortex, showing the nucleoli roughened and enlarged; the outline of the nucleus is also more irregular than in the normal cell ($\times 1100$).—From H. J. Berkley, "Studies on the Lesions produced by the Action of Certain Poisons on the Cortical Nerve Cell.—I. Alcohol," *Brain*, vol. xviii. p. 496.

portions the myelin is greatly attenuated and the axis is exposed.¹ The sheath may also become much altered by connective tissue invasion.² The neural core shows an internal pathological change by uneven staining, and the degeneration is further evidenced by its being greatly swollen and fusiform, as in other cases of inflammation of the nerve fibres, or in senile decay.³

As has already been noted, the upper layers of the cortex are comparatively less injured, the degeneration described above being mostly of the motor cells of the fifth layer of the cortex, and the large pyramidal cells. The spindle cells of the sixth layer also show effects of an injurious nature, apparently chiefly due to the spider or scavenger cells found in such large quantities in this layer in alcoholism. These spider cells act as phagocytes and destroy the spindle nerve cells so that we find them comparatively few where they should be most abundant. Many nuclear proliferations are seen surrounding the spindle cells, and some of the cells are undergoing pigmentary degeneration.⁴ (See Fig. 7).

In advanced cases a change in the neuroglia elements is noticed, consisting of a vacuolation of the cell protoplasm, with pigmentation of the cell body, swelling of the processes,⁵ and the abundant formation of so-called "colloid bodies" in the brain.⁶ (See Fig. 8).

In the cerebellum the degeneration is equally apparent. Proportionately more of the cells of purkinje are injured than of the cells of the cerebral cortex. The lesions are very noticeable, both in

¹ W. B. Lewis, *Text-book of Mental Diseases*, p. 585.

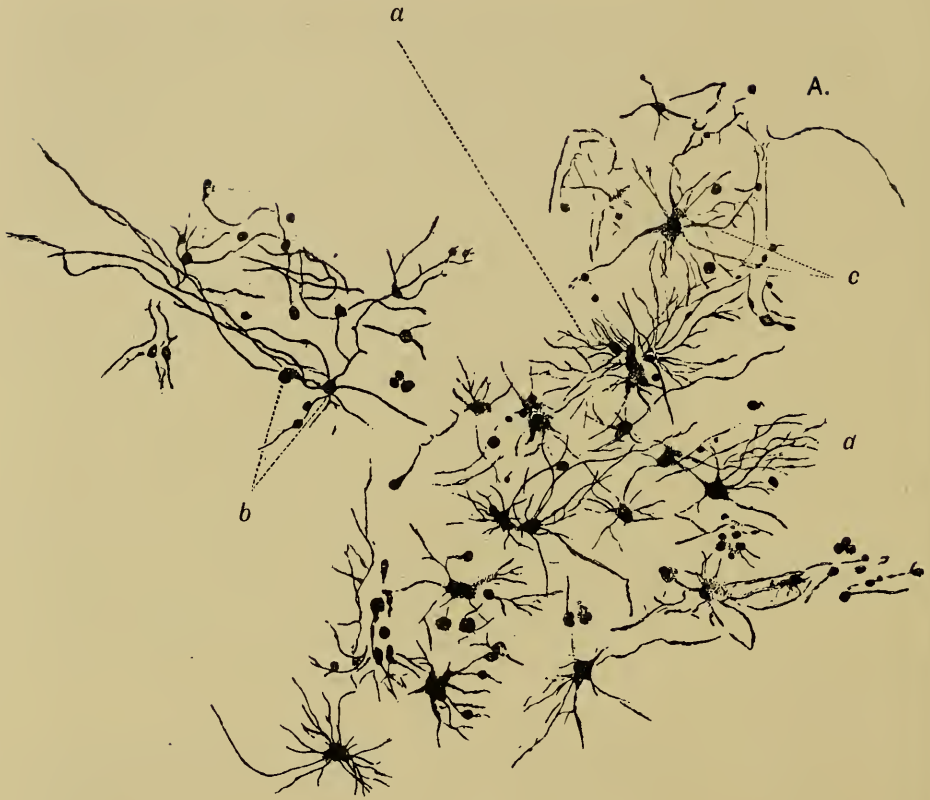
² T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 324.

³ W. L. Andriezen, "On Some of the Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 672.

⁴ W. B. Lewis, *Text-book of Mental Diseases*, pp. 584f.

⁵ H. J. Berkley, *Mental Diseases*, p. 264.

⁶ W. L. Andriezen, "On Some of the Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 684.



a, Spider cells following vascular tract. *b*, Spider cells with long, delicate fibrils. *c*, Coarser vascular branches of spider cell. *d*, Plexus of finer fibrils.

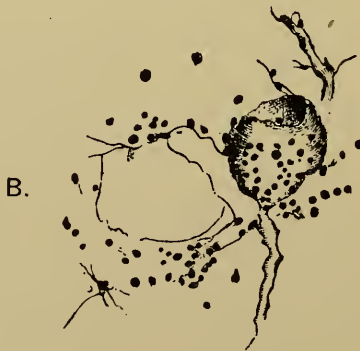


FIG. 6.—A. Scavenger elements (spider cells) in peripheral zone of first layer of the cortex human brain ($\times 240$). B. Aneurismal dilation of perivascular sac; general paralysis ($\times 210$).



a, Swollen degenerated nerve cell. *b*, Vascular process of spider cell. *c*, Spinous extensions from vascular walls. *d*, Degenerating nerve cells attacked by spider cells. *e*, Spider cell with its vascular process. *f*, Arteriole surrounded by spider elements.

FIG. 6 (*contd.*).—C. Degeneration of nerve-cells in cortex with proliferation of the spider or scavenger cells; section from fifth cortical layer in motor region; ($\times 210$).—From W. B. Lewis, *Text-book of Mental Diseases*, pp. 584, 588, 592.

regard to the disintegration and the tumefaction of the dendrites (see Fig. 9) and the changes shown by staining. The cell body undergoes decay, and the protoplasm loses its characteristic structure. Chromatolysis is apparent (see Fig. 10), the chromatic



FIG. 7.—Changes in deepest or spindle cell-layer of human cortex; chronic alcoholic insanity ($\times 180$).—From W. B. Lewis, *Text-book of Mental Diseases*, p. 585.

a, Spider cells proliferating. *b*, Degenerating nerve-cell devoid of nucleus. *c*, Proliferation of nuclei on fusiform cells. *d*, Perivascular nuclei crowding upon walls of blood vessel.

bodies are thin, ragged, granular, or absent, and the network is changed to granules.¹ The normally achromatic portions stain deeply, thereby showing

¹ J. Ewing, *Studies on Ganglion Cells*, p. 82.

degeneration.¹ The nucleus becomes altered in shape,² and both nucleus and nucleolus are much shrunken.

The detrimental effects in the spinal cord are not so consistent as in the higher centres of the brain. There may be very serious evidences of degeneration apparent, or again little or no effect is noticed. The same tracts are not always affected or the same sections of particular tracts. The degeneration may be unilateral or general; the spinal ganglia may or

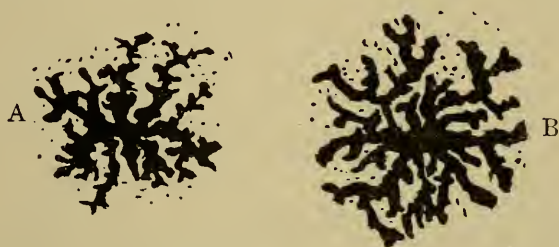


FIG. 8.—Two protoplasmic neuroglia cells of the human brain showing two stages of change. A. Commencing beaded-swelling of the protoplasm. B. A more advanced stage; the protoplasm in coarse irregularly-beaded botryoidal masses, with loss of mossy granulation.—(Alcoholic insanity). From W. L. Andriezen, "On Some of the Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 684.

may not be affected, and cornual changes are not infrequent. This being true, it is difficult to give any but the most general description of the lesions. We find here chronic myelitis and meningitis, and systematic sclerosis,³ the last probably being the chief lesion. This frequently affects whole sections of the cord, and in connection with scavenger cells is very injurious.⁴ Various forms of chromatolysis are ob-

¹ H. Dehio, "Experimentelle Untersuchungen über die Veränderung der Ganglienzellen bei der acuten Alcoholvergiftung," *Centralblatt für Nervenheilkunde und Psychiatrie*, n. f. vi., s. 113.

² V. Horsley, *The Effects of Small Doses of Alcohol on the Brain*, Lees and Raper Memorial Lecture at St. James' Hall, London, 1900.

³ H. D. Rolleston, "Alcoholism," *A System of Medicine*, Allbutt, vol. iii. p. 863.

⁴ W. B. Lewis, *Text-book of Mental Diseases*, p. 588.

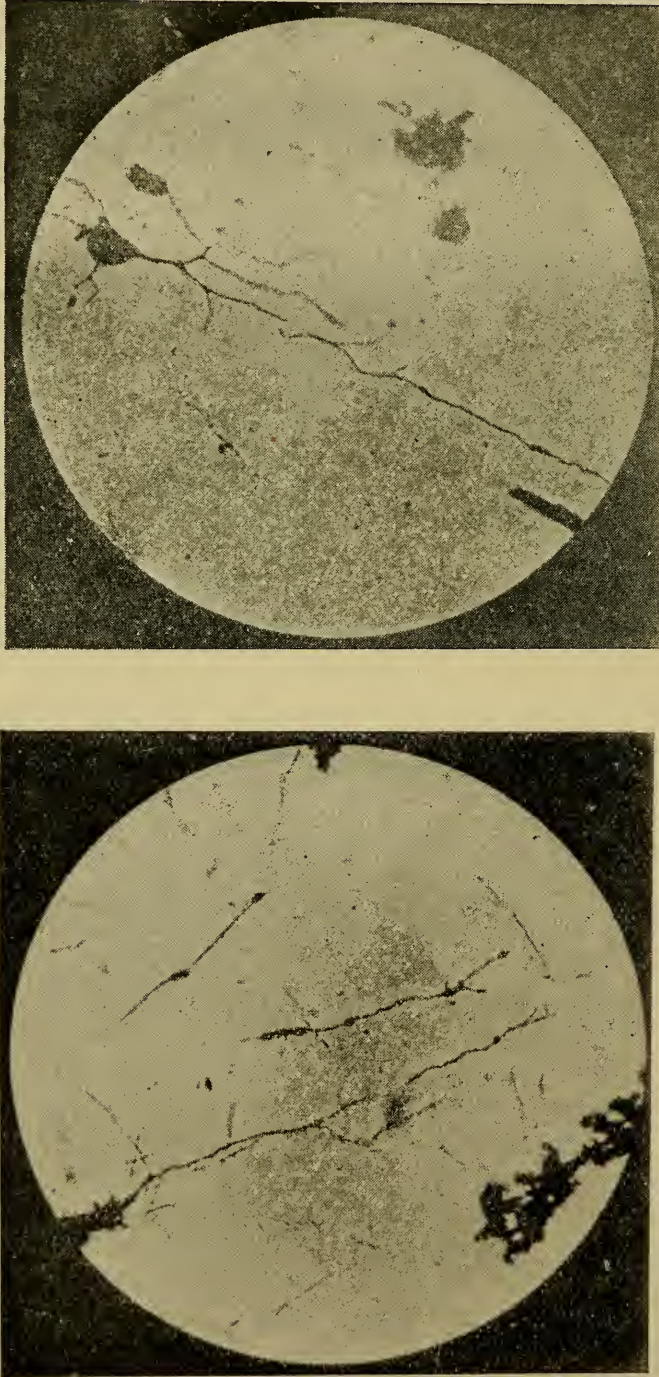


FIG. 9.—Sections showing the degeneration of dendrites through moniliform swellings.—From H. J. Berkley, "Studies on the Lesions produced by the Action of Certain Poisons on the Cortical Cells—I. Alcohol," *Brain*, vol. xviii, pp. 496 *f.*

served both in the cord and spinal ganglia (see Fig. 10), but this occurs rather irregularly, especially in the ganglia. There come to be very few chromatic bodies, and a noticeable decrease in the number of chromophile granules is characteristic. The spinal stichochromes show extreme chromatolysis,¹ and these together with the spinal and sympathetic ganglion cells show besides chromatolysis, lesions described as "homogeneous swellings," distributed in an irregular manner.²

Under the consideration of the spinal cord we must speak of the peripheral nerves, for these are axis-cylinder processes of the spinal cells and ganglia. They seem to be acted on directly as well as through changes in the centres, for neuritis has been repeatedly observed, ending in local paralysis.³ Usually these nerves do not show symptoms of injury until after the higher centres have been affected,⁴ and frequently not so serious degeneration takes place as in the higher centres.⁵ D. Cerna, who made experiments on frogs to ascertain the effects of alcohol upon the peripheral nerves,⁶ says that in frogs killed by the administration of large doses of alcohol "the nerves responded to electric stimulation very slightly or none at all." The observed change in the nerves

¹ C. C. Stewart, "Influence of Acute Alcoholic Poisoning on Nerve Cells," *Journal of Experimental Medicine*, vol. i. p. 623. J. Ewing, *Studies on Ganglion Cells*, p. 82.

² F. Vas, "Zur Kenntniss der chronische Nicotin und Alkohol-Vergiftung," *Archiv für experimentale Pathologie und Pharmakologie*, Bd. xxxiii. s. 141.

³ H. D. Rolleston, *A System of Medicine*, Allbutt, vol. iii. p. 863, says in opposition to this, "The degenerative effects of alcohol are developed more rapidly in the peripheral than in the central nervous system."

⁴ An exception to this statement is given by C. Hodge, "Changes due to Functional Activity in Nerve Cells," *Journal of Morphology*, vol. vii. p. 95, as follows:—"Mamurowski describes a case of death from progressive paralysis due to alcoholism, in which the peripheral nerves showed degeneration, but no change was observable in either brain or spinal cord."

⁵ A. R. Cushny, *Pharmacology and Therapeutics*, p. 133.

⁶ "Physiological Action of Alcohol," *Transactions of Pan-American Medical Congress*, vol. i. pp. 394-429.

begins near their peripheral distribution; the greatest alteration is noticed in the intra-muscular branches of the motor nerves.¹ Some have opined that the spinal alterations are due to the changes in the peripheral nerves, but it is probable that these are coincident affections. S. Martin has described the change as follows:—"First at one or more spots on the nerve-fibre the medullary sheath disappears entirely, the remainder of the sheath above and below still staining with osmic acid: the axis-cylinder in the affected part becomes attenuated and finally ruptures. The part of the nerve-fibre between the rupture and the muscle now undergoes Wallerian degeneration."² The changes in the neuron which have been mentioned are not all peculiar to alcoholism; they may be brought about by the continuous influence of many different toxic agents, but not all by any one other agent.³

2. *Changes in the Vascular System.*—The vascular lesions are very serious, and form a principal part of the trouble caused by alcoholic excess. "No single factor contributes so largely to disease of the blood vessels as much as the chronic use of alcohol poison."⁴ Especially well defined in the blood-vessels of the cortex is a wide-spreading hardening and thickening of the arteries, known as arteriosclerosis, or atheromatous degeneration.⁵ Here the vessels are

¹ H. D. Rolleston, *A System of Medicine*, Allbutt, vol. iii. p. 863.

² Quoted by Rolleston, *ibid.* p. 863.

³ J. Stewart, "Alcoholism," *American System of Practical Medicine*, L. Thompson, vol. iii. p. 735.

⁴ A. E. Sterne, "The Effects of Alcohol upon the Nervous System, the Mind, and Heredity," *Quarterly Journal of Inebriety*, vol. xxv. p. 60.

⁵ H. J. Berkley, "Studies on the Lesions produced by the Action of Certain Poisons on the Cortical Nerve Cells.—I. Alcohol," *Brain*, vol. xviii. p. 486; T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 323; A. R. Cushny, *Pharmacology and Therapeutics*, p. 133. In addition to the above references and others which might be given, W. H. Welch, "Pathological Effects of Alcohol," *Physiological Aspects of the Liquor Problem*, edited by J. S. Billings, vol. ii. pp. 368f., says, "Alcohol is usually regarded and probably correctly, as one of the causes of sclerosis or atheromatous

also found unequally and considerably distended by well-developed aneurysmal dilations (see Fig. 6, B), which later give rise to a cribriform condition. The usually smooth walls are irregularly shrunken and distended, at times almost botryoidal in shape on account of many rough bulgings. Occasionally the vessel is seen to be stopped up, the swollen condition of the different coats narrowing the lumen, and then it becomes plugged with some thrombosis, possibly a fatty embolus.¹ When this occurs it is followed by rupture of the walls of the arteries, Berkley² denoting miliary hæmorrhages as one of the characteristic lesions of alcoholism. Degeneration is further shown and continued by the presence of scavenger cells following the course of the arteries which they attack.³ (See Fig. 6.)

All the walls of the arteries show injury of some kind. In the Intima, or inner wall of the artery, a chronic inflammatory state leads to a condition of

degeneration of the arteries, a disease of great clinical importance and attended by various symptoms and organic lesions according to the particular arteries particularly affected. In this way alcoholic excess may stand in a causative relation to cerebral disorders, such as apoplexy and paralysis." We have, however, a protest against this lesion as the result of alcoholism from E. Lancereaux, "Alcoholisme," *Traité de Médecine et de Thérapeutique*, p. 222, as follows:—"Les ouvrages classique enseignent que les excès d'alcool engendrent l'athérome artériel ou mieux l'artério-sclérose généralisée, et ce fait, partout répété, ne manque pas d'intérêt en ce sens qu'il montre la facilité avec laquelle se propagent les erreurs en médecine et la négligence apportée par la plupart des auteurs de Pathologie à vérifier ce qu'ils avancent. Mes recherches sur ce sujet, qui datent de plus de trente-cinq ans, m'ont appris que l'artério-sclérose généralisée était manifestement rare chez le buveur, et si elle venait à s'y rencontrer, celui-ci était toujours en même temps un rhumatisant chronique, autrement dit un herpétique, et qu'ainsi la lésion artérielle se liait non pas à l'intoxication alcoolique mais bien à l'herpétisme, que est la maladie où s'observe spécialement l'atherome généralisée du système artériel. Observons, toutefois, que, chez les vieux buveurs, les éléments cellulaires de l'endartère subissent parfois la dégénérescence graisseuse, désordre tout différent de la prolifération cellulaire qui caractérise l'artério-sclérose."

¹ W. B. Lewis, *Text-book of Mental Diseases*, p. 586.

² "Studies on the Lesions produced by the Actions of Certain Poisons on the Cortical Nerve Cell.—I. Alcohol," *Brain*, vol. xviii. p. 483.

³ W. B. Lewis, *Text-book of Mental Diseases*, p. 582.

atheromatous and fatty change. The endothelium cells are swollen, and the cell protoplasm undergoes regressive changes. Here nuclear proliferation is in progress, the nuclei staining deeply. As a result of the endo-arteritis and fatty degeneration the lumen of the vessel is narrowed, and the result is mal-nutrition, softening and rupture following as a matter of course.¹ Probably the intima is the first part of the vessel affected, on account of its coming into direct and continual contact with the poisoned blood.

The Media, or muscular layer of the vessel, increases in thickness, the muscular protoplasm becomes swollen, staining less deeply than normally. The nuclei are occasionally absent from quite large areas, and those which remain are abnormal.² The contractile power of this muscular tissue is lost, resistance being diminished by the dilation and aneurysmal states,³ and more especially the injury to the vaso-motor nerves. Harnack so well says, "It should also never be forgotten that even in small doses the paralyzing action of alcohol is exercised most rapidly and energetically upon the tonus of the blood-vessels, the importance of which tonus for the regularity of the circulation and the cardiac energy is well known." The abnormal action of the vaso-motor nerves causes the small vessels to dilate, and thereby we find a loss of action and movement in the vessels. When this tonus is lost, there is an accumulation and sluggish movement of blood in the capillary and venous systems.⁴

The Adventitial sheath, the outer wall of the vessels, also increases in size on account of fatty degeneration of its elements. Nuclear proliferation is most noticeable in this coat, and the outside is attacked by spider cells. The swelling of the walls

¹ W. B. Lewis, *ibid.* pp. 586 and 589. N. Kerr, "Alcoholism and Drug Habits," *Twentieth Century Practice of Medicine*, vol. iii. p. 41.

² H. J. Berkley, *Mental Diseases*, p. 264.

³ W. B. Lewis, *Text-book of Mental Diseases*, p. 589.

⁴ J. H. Kellogg, "Hydriatic Substitutes for Alcohol," *Quarterly Journal of Inebriety*, vol. xxiii. p. 318.

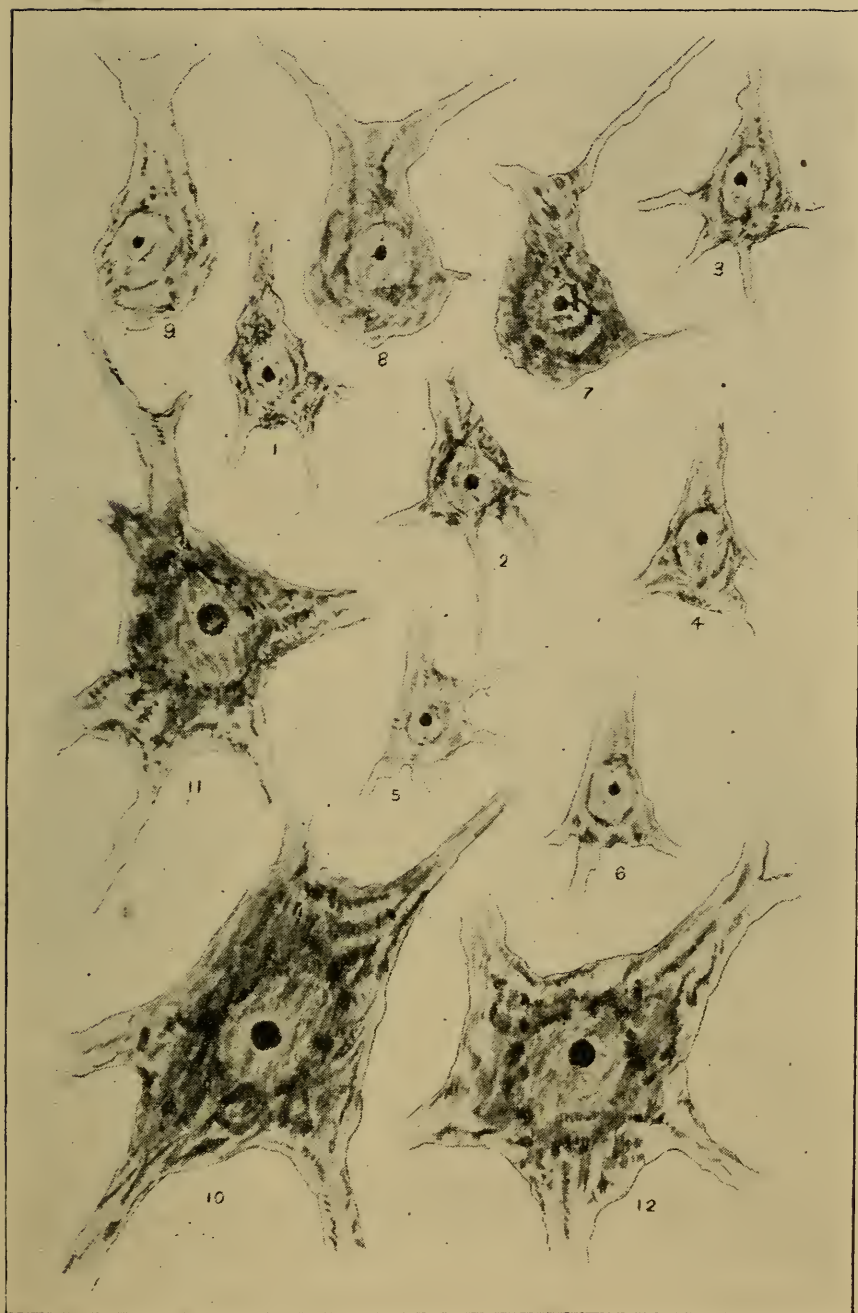


FIG. 10.—1, 2, 3, 4, 5, 6. Large pyramidal cells from the cerebral cortex: 1 and 2, from cat i.; 3 and 4, from cat ii.; 5 and 6, from cat iii.; 7, 8, 9, Purkinje cells: 7, from cat i.; 8, from cat ii.; 9, from cat iii. 10, 11, 12, Multipolar cells from the spinal cord: 10, from cat i.; 11, from cat ii.; 12, from cat iii.¹—From C. C. Stewart, "Influence of Acute Alcohol Poisoning on Nerve Cells," *Journal of Experimental Medicine*, vol. i. p. 629.

¹ Cat i., normal; cat ii, alcohol for fifty minutes; cat iii., alcohol for fifty-four hours and a half.

enlarges the size of the vessel to some extent, but it also presses inward so that the lumen is decreased or closed. The veins undergo changes similar to the arteries, the walls being frequently ruptured, and the capillaries suffer from the same degeneration which the larger vessels do, the dilations being quite noticeable. (See Fig. 11.)

On account of the degeneration of the vessels, blood is found in the brain substance, which has oozed out through the ruptured walls.¹ Not only the extravasated blood, but together with it a collection of hæmatoidin crystals and fat embolisms is sometimes found. Through the dilations of the blood vessels the walls become weaker, and this allows the exudation of the plasma to be more readily induced, and thus we frequently find an increased effusion of plasma,² the circulation of the blood is interfered with, and its original course perverted. The perivascular spaces become dilated, and occasionally contain a few grains of hæmatoidin débris.³ Beside the change in the blood circulation, the circulation of the lymph is also deranged. The arteriosclerosis and the chronic thickening of the meninges are evidence of the retardation of the lymph, which has induced cirrhotic changes. Further, the Virchow-Robin lymph spaces are found to be entirely obliterated, and the His lymph spaces are almost completely closed.⁴

The vessels of the cord, as well as those of the brain, are affected. The increase in size of the vessels makes them much more prominent in sections of the cord, and the thickening of the coats, especially the muscularis, decreases the size of the lumen, and the intima thus appears plaited when stained. Lewis

¹ N. Kerr, "Alcoholism and Drug Habits," *Twentieth Century Practice of Medicine*, vol. iii. p. 41.

² T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 324.

³ H. J. Berkley, "Studies on the Lesions produced by the Action of Certain Poisons on the Cortical Nerve Cell—I. Alcohol," *Brain*, vol. xviii. pp. 482f.

⁴ H. J. Berkley, *Mental Diseases*, p. 264.

gives comparative measurements of the lumina of vessels of the cord, both those affected by alcoholic excess and those devoid of spinal symptoms, showing the decrease in the lumen of the affected ones.¹ In general the lesions are very similar to those of the cerebral vessels, the posterior portions being more affected than the anterior.

These defects in the vascular system would be sufficiently serious if the blood itself were normal, but alcohol has also a toxic effect upon the blood. Lewis² accepts Dr. Percy's experiments of 1839,³ in which he claims to have found alcohol in the brain. His inquiry was suggested by Dr. Kirk and Dr. Ogston, who said, in 1830 and 1831 respectively, that the blood of the brain of an habitual drunkard, when exposed to heat, gave off fumes of alcohol, and the fluid in the ventricles of drunkards ignited and burned with the characteristic blue flame of alcohol. "We discovered nearly four ounces of fluid in the ventricles, having all the physical qualities of alcohol, as proved by the united testimony of two other medical men, who saw the body opened, and examined the fluid," are the words of Dr. Ogston. In Dr. Percy's experiments on men and dogs he did not rely on the odour and inflammability of the fluid, but he procured a quantity of alcohol by distillation.⁴ The writer is not prepared to affirm or deny the truth of these statements, or the value of these experiments, since he has been unable to find any confirmation of them in modern experiments or among modern writers with the exception of the endorsement of Mr. Lewis.

The effects of alcohol upon the blood cause its nutritive qualities to be impaired, and its oxygenation

¹ W. B. Lewis, *Text-book of Mental Diseases*, p. 587.

² W. B. Lewis, *ibid.* p. 344.

³ *An Experimental Enquiry concerning the Presence of Alcohol in the Ventricles of the Brain, after Poisoning by that Liquid*, by Dr. Percy.

⁴ W. Hargreaves, *Alcohol and Science*, pp. 41f.

and circulation retarded.¹ The hæmoglobin forms a close union with alcohol and then parts with its oxygen less readily.² If present in sufficient amounts, the strong affinity which it has for water leads it to absorb the moisture from the red blood corpuscles, causing them to shrink, harden, change their form, and lose some of their ability to carry oxygen as well as their readiness to part with it.³ In this shrunken and irregular state of the red blood corpuscles, with diminished hæmoglobin, when oxyhæmoglobin is reduced in the presence of alcohol, it becomes less capable of reoxygenation.⁴ The injury is not confined to the red blood corpuscles, but extends also to the colourless ones. When alcohol is present in the circulation it has the power of repelling leucocytes, greatly diminishing their activity,⁵ seriously interfering with them in the performance of their function,⁶ and causing their disintegration and death. In the veins more frequently than in the arteries are found aggregations of dying poly-nuclear leucocytes, and where perivascular spaces are present they contain leucocytes in all stages of disintegration, together with large protoplasmic bodies and quantities of detritus finely granular in character.⁷ It is also noticed that alcohol causes an increased amount of fatty matters in the blood.⁸ Usually in alcoholic

¹ C. Richet, *Dictionnaire de Physiologie*, vol. i. p. 236. T. D. Crothers, *Diseases of Inebriety*, p. 186.

² H. D. Rolleston, "Alcoholism," *A System of Medicine*, Allbutt, vol. iii. p. 840. J. M. Whyte, "Some Recent Researches on Alcohol," *Quarterly Journal of Inebriety*, vol. xxiii. p. 298. Becker, *Franck's Magazine*, vol. iv. p. 762.

³ E. Stuver, "Alcohol in High Latitudes," *Quarterly Journal of Inebriety*, vol. xxiii. p. 331.

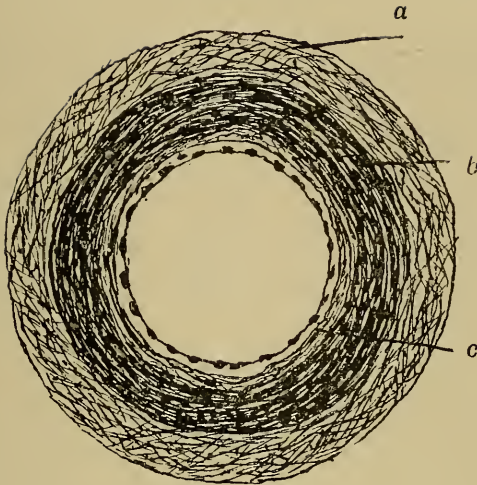
⁴ N. S. Davis, "History of the Experimental Investigations concerning the Influence of Alcohol," etc., *Quarterly Journal of Inebriety*, vol. xxii. p. 275. W. B. Lewis, *Text-book of Mental Diseases*, p. 344.

⁵ H. J. Berkley, *Mental Diseases*.

⁶ G. S. Woodhead, "On the Action of Alcohol," *Quarterly Journal of Inebriety*, vol. xxiii. p. 39.

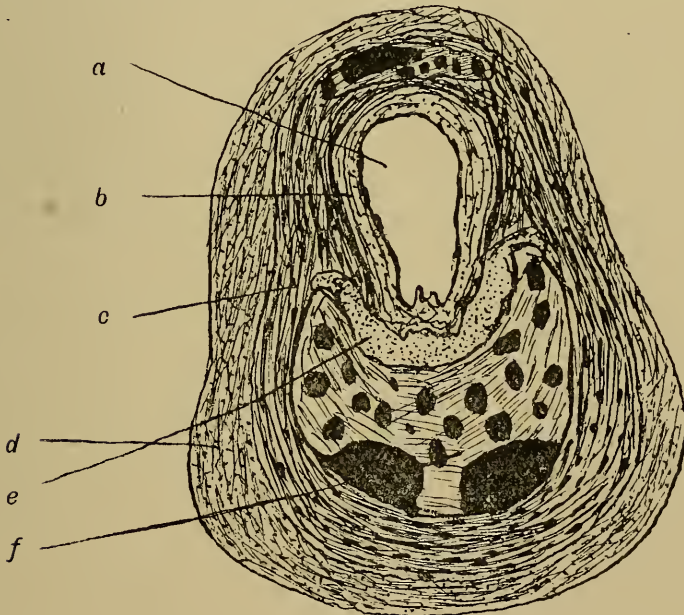
⁷ H. J. Berkley, *Mental Diseases*, pp. 264f.

⁸ F. E. Anstie, "Alcoholism," *Reynolds' System of Medicine*, vol. ii. p. 165.



I.

a, Adventitia, or outer wall. *b*, Media, middle or muscular wall showing nuclei of muscle fibre cells. *c*, Intima or inner wall showing nuclei of pavement epithelium.



2.

a, Lumen nearly closed. *b*, Intima folded, swollen, and with nuclear proliferation in progress. *c*, Media irregularly swollen, staining lighter, and decrease in number of nuclei. *d*, Adventitia irregularly swollen, and undergoing nuclear proliferation. *e*, Leucocytes. *f*, Fatty detritus.

FIG. 11.—Diagrammatic Representation of Two Arteries. 1. Normal. 2. Affected by alcoholic excess.

poisoning the contents of the skull are markedly hyperæmic, the pia very full of blood and the sinuses and plexus gorged.¹

3. *Pathological Growth*.—The brain as a whole is affected by cirrhosis. The meninges, especially the pia-mater and the arachnoid, are much thickened;² but whether this is due to an atrophy of the brain or to other causes, as, for instance, the hindering of the lymph flow and the disturbance of the blood supply, or both, is a matter of controversy. The whole mass of the brain is shrunken,³ the atrophy and wasting of the convolutions causing them to be narrow, flattened, and distinctly separated by sulci.⁴ The relation of cause and effect, however, between this atrophy of the brain and the excessive growth of connective tissue is uncertain. In some cases are found a thickening of the three different meninges, together with an increase in the size of the pacchionian bodies,⁵ and excess of sub-arachnoid fluid. Further signs of chronic meningitis often accompany the above changes, such as the adhesion of the pia-mater to the underlying cortex.⁶ The dura-mater, too, may be abnormally adherent to the cranium, the arachnoid extraordinarily opaque,⁷ and the pia-arachnoid thickened with tendencies to œdema.

When the connective tissue intrudes, the shape of the cells is changed by the crowding which ensues, thus lessening the functional capacity of the neurons. This crowding by intrusion, and the compression by the thickening of the envelopes, interfere with the blood supply, causing mal-nutrition and functional incapacity. Another sign of disintegration by alcohol

¹ A. W. Blyth, *Poisons: Their Effects and Detection*, p. 119.

² W. B. Lewis, *Text-book of Mental Diseases*, p. 590.

³ W. R. Gowers, *Diseases of the Nervous System*, p. 983. H. D. Rolleston, "Alcoholism," *A System of Medicine*, Allbutt, vol. iii. p. 862.

⁴ N. Kerr, "Alcoholism and Drug Habits," *Twentieth Century Practice of Medicine*, vol. iii. p. 41.

⁵ N. Kerr, *ibid.* p. 42.

⁶ R. Quain, *Dictionary of Medicine*, p. 28. H. D. Rolleston, *ibid.* vol. iii. p. 862.

⁷ W. R. Gowers, *ibid.* p. 983.

is that the spider cells greatly increase in number and form cicatricial tissue.¹ The growth does further injury by invading the medullary sheath of the axis-cylinder processes, and the collaterals. In the cord the connective tissue growth is not so great as in the brain, but is sufficient to do much injury.

The pathological effects² have been divided into three classes, and treated separately. This cannot be done in fact, for there is a constant interaction between these changes. What is the effect in one class may be the immediate cause of some lesion in another. All, of course, are either directly or indirectly caused by alcohol. A change in the vascular system, which has been immediately caused by alcohol in the blood, may be the direct cause of the pathological growth, or the degeneration of the neurons; the pathological growth may interfere with the vascular system, and hinder the action of the neurons; or the defective neurons may cause the change in the vascular system, and the pathological growth. It is impossible to say which is the cause of the total effects in the others; probably no one is, but we have here a pathological circle, the one diseased part working disastrously upon another, the second part reacting in a detrimental way upon the the first, all being interdependent.³

¹ T. D. Crothers, *The Diseases of Inebriety*, p. 192. W. B. Lewis, *ibid.* p. 582.

² W. H. Welch, "The Pathological Effects of Alcohol," *Physiological Aspects of the Liquor Problem*, edited by J. S. Billings, vol. ii. p. 370, sums up the pathological effects as follows:—"The pathological lesions of the brain found with greater or less frequency in cases of chronic alcoholism are thickening, opacity, and adhesions of the membranes, chronic hæmorrhagic pachymeningitis, transudation of serum, atrophy of the cerebral convolutions, a granular condition of the ependyma, atheromatous arteries, and increase of neuroglia in the superficial layers of the cortex."

³ H. J. Berkley, "Studies on the Lesions produced by the Action of Certain Poisons on the Cortical Nerve Cell," *Brain*, vol. xviii. p. 491, says that the nerves are affected as a direct result of the poison of alcohol, as well as indirectly through a lack of nutriment in the blood. On the contrary, A. E. Sterne, "The Effect of Alcohol upon the Nervous System, the Mind, and Heredity," *Quarterly Journal of Inebriety*, vol. xxv. p. 59, says:—"The effect upon the nerve-tissue

Cells of every kind of tissue usually have the ability to hinder or prevent the entrance within their walls of substances which will injure them. Not so with alcohol and other narcotic poisons, which easily penetrate the walls and attack the protoplasm with toxic effects.¹ In fact, here we have three varieties of poison against which the cells have to struggle—that of the alcohol as such, the products of alcohol in uniting with the elements of the blood,² and the effete and stagnant matter not eliminated. Thus we see that the whole system is exposed to the toxic changes. The blood supply affects all parts of the body, for the most minute and remote cell has no other source of nourishment, and therefore of life, than the blood. This is especially true of the brain and spinal cord, for on account of the osseous covering, not only can nourishment be received in no other way, but to a large extent the blood is the only means of injury.

Further, with no lesions in the vessels and no poison in the blood, we know that the simple change in the amount of blood has an effect upon the brain, the discontinuance of the supply causing insensibility almost instantaneously, while the increased supply causes excitation, and, later, unconsciousness and death. It is thus very important to remember in dealing with alcoholism that the neurons within the nerve centres can be, and often are, very significantly affected by influences dependent upon alterations in the flow of blood and lymph. Nerve cells of the spinal cord deprived of blood for some (six) hours show an almost total lack of chromatic bodies, except a few near the nucleus.³

itself is purely secondary,—due, in other words, largely to malnutrition of the nerve elements. W. B. Lewis, *Text-book of Mental Diseases*, p. 583, opines that the vascular lesions are first in point of time.

¹ E. Overton, quoted by *Quarterly Journal of Inebriety*, vol. xxiii. p. 34¹.

² W. V. Jauregg, "The Poisonous Action of Alcohol in some Nervous and Mental Diseases," paper read at Eighth International Congress, Vienna, 1901.

³ L. F. Barker, *The Nervous System*, pp. 288f.

We have also noteworthy alterations in the nutritive properties as well as in the flow. The blood itself is impoverished by lack of oxygen, and the changes in the arteries cause either a lack of blood to a particular part, or a rupture of the vessel, allowing the contents to be sent into the brain substance. "Thus in every case of alcoholic cerebral degeneration we have to deal with the part played by the inflammatory exudate, that of alcohol in the exudate, and the combined effects of nutrition and metabolism of the nervous structure."¹ The retardation of the flow of lymph and blood induces cirrhotic changes, giving us a thickening of the meninges and a general increase of connective tissue. The quality of the blood also affects the vessels themselves, and by rupturing or closing the lumina acts upon the nervous and connective tissue.

The direct effect of alcohol upon the nervous system, and thus upon the vaso-motor nerves, causes much of the disturbance in the vascular system. When these nerves are affected the vessels dilate and perhaps rupture, or else the walls are swollen, the lumen is closed, and degeneration is completed in this way. In addition to this, the nerves, indirectly through the blood, and probably also to some extent directly, exert an influence upon the excessive growth of connective tissue. The connective tissue injures the nerves by invading the sheath of the processes, pressing the cell bodies, changing the shape, and interfering with their function. By pressure upon the vessels the lumina are made smaller, and thus the supply of blood and lymph is decreased.

It must not be supposed that the foregoing description of the effects of alcohol upon the nervous system is the result of an examination of any one individual. Of course no one could survive with all these lesions, a small proportion of them being sufficient to cause death. This account is a resumé

¹ T. B. Hyslop, *A System of Medicine*, Allbutt, vol. ix. p. 324.

of all the effects which have been observed, supposed to be caused by alcohol upon different persons, the effects varying with the individual. Nor must we think that these are the observations of any one scientist upon a number of persons. It is rather a composite description of the accounts of different observers, none of whom has probably noticed all the lesions described here.

It is only natural at the present stage of investigation regarding histological elements of nervous tissue, that there should be differences, not only of opinion, but of observed facts, according to the personal equation of the observer, the experimental methods, and the numerous other circumstances which must necessarily vary in different individuals when small doses of alcohol are taken by the subject, or even in a single or few intoxications. We also have different effects according to the variety of alcoholic beverage of which the subject partakes. One kind causes him to be keen and quick-witted, another jolly, another morose, at the same period of the intoxication; while different periods of the same intoxication produce as many different moods.

These differences, however, are noticed in acute cases, or with small doses; but with these we are not directly concerned. The effect is different when larger doses are taken.¹ The individual participating does not then show his characteristics so much, and the form of the alcohol does not produce such noticeable differences. Finally, when the doses become large and the participation frequent, the individual characteristics, and the form of the alcohol make less and less difference. All the appearances of stimulation cease, and the apparent effect is that of paralysis only. It is only thus that we can pursue our investigation, for if the same differences were noted in chronic alcoholism that are seen in a single intoxication, we should have to confine ourselves to the investigation of the effects of wine, or beer, or

¹ T. D. Crothers, *The Diseases of Inebriety*, p. 114.

whisky upon a certain individual, rather than the effect of alcohol, regardless of its form, upon men in general.

There are differences, however, which may be likened to different cases of any disease. The physician knows of many symptoms of every disease, or form of poisoning, but he rarely finds all the symptoms present in any one case; they will depend on the constitution of the patient. This is equally true regarding alcohol; with one the effects appear to be largely upon the central nervous system, with another the peripheral nerves are most seriously affected; some are able to drink moderately and seldom, others cannot control themselves, but are continually intoxicated. Between these two extremes can be found individuals to form a gradual scale. "There is no more perplexing problem in individual psychology than is presented by the subtle differences of organisation which make it possible for one man to drink moderately, without danger, while another, apparently as well constituted and as favourably conditioned, perishes in the presence of alcohol."¹

We know that the effects differ according to the age,² sex,³ profession,⁴ hereditary disposition,⁵ form

¹ G. E. Partridge, "Studies in the Psychology of Alcohol," *American Journal of Psychology*, vol. xi. pp. 332f.

² W. B. Lewis, *Text-book of Mental Diseases*, p. 328, says the ages when males are most susceptible to alcohol are from twenty-five to thirty, and from thirty-five to forty. The explanation which he gives for this is that the former is a period characterised by intellectual advance, and the latter a time when the struggle for existence is most keenly felt. H. J. Berkley, *Mental Diseases*, p. 248, says:—"While chronic alcoholism is found at all ages, its especial predilection seems to be for individuals between twenty-five and forty-five years of age, when the man's activities are at their height, his intellectual development is greatest, and the work in the struggle for a competence at its maximum."

³ It has been pointed out by H. Ellis, *Man and Woman*, p. 222, W. B. Lewis, *ibid.* p. 346, and R. Jones, *Quarterly Journal of Inebriety*, vol. xxv. p. 270, that alcoholism is more common in men than in women; but Mr. Jones says that criminality is more common among women inebriates, and Mr. Ellis affirms that affections of the spinal cord and nerves are found more frequently among women.

⁴ Professions which induce sedentary habits are more disastrous than a more active outdoor life.

⁵ Any form of neurotic inheritance tends towards an inebriate life.

of alcohol used, and other factors; yet in advanced cases the difference is not so great as to prevent our noticing both physiological and psychological laws which apply to all cases. Three things we may note here in passing: alcohol appears to affect neurotic persons more than the non-neurotic; persons already degenerated along nervous lines are most seriously injured;¹ the most highly organised centres are first and more permanently affected than the lower centres. This last point will have an important bearing on the psychology, for the principle holds good psychologically as well as physiologically, that in cells subject to the same amount of alcohol, the suspension of activity begins first with the most complex and proceeds to the most simple.²

The disagreement of the results of scientific investigation regarding the lesions caused by alcoholism makes our task difficult, and the further uncertainty concerning the importance of the lesions concurred in by all the investigators, is an additional drawback. One example will suffice to elucidate the point. Chromatolysis, a lesion reported in alcoholism, is also found in ordinary fatigue, the repair of which is brought about by rest.³ Post-mortem changes are also shown in this way. Noting this, chromatolysis may not be a very serious lesion, but when it is coupled with fatty and pigmentary degeneration, as is frequently the case in alcoholism, we are justified in positing its pathological nature. The basis of the observations, the science and art of staining, is still very imperfect, and not until this is perfected can we expect more certain results.

This uncertainty makes it difficult to establish any certain connection between the physical and the

¹ G. H. Savage, "Toxic Insanities," *A System of Medicine*, Allbutt, vol. ix. p. 315.

² E. Overton, quoted by *Quarterly Journal of Inebriety*, vol. xxiii. p. 341.

³ C. F. Hodge, "Changes due to Functional Activity in the Nerve Cell," *Journal of Morphology*, vol. vii. pp. 95-168.

psychical, and it seems venturesome to try. When slight success has crowned the efforts of those who have tried to establish a proportion between morphological alterations and the amount of functional disturbance¹ (between the two aspects of the physical), how should one be expected to establish the relation between the morphological alterations and the psychical changes, over that unbridged chasm between the physical and the psychical?² This in its wider aspects seems impossible, yet in a limited way we are able to apply the principles of physiological psychology, advance into the known and reasonable as far as we can, and leave the rest to the future—to the time when the activity of the single neuron in its normal condition shall be more fully understood, and when we can better comprehend the pathological cases.

This chapter, which must form the basis of our further study, has given us a *resumé* of the chemical and physiological discussions concerning the action of alcohol on the brain. We have seen that the neurons are so injured that in many cases they are entirely destroyed. This degeneration is found in all parts of the nervous system, but is most disastrous in the cerebrum. The arteries are hardened and filled up so that they are not capable of performing their normal functions, and the blood is deficient both in quantity and quality. The pathological growths crowd and deform the cells so as to interfere with the best work, and at times assist in the destruction of the nerve elements. All these different lesions are related, and prove both cause and effect in the pathological circle. While we find the effects of different kinds of alcoholic beverages vary when

¹ L. F. Barker, *The Nervous System*, p. 286.

² W. H. Welch, "Pathological Effects of Alcohol," *Physiological Aspects of the Liquor Problem*, edited by J. S. Billings, vol. ii. p. 350, says:—"The injurious effects of alcohol upon the body are represented only in part by known anatomical lesions, for we are still ignorant of the anatomical basis of many of the morbid manifestations produced by this substance."

taken in small doses and as an occasional indulgence, when the doses are large and continuous, the same differences are not noticeable; nevertheless, the various conditions under which the individuals live, and the investigations are made, add to the difficulties of our problem.

In the succeeding pages the attempt will be made to follow what is known concerning the relation between the physical and the psychical, and to explain how and why alcohol in affecting the brain injures the mind. One principle, one analogy, seems to permeate the whole; the alcoholic is a victim of premature senility of mind and body,¹ the symptoms of alcoholism and "old age" being similar.²

¹ V. Magnan, *On Alcoholism* (trans. Greenfield), p. 155; also, D. H. Tuke, *Dictionary of Psychological Medicine*, vol. i. p. 77.

² A. M. Hamilton, *The Neurotic Indications of Pre-senility*.

CHAPTER III.

MEMORY.

Memory fundamental—Various disorders of memory brought about by alcohol—Amnesia—Cases cited—A case of hypermnesia—Paramnesia—Histological evidence—The three factors of memory—Relation to perception—Conditions of perception—Retention—Reasons for faulty retention—Disorganization of brain one cause—Effect of Pathological growths—Distinction between retention and reproduction—Reproduction—Effect of disorders of other faculties on reproduction—Fatigue—Hypermnesia—Recognition—No local physical basis—The usual fault of recognition—Localisation—Paramnesia—Classes and explanation of paramnesia—Memory declines in chronological order—Reasons for this order—Order of decline of contents of mind—Emotional memories—Effects of loss of memory.

THE discussion of the memory of the alcoholic is the first psychological subject taken up, the reason for this order being that memory is fundamental. This can be recognised from three different standpoints. Our whole subject leads us to discuss the relation of the psychological to the physical, which is difficult to discover and quite impossible to explain. The memory gives us the best clue to this relationship, as it is without doubt the psychological factor whose dependence we can most clearly trace to the physical processes,¹ and as such has a claim to the first place in this discussion.

It is fundamental as a faculty of mind, because all other faculties are more or less dependent upon it. All our knowledge is based on memory, and without it experience would be useless, and reasoning im-

¹ G. T. Ladd, *Psychology, Descriptive and Explanatory*, p. 384; D. Kay, *Memory: What is It? and How to Improve It*, p. 38, note 1; W. B. Carpenter, *Mental Physiology*, p. 429.

possible. The self shrinks with the memory, and every thought and action are based on it. We must recognise that the mind is so much a unit that we cannot dispense with any portion as useless, and go on in life without feeling the need of it. That the mind as a whole is dependent upon its every part is true, and yet there is a special sense in which it is dependent upon the memory. Life without memory would be a blank, not to be compared in richness with that of the idiot or insane, who has lost some other faculty of mind.

Not only would other faculties of the mind be impossible without memory, but they fail as the memory fails, so that if the decline of memory goes beyond a certain point it will prove to be the destruction of the other faculties. Memory is not a faculty separate from all the others, but rather the condition of their activity. It furnishes the material for mental life, and without it there is no content.

The other reason why memory should be first discussed is because its impairment is one of the first symptoms of decay and decline in the life of the alcoholic, as in almost all cases of mental degeneration.¹ Sometimes it may be the only symptom.² The slight early affections may be overlooked at first, because of the constant liability to forgetfulness common to normal persons. The decline of the alcoholic's memory may first manifest itself, not in the conscious inability to remember certain things, but in the unconscious effect which it may have upon

¹ H. Maudsley, *Physiology of Mind*, p. 535. W. B. Lewis, *Text-book of Mental Diseases*, p. 348, says: "The memory is specially implicated. . . . Cases comprised in this category (amnesia forms) show the earliest evidence of the structural change due to the prolonged use of alcohol; they are of most serious moment, as they indicate that the borderland between disordered function and real structural change has been passed."

² J. Dreschfeld, "On Alcoholic Paralysis," *Brain*, vol. viii. pp. 437 and 444, gives two cases of which he speaks as follows: "The patient complained of loss of memory, but otherwise her mental condition was normal." "I found the patient irritable; otherwise but little affected mentally except that he had lost his memory for recent events."

the other faculties. As the alcoholic has been stricken with premature old age, this symptom so common to the appearance of senility is the first one manifested. Since the memory is fundamental in respect, first, to the explanation of the relationship of mind and brain; second, to the dependence of the faculties upon it; and third, because it is the first symptom of degeneration through excessive indulgence in alcohol, the discussion is placed first.

The disturbance of memory due to a single intoxication is not within the range of our subject, save as it may throw light upon the effects of the continued use of alcohol. In single intoxications we find at first an exaltation of memory due to the increased supply of blood to the brain, and later a loss more or less complete until the victim lapses into unconsciousness. The fact that he has had his memory exalted or depressed once or twice, or many times, is not the reason that the memory may fail in advanced cases of inebriety, but the physical conditions which cause these temporary changes in the memory tend to cause also such permanent disorder in the cells of the brain as to interfere with the normal function of the mind as far as the memory is concerned.

The disorder of memory most common to the alcoholic is that of progressive amnesia.¹ Sometimes we find also well defined cases of hypermnesia, and abnormal and excessive paramnesia, as solitary symptoms or coupled with the amnesia. While forgetfulness is a characteristic symptom of all

¹ W. B. Lewis, *Text-book of Mental Diseases*, p. 348, describes the extent of the disorders when he says: "The most notable feature characterizing this class is the peculiar failure of memory—an instantaneous forgetfulness of events which have only just occurred. Every degree is found from slight retentiveness up to a complete, and almost immediate, abolition of the latest impression. A patient so affected forgets names, dates, and order of sequence, to an almost incredible degree. If a name not familiar be repeated over and over again, a moment's conversation will often obliterate its memory; even when told to keep the word as a test word in mind—the recall fails, if the attention be momentarily attracted in another direction."

forms of chronic alcoholism, the loss of memory may be so prominent as to constitute a special form of the disease. Berkley recognises this,¹ and Lewis has made a division on this line, one form of alcoholism being designated by him as the Amnesic type.² The patients recognise their mental enfeeblement, and strive against it with painful earnestness. Amnesia is not always complete, for often there will be a dim remembrance, or a solitary event or sentence may be retained out of an otherwise amnesic period.³

Dr. Freund⁴ gives two very interesting cases of amnesia brought about by alcoholic excess. His accounts are plenary, so only an epitome of the cases can be presented here. The first patient was a woman, fifty-two years old. She had had both bodily and mental disorders characteristic of alcoholism, including a slight delirium, but from these she had mostly recovered, the chief remaining symptom being a very weak memory. This caused her to be considered feeble-minded, another symptom of which was frequent chattering. Her early memory, such as the birthdays of her brothers and sisters, the names of her teacher and school friends, was complete, and many events up to her thirtieth year were not forgotten; but of occurrences after that, and especially concerning recent events, her memory was largely a

¹ H. J. Berkley, *Mental Diseases*, p. 274, says of this class: "This forgetfulness of names, dates, the order of work, even of meal-times, renders the patient unfit to follow the daily pursuits of ordinary life. This incapacity may exist for the simplest procedures. I have, for instance, ordered a patient afflicted with alcoholic amnesia to bring me a glass of water from the hydrant. He would start off with perfect willingness, would, perhaps, reach the door, and then return for further orders, with the acknowledgment that he had forgotten for what purpose he had been sent. The scene has been repeated eight or nine times in succession, the patient sometimes very nearly succeeding, at other times hardly reaching the doorway before abandoning the attempt."

² W. B. Lewis, *ibid.*, pp. 348f.

³ K. Heilbronner, *Pathological Inebriety*, Lecture delivered before the Medical Society of Halle, Germany, January 1901.

⁴ C. S. Freund, "Klinische Beiträge zur Kenntniss der generellen Gedächtnisschwäche," *Archiv für Psychiatrie*, Bd. xx. s. 441.

blank. At times she knew not the name of her husband nor the place of her residence. She believed her parents and husband still alive, and thought of her grown-up children as yet uneducated. She estimated her own age correctly, and gave a correct account of her illness. She believed that she had been in her present place of abode only a few days, and mistook the doctor for her old schoolmaster. She did not remember the day of the week, month, year, or even the season. Meal times were most correctly judged, yet a few hours after meals she could not remember whether she had dined, nor could she tell what food she had had. An hour afterwards, she forgot that the doctor had given her a close bodily examination, and she replied to the same question she had answered shortly before,¹ not recognizing it. She could only repeat phrases or tunes when they were reiterated or spoken slowly and distinctly. She multiplied correctly, but could not remember the examples; she did remember a number over a period of conversation. There was no abnormality regarding her writing.

The second case was that of a woman of sixty-five years of age, who after alcoholic excess had isolated epileptic attacks, and slight delirium. After a serious attack when admitted to the hospital, her memory became very weak, much like the former patient, with symptoms of feeble-mindedness and clouded judgment. The boundary time of memory was her twentieth year, after which a few scattered events only were remembered. Of early years she could recall her place of birth, teachers, school friends, and church; but she did not know her age, usually saying she was eighteen. She did not know that she had grey hair, nor did she know that she was in a hospital;

¹ Without more than a minute's intermission the doctor repeats the question concerning his identity: "Wer bin ich? Sie werden verzeihen, ich glaube mein Herr Lehrer in Carlsruh, der Lehrer Golch. Ich habe Sie gleich wieder erkannt. Haben Sie mir dar schon einmal erzählt? Nein, ich glaube nicht."

but she gave a fair account of her illness. Recollections of simple impressions vanished in a few minutes. She could not remember her bed and similar things. Different from the first case, her power to write was greatly affected. In writing of a spontaneous character, she repeated words and portions of sentences before she could form one letter correctly, and even then it was with great difficulty that she could recall capital letters. Letters which she forgot were frequently remembered shortly afterwards. She could write from copy quite correctly when she spelled aloud the words as she wrote them. Her least success was in writing from dictation, and in this exercise accelerating the speed of the dictation increased her errors; frequently, however, she recognized the errors which she made. Her oral spelling was much superior to her written.

The following is a case of hypermnesia:—"Dr. Godding, in charge of the Government Hospital for the Insane, informs me that he has seen but two instances (of hypermnesia)—one in a woman, the other in a man, who suffered from dementia of alcoholic origin. In the earlier stages of his trouble, this man showed surprising memory for the smallest details of his profession—that of chemist—and for minor events and scenes of his previous life; but the augmentation of memory was only transitory, having been replaced by progressive amnesia."¹

Paramnesia is so common in normal subjects that a case seems hardly necessary for description here. The alcoholic's experience in this regard is more frequent and more pronounced, causing foolish and unexpected situations for the patient. He is introduced to a stranger whom he recognizes as an old friend, and may be very familiar with completely new surroundings. This exaggerated and continuous paramnesia is more common in alcoholic insanity than in any other form of mental disorder. It is

¹ I. C. Rosse, "Disorders of Memory," *Reference Handbook of Medical Sciences*, Buck, vol. iv. p. 710.

frequently associated with illusions, and may be the result of them at times.¹

The following extract shows the histological evidence and conclusions regarding the alcoholic's memory:—"Under the law of psychogenesis we had previously noted that the power of recalling past memories . . . [implies] a highly involved cortical (mental) organisation, and that it has behind it a nutritive law of deep significance. . . . This capacity depends upon the integrity . . . of the cerebral organisation in two regards—viz., (a) the integrity of the latest involved and elaborated anatomico-physiological connections (or 'fields of conjunction') between the neurons which subserve it, and (b) the high nutritive elaboration, the high 'nerve tension' and capacity for spontaneous discharge of the said neurons, from time to time."² These two, (a) and (b), are not distinct, but will be discussed separately.

In what respect does alcohol produce a change in these two above factors? In the normal relation, the dendrites and collaterals of the different cells come into contact, but in the alcoholic there is a softening and decay of the dendrites as already described; there also comes a change in the collaterals. The dendrites and collaterals form connections, not only between one neuron and another, but between one complete set and another—*i.e.*, between nerve centres. With the dendrites and collaterals gone this connection is impossible. When this happens we have a diminished capacity of the neuron to be excitable to stimuli, and a diminished permeability in the pathways of the nerve currents issuing from one neuron by its nervous processes and its terminals to another in the cortical area, the psychological counterpart of which would be a slowness in the arousing of associated images, and delay in reaction time.

¹ T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 329.

² W. L. Andriezen, "Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. p. 673.

The nutritive changes are also important. "The physiology of nutrition is in the nerve cell elaborated to a high degree, and each nerve centre of this or that part of the central nervous system has its own intrinsic nutritive rhythm. In the alcoholic brain, the earlier and subtler changes affect not merely the field of conjunction, but the trophic or nutritive forms (cell body and nucleus) of each individual neuron." These changes show an increased functional activity and degradation therefrom, evidenced by "the softening and alteration of blue chromatic rods and granules and displacement of yellow pigment. The increase and progress of pigmentation is the equivalent of the onset and progress of degradation in the functional activity of the cell—the replacement of living protoplasm by non-living pigmentary product, as we see in senile decay."¹

The memory may be divided into three factors, the purely physical retention, the psycho-physical reproduction, and the purely psychological recognition. Sometimes there is added to these the factor of localization, but this is rather an elaboration of memory than a real part of it; in so far as it is necessary, this factor will be treated under the rubric of recognition. The effects of alcohol on the memory will be shown by its effect upon each one of the factors in turn, and thus the total injury can be comprehended. It might be remarked here in passing, that the theory of the physical basis of memory which the writer accepts can be briefly stated as follows: "Memory depends upon a persistent disposition or tendency to movement created in the brain."²

The prerequisite of memory is an impression made upon and responded to by the mind, of which we shall take perception as the type. It seems unnecessary to say that what is not perceived cannot be remembered, but perhaps it would be less readily

¹ W. L. Andriezen, "Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. pp. 673f.

² G. T. Ladd, *Outlines of Physiological Psychology*, p. 420.

accepted if we should say that in proportion as the perception is less distinct so the memory of it will be not only less clear, but also less lasting. As we shall see when we come to consider the subject later on, alcohol has a very distinct effect upon the senses. This is especially true of the organs of sight, but also of the other special senses, common sensations, and the muscular sense; the general affections of the end organs prevent normal perception. The hardening of the brain makes it less susceptible and plastic, while the decay of the cells and fibres, if in process of degeneration at the time, would also prove to be a preventive of the necessary modification.

The condition of the body at the time of perception is very important. The question of the energy of the person figures conspicuously. In the previous chapter, when speaking of the histological appearance of the nerve cells in alcoholism, we found that the appearance of the cell when fatigued and when affected by alcohol, was quite similar in several respects. We know that when fatigued we cannot respond to a sensation so well,¹ and do not remember so well afterwards, because we have not received the required impression and given the required response to make the necessary modification in cells and fibres. In some experiments with persons deprived of sleep,² the memory failed in waves, and at the end of ninety hours it was very much slower or failed entirely. This showed the effect of a low nervous energy on perception, the impression not being made, and the mind not responding to sensuous stimuli.

That the flow of blood is necessary in a normal degree in perception, is seen in the fact that we are less bright, as far as perception is concerned, after a meal than before.³ If the stomach demands an abnormal amount of blood, the brain cannot have its

¹ N. Porter, *The Human Intellect*, p. 312.

² G. T. W. Patrick and J. A. Gilbert, "Effects of the Loss of Sleep," *Psychological Review*, vol. iii. pp. 472f.

³ G. A. Lindner, *Manual of Empirical Psychology* (trans. De Garmo), p. 99.

normal quantity. The fresher and more energetic the vital processes, the better may things be learned—*i.e.*, the sensuous percepts will leave behind more permanent and deeper traces; even things perceived in an energetic and cheerful frame of mind are more easily retained.¹ We know that on account of the diseased condition of the blood vessels of the alcoholic, the proper amount of blood cannot reach the brain, and so perception is less forceful. The other functions of the brain concerned in perception to make it available to the mind, being also affected, the perception if perfect cannot be known as such. The element of attention required in all perception, is lacking in the alcoholic. The value of attention to memory is shown by the first of a series always being remembered best,² because it attracts the attention, and strikes the organs when fresh and forceful.

Some have claimed that the difficulty usually attributed to memory in old age and alcoholism should properly be laid to the door of perception, on account of the lack of attention;³ that the attention degenerates first and not the memory. However true this may be, we know that the power of voluntary attention, as well as what might be called spontaneous attention, is diminished in alcoholics, and memory is injured thereby. Voluntary attention is lacking on account of the lack of will. The sensations are also misinterpreted, which makes perception untrustworthy. Many mistakes commonly attributed to recognition may without doubt be due to erroneous perception, and the recognition, at least in some cases, be perfect. Thus, the accusation against the alcoholic of being a smooth-tongued, fluent liar, may not in all cases be due to his moral degeneration, but to his improper perception; he may tell things different from the way in which they appear to the

¹ H. Hoffding, *Outlines of Psychology* (trans. Lowndes), p. 148.

² A. Binet, "Notes on the Experimental Study of Memory," *American Naturalist*, vol. xxxi. p. 916.

³ D. Kay, *Memory: What is It? and how to Improve It*, p. 257.

normal person, and yet his account may be as he saw them or heard them, the trouble being that he did not see or hear correctly.

Supposing the perception to be normal, do we find the retentive power of the memory injured? This is a physical process purely, and if the injury comes through the physical, we would expect the trouble, as far as the memory is concerned, to originate here. This is undoubtedly the case. As soon as the modification is made in the elements, the nourishment provided by the blood must be sufficient to continue the modifications in the original way, to allow the cell to produce its kind so as, in the event of its death, to have other cells to take its place. The fact that perception received just before sleep, when the cells have immediately afterwards much rest and nourishment, is remembered well; and that the events immediately preceding severe illnesses, such as fevers, cholera, excessive hemorrhages, inveterate syphilis, etc., are not remembered, shows the necessity of nourishment following the perception, if it is to be retained. We find that there is sometimes a permanent loss of memory after lead, mercury, and nicotine poisoning.¹ This might be due as well to the lack of ability to make associations, through the shrinkage of the fibres, for some poisons have the effect of contracting nervous tissue,² and a very slight contraction would separate a cell from its neighbours and companions in labour.

Fatigue, or any lack of nervous force, after a perception, causes a lack of retention. The old particles are dying continually, hence new particles must be supplied to keep up the structure, and this is done by the re-positing of new matter in the precise form of the old.³ The physical basis of memory is therefore nutrition.⁴ The lack of nutrition is well known in

¹ I. C. Rosse, "Disorders of Memory," *Reference Handbook of Medical Sciences*, Buck, vol. iv. p. 713.

² B. Sidis, *Psychology of Suggestion*, p. 213.

³ W. B. Carpenter, *Mental Physiology*, p. 440.

⁴ T. Ribot, *Diseases of the Memory* (trans. Smith), p. 67.

alcoholics, not only on account of the impoverished condition of the blood, but also on account of the small supply received, due, as we have seen, to embolisms or the closing of the lumina of the arteries. We found that the cells and their dendrites were actually destroyed in some cases, degenerating through the effect of alcohol upon them. Of course, if this is so, the modification cannot remain, and the cell cannot function. Not only the elements directly modified, but those indirectly changed, and upon which the associations depend, may be injured. We know that if a single nervous element is destroyed or paralyzed, that suffices: the well-known mechanism of association will explain the rest. "A chain is as strong as its weakest link"; this applies to the chain of associations, and if one link is gone the whole thought perishes.

As memory is primarily a process of organization, so amnesia is a process of disorganization and dissolution. The basis of memory is not simply a collection of impressions, but an organization of what have been called "dynamical associations," or habits of the functioning of the various elements of the brain, which respond to appropriate stimuli. Because of the impression made upon the single cell it functions in a certain manner, but it functions thus in connection with many other cells and fibres to allow us to have memory.

Probably never all the cells and fibres of a system are destroyed, but the system is destroyed when one of its factors is. It is not necessary for the tracks of a whole railroad system to be removed in order to prevent traffic; one rail or even one spike, an infinitely small proportion, if removed, wrecks the train, and prevents its arriving at its destination. Thus, if one cell loses its power of functioning in a certain way, loses its retention, then the whole thought is destroyed. This disorganization begins with the most unstable systems of neurons, with those which require a large and complicated mechanism; because it

requires so little, such a small retraction of the dendrites or a small part of the cell incapacitated, to prevent its functioning. Kleefeld found in his experiments, that when alcohol was introduced into the circulation, it produced almost instantly a retraction of the minute branches of the neurons, at least of a great number of them.¹

The pathological growths of the brain as a whole, and the invasion of connective tissue among the individual cells and fibres, so distort the cells as to destroy any modification which they may have had, or prevent them from functioning in their usual manner. This growth must also interfere with the complex systems which have elements all through the two hemispheres, and prevent the working of the systems as wholes. Thus in two distinct ways the growths seriously interfere with the memory. We know the brain of the alcoholic to degenerate in this way, so here again an additional cause is found for the loss of memory.

It is exceedingly difficult, if at all possible, to distinguish between the destruction of the memory as retentive and as reproductive. We know, of course, when we fail to reproduce a thought at one time and under certain circumstances, and are able to do so at other times, that the fault has been with the reproduction; but when the idea is never reproduced, it is impossible without further data to know where the fault lies. What has been said under the head of the destruction of the memory as retentive, may also apply to the lack of reproduction. As we found it necessary to have the body as a whole, and the brain in particular, in a good state of health when we acquire any idea in order to remember it, so it is necessary to be in equally good condition when we desire to recall or reproduce anything; in fact, the conditions necessary, both physically and psychically, are very

¹ J. H. Kellog, "The Baneful Effects of Alcoholic Medication as shown by Recent Experimental Observations," *Quarterly Journal of Inebriety*, vol. xxiv. pp. 264f.

similar in presentation and reproduction. We require nourishment, good blood supply, and well functioning nervous elements, as well as attention in both. As we found that the alcoholic lacked these conditions in perception, so he lacks them in reproduction.

Both in voluntary reproduction, or recall, and spontaneous reproduction, the alcoholic is very weak. He has lost the power of will, as we shall see in a later chapter, hence the lack of voluntary reproduction; the general decline of nervous force and the sluggish flow of thought, account for the absence of spontaneity. The feeling of strain, so apparent during voluntary attention, shows that mental work is necessary, and this the alcoholic cannot well do. This inattention, so apparent, not only lessens the extent to which ideas can be taken up and retained in consciousness, but in a still greater degree confuses and deranges the associational connections in what is actually recollected.

The associations become very unstable, and referring again to our railroad illustration, the train is easily switched to another track through this lack of attention, until a few tracks only are used; the others through disuse atrophy, and through disease which would attack the weaker, unused elements, soon decay. The decay of one element not only interferes with the idea directly dependent upon the system to which it belongs, but with the other systems which are dependent upon it; so, as we say, a whole train of thought is lost. This happens, not because of the lack of retention in the greater part of the physical basis of this train, but because the connecting elements having gone, it is impossible to stimulate the figuratively more distant elements. The physical basis of associations of ideas being destroyed, we have no means of approach; the idea is therefore past recall unless the damaging factor is removed, and sufficient nourishment comes to the affected part to allow of the renewing of the association fibre, as is sometimes the case after Wallerian degeneration.

Besides attention and association of ideas, other mental states have an effect upon the memory. All varieties of emotion have an influence—as, *e.g.*, anger, fright, depression, and joy. The first three are generally detrimental, because they lower the nervous force or else divert it. When there is a loss of nervous force not immediately replaceable, there is a corresponding diminution of memory. In no condition is this better shown than in that of fatigue, nearly all books dealing with memory giving definite examples of this. There is that example of Sir Henry Holland, who, while in the Hartz Mountains, became very much fatigued, as a result of which he was unable to remember a word of German, and therefore could not converse with those who were accompanying him. On becoming rested, a full recollection of all his knowledge of German returned. Assistant-Surgeon Woodruff, in a paper published in the *Philadelphia Medical Journal*, gives several examples of entire lapse of memory among the officers of the United States army doing duty in the Philippine Islands. The phenomenon took place usually late in the day, on account of exhaustion, and not until after a rest differing in length from an hour to a whole night, was the memory restored.

We have all had similiar experiences of being unable voluntarily to recall something when we were exhausted and our heads felt tired, while after an interval of repose, when we felt fresh, it was easily recalled. This return of reproductive power is probably due to the renovation of brain tissue and the purification of the blood, which has been charged with waste products. If, as is largely the case with the alcoholic, not sufficient blood comes to the affected parts, and what blood does come is surcharged with injurious matter, and if the vascular system is so injured as to prevent the carrying away of the effete matter, whence comes the necessary repair and change? With the alcoholic it never comes fully; and gradually through the lack of

repair the neurons lose their ability to function, sometimes becoming so weak and degenerated, that an ordinary stimulus is not sufficiently powerful to affect them.

The very presence of alcohol in the blood is detrimental to reproduction, because of the effect it has upon the healthy neuron. Experiments with various toxic substances show that when the neurons come in contact with them they contract. True, it is a very slight contraction, but a slight contraction is sufficient to prevent the transference of stimuli when the connection is not organic and continuous, but by synapse. The interlacing dendrites and collaterals drawing apart an exceedingly short distance, prevent the connection, not only between single neurons, but in doing this, between different systems. So long as the harmful substance continues in the blood, the process of the memory of many experiences may be hindered. Again the effects of the pathological growths in the brain may be noticed. By crowding and otherwise injuring whole areas of the brain as well as individual neurons, they prevent the normal functions. They thus hinder reproduction, which requires the healthy condition and normal position of every portion of the brain to do its best work.

That retention is much broader than reproduction—that is, that many ideas are retained and normally not reproduced—is shown by some cases of abnormal memory in alcoholics. The exalted memory, or hypermnesia, is also seen in some cases of fever—as *e.g.*, that classic case of the illiterate serving-maid, who, in her delirium, repeated long passages of Greek and Hebrew, which her master had recited when she was about her work in the house, and which she had scarcely noticed at the time. In some cases of great sorrow, similar phenomena are noticed; in fact, the phenomenon is seen in many abnormal conditions which put an additional burden upon the mind. This, however, is only a proof of amnesia, for it shows a dis severance of certain groups and systems of

neurons, which no normal volitional effort can stimulate: that the physical bases of these ideas have been previously separated from those of the normal stream of thought. The mechanism of these dissevered tracts may still be preserved and in working order, except that it would become weaker through disuse; and when some abnormal condition furnishes an exceedingly strong stimulus this mechanism again functions, with the result of what is called hypermnnesia.

We now come to the characteristic factor of memory, recognition. If the quality most needed in memory were demanded, trustworthiness would be the answer. What is memory if not trustworthy, and how can we have trustworthiness unless there is perfect recognition? Yet in our discussion here, we can probably deal less with recognition than with the other factors; because, while so characteristic and necessary, it is equally difficult to explain. We know that we do recognize, but why and how we recognize are questions not yet answered. Some have attempted a physical explanation in this way: it is a "feeling" caused by the brain elements working in the same way as they have previously done—*i.e.*, a sensation of repeating a physical action; but we know on introspection that recognition is not such. Most persons who give a totally physical explanation of memory wholly ignore recognition; and perhaps not unwisely, for it is a psychical factor, pure and simple. It is because of its psychical nature that it comes in for so small a part in our consideration here, where we have physical causes and look for physical effects primarily.

Although we cannot discover a local basis to examine histologically, from which to draw conclusions of a psychical nature, we can examine recognition itself through introspection, on account of its very psychical nature. We find that in alcoholism recognition is at fault at the very point where we desire it to be sound—*viz.*, in its trustworthiness. This is shown in two ways. First, it does not recognize

some things which have been perceived before, and which are brought before the mind again; and second, things are supposedly recognized which have never before been experienced.¹

The first of these troubles we would speak of as the usual fault in recognition; the second, is called paramnesia, and has lately received considerable attention from students, being the subject of various and diverse conclusions concerning its cause. It would be impossible for the mind as a whole to degenerate, or to have the other factors of memory affected, without there being a corresponding effect upon recognition. The fact that the mind as a whole is weakened in alcoholism cannot well be disputed, and some of the faculties of mind closely allied and necessary to recognition we find injured. The judgment as a whole is certainly incapacitated, and as far as recognition is a judgment it is weakened thereby. The self-consciousness is lessened and confused, and if recognition as applied to memory means, not only the considering of a certain experience to be in the past, but to be in the past of the individual experiencing it, then it is necessary, in order to have recognition perform its natural work, to have a clear and well-defined self-consciousness. Time and space relations must be easily and surely grasped in perfect recognition, but here again the alcoholic is deficient.

He makes frequent mistakes in orientation as well

¹ G. R. Wilson, *Drunkennes*, pp. 37f., describes the disorders of recognition as follows:—"But it is in the process of recognition and allied functions that the most interesting and grotesque mistakes are made by the habitual drunkard. The disordered brain refuses to operate for recognition when it should, and accordingly familiar objects seem strange, and facts brought to his recollection fail to excite conviction; or the mechanism for recognition reacts to a wrong stimuli, and he has a sense of familiarity with new surroundings, or greets a strange face with assurance of time-honoured friendship. Closely allied to these mistakes in identity, there are defects in 'orientation.' . . . In alcoholism orientation is almost invariably impaired, so that, in advanced stages, the patient easily loses himself, mistakes the hospital for home, cannot find his way even by a route that he has travelled daily, and fails to judge intervals of time, and to realize the drift of the season."

as in other forms of localization. Sometimes the most familiar articles of dress, or persons whom he has met frequently and knows well, are all strange to him, and he has to be introduced over and over again to acquaintances. He may, however, be able to recognize them as having seen them before, but when he last saw them, whether yesterday or ten years ago, he is unable to tell. Equally uncertain is he of their place of abode, their relation to him or anything connected with them. These last cases may be extreme if permanent, but not infrequently does the alcoholic have pronounced temporary attacks of this kind. It is said that "women suffering from alcoholic peripheral neuritis lose account of time and are without ordinary knowledge of their whereabouts."¹ But this failure to orientate is not peculiar to the female sex, or to peripheral neuritis as a result of alcoholic excess, but in other effects of alcoholism we find it as a common symptom.

The phenomenon of paramnesia is common. Probably every one has had the experience of viewing a landscape, reading a passage in a book, or being introduced to a new acquaintance with a distinct feeling of having had this same experience before. Not only the landscape looked the same, but the same friends were accompanying you, you were dressed the same, the wind was blowing or the sun was shining in exactly the same manner. Not only the passage in the book was the same, but you were reading it in the same room, sitting in the same posture, in the same chair, on a similar day, etc.—everything identical, only it seemed to be distant and hazy, notwithstanding the fact that you seemed to know what was coming next, and concerning which you were not often disappointed. This is sometimes accompanied by a feeling of anxiety and uneasiness.

There appear to be no other factors of memory in

¹ H. D. Rolleston, "Alcoholism," *A System of Medicine*, Allbutt, vol. iii. p. 839.

use except that of recognition—that feeling of familiarity with the whole circumstances. Your reason tells you you could not have had this experience before, yet you feel that you have. This is comparatively common; but the alcoholic has it not only more frequently—it takes a firmer hold upon him. He is taken into entirely new surroundings, which he nevertheless remembers perfectly; everything is exceedingly familiar to him, even the people who are total strangers. It sometimes becomes ludicrous, nothing is strange or unknown.

Cases of paramnesia have been divided into three classes.¹ First, simple paramnesia, or pseudo-remembrance; this is where something dreamed or read, or pictures of the imagination are thought to be true. Second, identifying paramnesia; this is the “been there before” experience described above, which is most frequent in young people and those with a vivid imagination, and at times of fatigue and excitement, but which in the normal person is easily corrected. Third, suggested, or associated paramnesia; some actual impression suggests an illusion of memory. Now, while the alcoholic without doubt is troubled with all three forms, it is the second form, that of identifying paramnesia, with which he is especially troubled; with the first form next seriously troublesome.

The attempted explanations have been many. Usually only the second form, that of identifying paramnesia, is discussed and explained. It is very difficult to discover any theory exactly fitting the facts, but it seems that there is some disaggregation in consciousness from a physical cause. Both the first and second forms of paramnesia are found often in times of fatigue as well as in times of weakness from old age and disease. We have noted before the similarity between the person fatigued and the alcoholic; both lack in nervous force, and hence the

¹ W. H. Burnham, “Memory, Historically and Experimentally Considered,” *American Journal of Psychology*, vol. ii. p. 433.

mind does not work quickly and harmoniously, the connections between the different parts being uncertain. In the normal person paramnesia may be quickly and easily corrected, but when the critical faculty of mind is impaired, it is impossible to say whether a certain presentation has sufficient evidence of familiarity to call it memory, or whether the feeling of familiarity is stronger than the grounds for disbelieving it.

Something similar may have been dreamed, and made to fit the present case, being substituted for the basis of this memory; and while it is usually easy to tell what is remembered, what is dreamed, and what is imagined, there is an uncertain borderland, with the most rational and critical individual. This borderland extends in proportion as the reason decreases, until it may cover the whole consciousness. This latter condition becomes more and more the state of the alcoholic, which in part accounts for the abnormal proportion of his states that are tinged with paramnesia.

In common with amnesia generally, the failure of the memory of the alcoholic advances in chronological order. The events most recently occurring are forgotten, while the experiences of childhood, or early life, are retained. This is the case with senility, with which alcoholism is so closely related in many of its effects. This order of loss is noticeable also in the case of almost all diseases which affect the memory. The events prior to the disease are retained with great tenacity, but those following the illness are quickly forgotten. So, in stating this order of loss of memory in alcoholism, we are saying that this abnormality is perfectly normal as far as the order is concerned.

Why the memory of the alcoholic fails has been discussed; but why it fails in this way, why there is this selective failure, may take our attention for a short time. The memories of babyhood—*i.e.*, prior to six or seven years of age, are very few and uncertain.

Of course, the alphabet we learned then, and other similar things which are frequently repeated, are never forgotten; but here specific experiences are referred to. We have some cases, though, of events in the life of children under two years of age being remembered. These recollections were not produced spontaneously, but were recognized when experienced again.¹

The reason for the meagreness of babyhood memories is probably because dynamic associations are not firmly established,² and the mental material is in a chaotic state; but just as soon as there is a sufficiently organized basis for associations, then the time for acquiring has come, and the ten to twenty years following babyhood is the best period for obtaining knowledge, as all readily recognize. The reasons for this are manifold. In children the cerebral cells are flabby, greyish, and flexible.³ The sensorial excitement must therefore make an impression upon them more readily, since it finds them in the state of vacuity when they will respond easily and quickly.

It thus takes much less to impress a child than an older person; therefore little things in childhood make a stronger impression and more things are retained. Neither is there the struggle between the different impressions that there is in later years, for there are fewer things to distract the attention. The number of associations is much less, so that the last event is connected with more of the preceding, each element in the experience being incorporated into the general association. When later in life the groups of associations are numerous, the event must be connected only with its appropriate groups, and hence is

¹ See L. Waldstein, *The Subconscious Self*, pp. 64f., for case of Helen Keller; Dr. Abercrombie, *Inquiries Concerning the Intellectual Powers*, p. 120, concerning case of dying mother and infant daughter; and W. B. Carpenter, *Mental Physiology*, pp. 430^c., for the case of Rev. S. Hansard.

² G. T. Ladd, *Outlines of Descriptive Psychology*, p. 230.

³ J. Luys, *The Brain*, p. 159.

not so liable to recall and repetition as if attached to the whole experience.

The tendency of early years is to follow lines already opened, instead of going into by-paths where the organization is less complete. It is when the brain is growing that a definite direction can be most strongly and persistently given to its structure. When the blood is flowing freely and the whole body is developing, when the cells are multiplying rapidly, each following the bent of its parent, the impressions and modifications are firmly established according to the laws of nutrition already referred to. Because the early impressions are the only stock-in-trade of the mind, they are repeated over and over again, and all new acquisitions are associated with them.

The idea that comes into consciousness, and is revived very seldom or never, is very unstable, and many such disappear for ever—for example, the ordinary events of every-day life. They may be clear and intense at the time, but are not reorganized. Each return, whether voluntary or involuntary, causes a gain in stability, and the tendency to organize is accentuated. Now, such repetition comes to a relatively small number of ideas in child-life. Because the number is small they must be repeated and revived often, and be incorporated in many associations with the new acquisitions. Thus, the childhood experiences not only become firmly established in the growing and developing mind, but because of this they are the foundations of the adult mental life, and are intertwined with mature daily experiences.

In some investigations,¹ it was computed that thirty-nine per cent. of all associations of adult mental life were those of childhood, and the associations of recent years were very few. While this percentage may be a little large, it gives us some idea of the hold that childhood experiences have upon the adult mental life, and the dependence of the latter upon them.

¹ F. Galton, *Enquiries into the Human Faculty*, p. 195.

With the highly developed state of organization which these childhood experiences have, we can well see why they are retained longer than the more recent ones.

In progressive amnesia, such as the alcoholic experiences, during the initial period only partial disorders are manifest. The patient is forgetful of only the most recent events, as of those of the past hour or minute. The task interrupted is forgotten; sent across the room for a book or a pencil, he returns to be told again what he was sent for; the incidents of the day fade away; a resolution made is soon effaced.¹ These things can hardly be considered subjects of memory, for they have not really become a part of the mind's store. The nerve elements being a prey to atrophy and disease, are no longer capable of the conservation of new impressions; for neither a new modification in the cells nor the formation of new dynamic associations is possible, or at least permanent. The anatomical conditions of stability and revivification are wanting.

The events which have really been a part of memory soon begin to disappear in the chronological order above referred to. The order of time corresponds to the relative stability, the later experiences being less stable because less organized, the new and complex perishing before the old and simple. In the forgetting of words, we find those denoting concrete and individual objects are the first lost, while abstract concepts and relations are remembered better. Therefore proper names and nouns generally are forgotten before verbs, adjectives, and pronouns. There are other ways of remembering persons than by their names. We can call up the image in some way. So with a city. Thus these proper names are not so essential, and not so commonly recalled. On the other hand, words are the only traces of the abstract. It has been harder work to acquire the abstract, and we fortify the words with more associations.²

¹ T. Ribot, *Diseases of Memory* (trans. Smith), p. 116.

² H. Hoffding, *Outlines of Psychology* (trans. Lowndes), p. 148.

We find also an order of disappearance in the general content of the mind. Events go first, followed by ideas, then sentiments and affections, and finally actions.¹ Thus the primitive bases upon which the patient has for a long time been able to live begin to crumble away. Intellectual acquisitions disappear little by little. Only recollections of babyhood may remain, or he forgets the greater part of his language.² Those acquisitions which are the last to succumb are almost entirely organic, such as the routine of daily life, and habits long contracted. The memory is so far gone in advanced cases that the events of early life and childhood are spoken of as if they happened a few hours before, and even the most intimate acquaintances are not recognized. Thus the alcoholic lives in his past and becomes more and more childish. He may even be able to reason quite correctly about his childhood, while wholly incompetent to do so concerning present experiences.

In stating the order of loss, it will be remembered that among the last contents of the mind to fade away were the memories of the emotions and the affections. Some have denied that there is a memory of the emotions as such. "In the greater number of cases, only the conditions, circumstances, and accessories of the emotion can be recalled; there is only an intellectual memory."³ "There exists an affective type of memory as there is a visual type. The reviving depends on the cerebral and internal conditions more than on the primitive impressions themselves."⁴ The above quotations are not incompatible with the expressed order of decline, for while it is very difficult to reproduce the same feeling

¹ T. Ribot, *Diseases of Memory* (trans. Smith), p. 118.

² B. W. Richardson, *Ten Lectures on Alcohol—The Action of Alcohol on the Mind*, p. 57, says: "The memory is irretrievably lost, words and very elements of speech forgotten, or words displaced to have no meaning in them."

³ T. Ribot, *The Psychology of the Emotions*, p. 152.

⁴ T. Ribot, "Recherches sur la mémoire affective," *Revue Philosophique*, vol. xxxviii. pp. 398 and 401.

which we have experienced, we can remember well that we have experienced it. We may not be able to reproduce the pain which we felt on a certain occasion, but we remember clearly that we had it. The feelings truly are much more slowly effaced than the intellectual qualities or faculties. Feelings being innate, are much more profound, and are concomitant with, and tenacious to, all forms of mental life. With the amnesia of feeling goes the self; but, on the other hand, feeling must be controlled. If our feelings are largely dominant, the life will be inhuman and capricious. Such, however, is the case with the alcoholic. His reason is in abeyance and degenerated; his memories may be those largely of feeling.

In the experience of the writer, the earliest memories of life are those of feelings. Four memories of his fifth year are his first distinct recollections, and nothing further is clearly remembered until two years later. The chronology is of course obtained from his mother, and he connects these feelings with the circumstances as he has heard them related since the incidents occurred. Many others of his early recollections are of an affective character.

Now, if the alcoholic has a similar experience—viz., that his early memories are largely affective, and if the other memories fade before the affective memories do, we would expect him to be what we actually find him, a person largely controlled by his emotions; for they form the principal part of his mental life. While the temperament would have some bearing on the result, still the general principles hold good. Of course, a certain proportion of emotional memories is lost, but this proportion is small compared with that of the intellectual faculties.

The far-reaching effects of the loss of memory cannot be well realized without examining each of the faculties separately. The power of abstract reasoning, judgment, imagination—in fact, all the faculties—are seriously affected; and the degenera-

tion of these in turn further injures the memory. The very conception of personality depends quite fully upon the memory, for whom do we know, or why do we speak of ourselves as one person except through the assistance of memory? In single intoxications we sometimes have phenomena much resembling those of dual or multiple personality. There is the anecdote of the Irish porter,¹ who lost a package when drunk. When he became sober he was unable to remember anything about it, but on getting drunk again was able to recall where he had left it. In advanced cases we find worse abnormalities than this, insomuch that the whole personality seems to be shrivelled, degenerated, and decreased almost to the vanishing point; but these will be treated in another chapter.

Along with the memory also go the morals. We will stop here to refer to only one point which has already been hinted at. Above, it has been said that perhaps one reason why the alcoholic is a seeming liar is because he did not perceive correctly, but tells things as he did perceive them. Let us make another excuse for him. He does not remember correctly, or perhaps does not remember at all, and hence another reason for his seeming untruthfulness. But subtract all we can for these two reasons—and it is but just that we should discount some from the accusation on these accounts—yet there is sufficient untruthfulness left to sustain the reputation of the alcoholic as the prince of liars.

In trying to cover the ground of the effects of alcohol upon the memory, we have dealt largely with the physical side, because we were looking for causes. It seems that any derangement of the memory is inexplicable by the person who refuses to pass from the psychological to the physical. It is necessary to be physiological, but we have tried to escape the error of those who, in treating of the derangements of the memory, have been physiological only. Further, as

¹ T. Ribot, *Diseases of Memory* (trans. Smith), p. 115.

the subject of memory leads us so fully into the study of the mind content-wise, we fully realize, as we have tried to show by a few, perhaps too few, references, that the mind must also be viewed from the standpoint of its activity. It is because the mind is not able to function—*i.e.*, to be active, that it is not able to remember.

We have found the disorders of the memory to be of three classes—amnesia, hypermnesia, and paramnesia, the first of these being the most common and serious. The conditions under which the various divisions of the memory are most active were noted, and the reasons why alcohol affected each division as well as the memory as a whole were discussed. It was found that in every department of the memory alcohol was a serious hindrance to proper functioning. Hypermnesia appears to be only a transient phase, and paramnesia is much exaggerated in some cases. Two laws of degeneration of the memory were posited, that of decline inversely to the chronological order of the occurrence of events, and a loss according to the nature of the events involved. There is no faculty of the mind whose injury carries with it such general mental decline.

CHAPTER IV.

INTELLECT (NOT INCLUDING MEMORY).

The importance of the intellectual faculties—Imagination—Effect of alcohol—Primary stimulating action—Dependence of imagination upon other faculties—Kinds of imagination—How each is affected—The result of the brain injuries—Thinking—The alcoholic weak-minded—No initiative—Less effect on habitual nature—Lack of judgment—Moral judgments especially affected—Unfitted for social intercourse—Theory of Dr. Everts—Experiments at Bonn—Experiments by Kraepelin, Smith, and others—Small doses at first heighten and quicken mental processes—Later effect is retarding—Alcoholic judges incorrectly concerning his actions—Higher and lower intellectual faculties—Effect of the decline of other faculties—Physical basis of the intellect—Influence of pathological changes in the brain.

WE take up for examination in this chapter the subject of the intellect of the alcoholic with the exception of the memory, the treatment of which we have just finished. Included in this will be the distinctively thinking processes—conception, judgment, and reasoning—and the imagination. The latter will be first taken up on account of its close relation to memory, and because it entails simpler elements on which the thinking powers depend, and with which we will deal in the latter part of the chapter. Some of the intellectual factors of the mind are among the highest developed characteristics, especially when associated with the moral nature; their degeneration means the degradation of the victim.

The control of the emotions, imagination, and lower psychic factors is usually assigned to the will, but it is well to remember that this control must be under the direction of the judgment—*i.e.*, that will acts accord-

ing to and in harmony with the laws of the judgment. What we judge to be the right or expedient or profitable course of action, that we will to do according to the ideal which we have judged to be best for us. Our conduct, then, should be the result of our mature judgment as expressed by the way in which we will. If we are unable to judge correctly, if we cannot hold the proposition in suspension until we have light on it from all sides and decide on the reasonable side, then our conduct must inevitably suffer, both from the moral and rational standpoints. This condition we find to be that of the alcoholic, and it is with the intellectual phase of his condition, the imaginative and rational decline and decay, that we have to deal in this chapter.

Imagination.—The imaginative faculties are early affected,¹ and their impairment forms one of the peculiar and constant symptoms through the whole progress of the disease. Imagination does not fail in all particulars, but the higher processes are most affected, while the injury to the lower ones varies, and at times their action may even be augmented. When alcohol is first taken, on account of the increased circulation in the brain which follows, the imagination is usually more active, and some of the wittiest remarks and brightest speeches have followed the first one or two glasses; it is noticeable, however, that the heightened imagery and freedom of utterance are attended with lack of control and imperfect co-ordination. Not unusually remarks are made in the after-dinner speech which are of so low a character that if they had come into the mind when the speaker was possessed of normal judgment, they would never have been uttered. It is further to be noticed that what the speaker considers so brilliant a flow of imagery may be insipid and coarse, the diversion from normal not being in the exalted imagination, but in the defect in judgment.

Some old hunters cannot begin their tales, some

¹ W. B. Lewis, *Text-book of Mental Diseases*, p. 346.

village speech-makers are dumb, and even some of the orators of bygone days could not respond without the accustomed dram. It is said that Theodore Hook had to be "primed" by alcohol before versification was fluent, and Sheridan in his later days could not make a speech on the floor of the House until after the cerebral circulation had been encouraged by whisky.¹ This is the primary effect of alcohol, to heighten the imagination; as the subject drinks more and more the dose must be increased to have any effect, and finally with large doses the imagination does not reach its normal activity. In the meantime, the quality of the images becomes lower and lower until the mutterings are incoherent, vulgar, or senseless. In some forms of insanity of which alcohol is the cause, the imagination is very active. Especially is this true of delirium tremens, but it is also plain that the imagery is of a low and morbid character.

It is the higher aspect of imagination which is destroyed, and that which remains might be called physiological rather than psychological, if such a distinction can be made. The psycho-physical mechanism may send into consciousness an elaborate chain of representative images, showing very little development of intelligence.² We see this very clearly illustrated in the mental life of children, savages, and even the lower animals. This may also be true with the alcoholic, but in the latter case the lack of connection between the different images is distinctive, and at times almost unique. With a few extraordinary exceptions, no examples of the higher use of the imagination are found among common alcoholics—*i.e.*, no inventors, artists, poets, or seers—although many real geniuses are known to be dipsomaniacs.

The dependence of the imagination upon the other faculties of mind is apparent. The physical basis of the imagination is probably the same as that of perception; the neural process in the former is only a

¹ I. Ray, *Medical Jurisprudence*, p. 545.

² G. T. Ladd, *Psychology, Descriptive and Explanatory*, p. 408.

milder degree of the same process which took place when the idea or thing now imagined was first perceived.¹ The renewed feeling makes use of the same parts and in the same manner as the original feeling, the difference being in the intensity and the quality of the feeling rather than in the cerebral locality used. The constructive imagination requires a mind richly stored with material permanently fixed and easily recalled. This necessitates keen perception and deep impression. In the preceding chapter the statement was made that the alcoholic could not perceive well, so imagination would suffer on account of this.

In its lowest forms, imagination is much like memory with low cognitive energy, and hence the laws governing memory would in a great measure apply to the imagination. It is because of this very close relationship and the plenary treatment already given to memory, that the discussion of the imagination requires so little space. Association of ideas is the keynote of both. To have a good imagination requires a mind also endowed with the power of readily reproducing the material supplied by perception, and then the free flow of association of ideas. Memory must be the basis of all imagination, and with memory impaired, as in the case of the alcoholic, it would inevitably have a serious effect upon the imagination.

Will cannot create new images; it can only select some which have spontaneously presented themselves, and inhibit the useless ones. By fixing attention on the selected images and thereby intensifying them, we may use them as stimuli for other similar ones, which association may present. The genius is the man who has the power of bringing forth similar associations to an extreme degree—*i.e.*, the genius can usually fix his attention on one thing for a long time, and frequently there is only one subject on which he can fix his attention. On the other hand, the lack of inhibition from any cause, results in

¹ W. James, *Psychology*, vol. ii. p. 68.

increasing the rapidity of image-making. One can see this illustrated in any form of emotional excitement, the images being more numerous, but void of selection. Here we find the alcoholic with will virtually gone, and judgment valueless, unable to fix attention on any particular image except that of drink, and not able to select the best image if he could attend to it. The corresponding process of inhibition of the undesirable images is equally difficult, and the exaltation of the lower and uncontrollable emotions in most alcoholics, lessens at times any vestige of inhibitory power which might be left.

Imagination has been divided into two kinds according to the content—viz., reproductive and productive or creative. In reproductive imagination similar ideas are brought to consciousness free from the original connections of time and place, and elaborated by experience according to the mental development of the individual experiencing them. This depends largely on the memory and fails with it, so in the alcoholic is not really strong. The productive is the highest form of imagination; it not only augments the reproductive, but it consciously relates the factors and assists their conformity to certain ideals. This requires and is a mark of superior intelligence, and therefore only its lowest forms are seen in the alcoholic. He has vivid dreams which may be creative as well as reproductive, and this is also noticed in his insane wanderings. In neither of these cases is there noticed any construction according to a plan, or any apparent end toward which it is working. These images are chaotic in the extreme.

His speciality in this particular, however, is the wonderful fabric he is able to weave about his circumstances and personality, by which he impresses the unwary with his great need for alcohol. His lies are frequently marvellous as works of fiction, and very often are successful in procuring for him the coveted drink. Equally ingenious are the excuses which he gives for his present condition, but on account of his

lack of judgment they are as frequently ludicrous and child-like. He may become very suspicious, and in addition to misinterpreting the actions of his family and friends may construct a series of incidents which to him seem probable, with no other ground for them than a diseased imagination, and then believe them. The images appear to have more of a touch of reality and become more firmly incorporated into the life of the alcoholic, than in the normal person, until he is unable at times to distinguish between the actual facts and the result of the activity of his imagination. His present condition is the best proof of his lack of normal imaginative ability. If he could picture the consequences of his acts, if he could imagine his condition in a few years, or even appreciate his present condition, a great incentive to sobriety would be present; in these particulars he seems to be powerless.

In imagination, especially in productive imagination, there is a simultaneous re-excitation of different central structures which have not before co-operated in this way.¹ To allow of this new combination the brain must have its normal plasticity, of which the alcoholic has been robbed by the more or less hardening process which is carried on under the influence of alcohol in which it is bathed. For the building up of new and previously unused cells and paths, for the continued action of the centres which have been used in perception, and for the free and uninterrupted activity of the brain as a whole, all so necessary to imagination in its highest and best way, a blood supply of both normal quantity and quality must be present. If we refer to the alcoholic's condition as presented in the chapter on physiology, we will readily see that the conditions are not fulfilled. In addition to this lack of plasticity and the poor blood supply, we have also to consider the loss of proper function due to the pathological growths and the consequent crowding of the cells.

¹ J. Sully, *The Human Mind*, vol. i. p. 368.

Thinking.—The higher intellectual faculties grouped under this one word “Thinking” suffer severely in alcoholism, because, more largely perhaps than any other mental process, they need the co-operation of healthy mental activity as a whole, and this in turn is dependent upon a healthy, normally active brain. In acquiring accurate knowledge and in forming correct judgments, consciousness must be unclouded, and the mind should be keenly alive to every detail. On account of the composite character of knowledge, it is necessary for each part to be accurately and carefully obtained.

The alcoholic might be described as a man in a state of chronic weak-mindedness;¹ the mental degeneration runs all through a career of alcoholism and ends, if not cut off by premature death, in a loss of thought concentration in the less severe cases, and in insanity in the more severe. The beginning of decline may first be seen in indecision of character. This indecision is exhibited at first in the more important matters, but later is shown concerning some things of little or no moment, until the alcoholic does not know how to decide about anything, and the decision which he may make is of value for a moment only; a minute later it may be reversed.

For a time he attends well to duties of a routine and habitual nature,² the duties which require little real thought; any work of a new character requiring initiative is difficult or impossible for him, except that a vestige of his old spontaneity may be recalled by the fleeting excitation of renewed doses of alcohol. If he does accomplish it, he does it in a circuitous manner, taking twice the time ordinarily required, and expending much unnecessary energy. He cannot make “his head save his heels.” After a new piece

¹ W. L. Andriezen, “Newer Aspects of the Pathology of Insanity,” *Brain*, vol. xvii. p. 666.

² H. D. Rolleston, “Alcoholism,” *A System of Medicine*, Allbutt, vol. iii., p. 853.

of work is undertaken, the original plan may be forgotten, for he is easily diverted from his purpose.¹ If every point is carefully explained and he does not forget, he may carry out the plan given to him and finish the work better than as though he undertook to plan it himself. On this account he easily becomes the tool of others, and in complicated crimes laid at his door, he is often innocent, because he is not intellectually able to plan and bring them to a successful culmination; he is the instrument, some one back of him is furnishing the mental power. The course of his ideas is sluggish and they become clogged, refusing to operate when they are needed, and their former continuity and force is lacking. Comprehensiveness of grasping ideas is lost, and a difficulty in seizing the relation of one idea to another is experienced. The mind is incapable of long-continued effort and concentration on any subject submitted to it.²

The mental weakness of the alcoholic is very clearly seen in the judgments which he makes, especially concerning himself. His friends recognize that his condition is serious, but he does not see that he is any different from what he was ten years ago, and thinks that his friends are unnecessarily interfering with his private affairs. He does not notice that his relations to his family have changed, does not recognize that he is ill-treating them, and if they remonstrate with him he thinks that some one or something has turned them against him. He judges himself to be a good citizen, considering his ability superior to that of the ordinary man. The writer remembers witnessing a very amusing scene of this character. An intellectual gentleman, a superior business man, who was lame, was transacting business with some strangers when an alcoholic joined the company. Owing to his inebriated condition, the alcoholic did not understand the business

¹ R. C. Spitzka, *Insanity*, p. 251.

² I. Ray, *Medical Jurisprudence*, p. 545.

but thought that the strangers were trying to take advantage of the gentleman because of his being lame, and tried to take the matter out of the gentleman's hands and himself transact it, considering himself the more capable.

He believes himself to be much more brilliant than he is, and will frequently laugh at his own jokes when his friends will not be able to discern any joke at all. He is unable to recognize his degradation, which in his eyes is turned into exaltation, and in all things he grossly over-estimates his worth. Without the power of judging, he performs acts which to him may seem normal, but to his friends are ridiculous or blameworthy. Kerr well says¹:—

“He is borne headlong on his career of chronic alcoholism either blind to the dangers which are before him, or, if he sees them at all, beholds them only in a confused, cloudy, indefinable mist which makes no impression on his mind and conveys no sense of peril to him. . . . He can neither comprehend to the full, nor discriminate accurately.”

The pains which might warn him are deadened by alcohol, the diseased and poisoned condition of his organs is unnoticed, and he is really unconscious of the destruction which alcohol has wrought on his body.

His judgment regarding moral values and acts is affected to an equal or greater extent. He is unable to distinguish between right and wrong so clearly and definitely as when his brain was free from the effects of alcohol, and in most advanced cases right comes to be simply the fulfilment of his craving for alcohol, and all other things must give way to that. He is unable at times to make the distinction between truth and falsehood, and he lives in a world of false impressions. The real to him may be a flight of the diseased imagination or the result of paramnesia. He becomes confused regarding actual events, except those very clearly and definitely fixed in memory.

¹ N. Kerr, “Alcoholism and the Drug Habits,” *Twentieth Century Practice of Medicine*, vol. iii. p. 48.

Violence is often committed quite unintentionally by the alcoholic, because he is not able to judge how hard he is striking, and what he intended for a gentle tap may be a stunning blow. In having a book bound, the writer had an experience which illustrates this. The binder apologized for the workmanship, because the gold lettering on the cover had been impressed too deeply. He explained that the man who had performed this piece of work was formerly a splendid workman, but was now an alcoholic, and he was apparently not able to judge the amount of pressure he was putting on the press; the work was either too deeply or not deeply enough impressed, and usually uneven.

As he is not able to judge the strength of the blow, he is equally unable to judge the occasion when a blow is appropriate. He cannot see how unfit he is for social intercourse, and when he is most unfit he is so deceived that he wishes to appear before men. The conventionalities which go so far to make up gentlemanly conduct he neglects without noticing the fact he tells secrets concerning friends, family and self without recognizing that he is doing anything out of place, and vulgar actions may seem exceedingly bright and witty because the sense of propriety regarding personal conduct becomes obtuse. The higher, nobler mental activities are destroyed without his recognizing the loss. However great the offence to guests or host, he never seems conscious of it, and the lack of intelligence on his part is also unnoticed. "In vino veritas" does not mean that the alcoholic is always truthful, but that the family secrets and business matters which a well-balanced judgment would counsel to be hidden from the world, are betrayed during the period when alcohol injures the judgment.

The sanguineness of the alcoholic is proverbial; everything with him is pointing to success, and he is cocksure of every statement. In the clouded mental atmosphere through which he views things, when

everything assumes a hazy, contorted appearance, a desire in any direction on his part makes it right, and the result of his imagination becomes truth. He loses himself, he fails to judge time, he cannot strike the balance between probabilities presented to him, and he cannot judge his action to fit the proper time:—"one thing is clear—namely, that the highest possible perfection of the nervous system is only possible with strict total abstinence."¹ It is equally clear that high, virile thinking, and keen, unfaltering judgment cannot be the product of a mind which is dependent on an alcoholized brain.²

In the discussion of the alcoholic question, one observer³ has proposed a theory which seems to be hardly consistent with the facts correctly interpreted. He holds that man is distinguished from the other animals by an appetite for brain stimulants. The largest-brained, and consequently the most highly intellectual and civilized races now living, consume greater quantities and varieties of brain stimulants, especially alcoholic drinks, than do contemporary semi-civilized or barbarian peoples. He recalls the further fact that a greater disparity of excess characterized the ancestors of such brainy races as far back as we have any knowledge of them. An immediate and total disuse of brain stimulants, including alcoholic drinks, is not desirable, in consideration of the highest human interests. Declare the drunkard to be just what he is now recognized to be by the intelligent—a man of unsound mind, who by reason of infirmity is incapable of performing the full function of citizenship unaided; and who also by reason of inability to control his own actions, periodically or continuously, is dangerous to society and himself. "Inhibition not Prohibition" is the point and key-

¹ A. Gustafson, *The Foundation of Death*, p. 119.

² See H. P. Stearns, *The Drunkard and his Responsibility* (Pamphlet).

³ O. Everts, *What shall we do for the Drunkard? A Rational View of the Use of Brain Stimulants* (Pamphlet).

note of his argument, and he evidently thinks that the highest mental development can only come through the use of alcohol and other narcotics.

The facts which he presents may be true, and undoubtedly have a large element of truth, but the conclusion does not follow. The relation of alcohol to the development of the race is accidental, not causal; and probably the truth of the matter might better be expressed if we say that these nations are greater intellectually notwithstanding their use of alcohol, rather than because of it. The words of Dr. Baer seem to express the scientific view to-day rather better than the theory which has just been stated:—

“Undisturbed reflection and quiet comparison, critical regard and deliberate judgment, impartial observation of facts and the weighing of their relationships—such are the mental processes to which mankind owes the entire treasure of positive knowledge, including the progress of natural science, technique, and industry. Such processes are certainly not promoted by alcohol.”¹

A few years ago the German authorities at Bonn made an investigation upon alcoholism among pupils in primary schools. Of 237 pupils, seven to eight years of age, there was not one who had not drunk wine, beer, or whisky, and 23 per cent. of these children were given their glass of whisky every day by their parents that they might become strong. As a result of these investigations, it was proved that children most accustomed to alcohol showed the least intelligence; and those children who had their morning glass of whisky, but found no savour in milk, showed great inattention during the morning hour.

The experiments of Kraepelin have been very interesting and instructive, in showing the effects which alcohol has upon the intellectual powers. He found that the time required for simple reaction,

¹ *Der Alkoholismus.*

and also that required for choice reaction, was shortened after small doses of alcohol had been taken; but in harmony with other investigations, he found that large doses of alcohol cause a retardation of the action of all forms of reaction time as well as other mental activities. The results of some experiments on the intellect have been summarized so succinctly that we can do no better than to quote the following:—

“Those processes which involve the reception and mental working up of conceptual material, like the addition of figures, are affected in a detrimental manner from the very first by alcohol. In other words, alcohol, according to Kraepelin, exerts a ‘stimulating’ action on the organ of the mind when it is occupied with sensory-intellectual material, but has a depressant action when the mind is engaged on purely receptive or constructive operations. Larger quantities of alcohol—say, the equivalent of a bottle of ordinary wine—depress every type of psychical energy from the first.

“It is not without interest in this connection to cite the testimony of that master-mind, Helmholtz, who declared that the smallest quantity of alcohol sufficed to dispel from his mind every idea of the creative order when he was trying to give form and being to some dimly seen conception.”¹

“Smith has studied the action of alcohol, when administered for a number of weeks in small doses in quantities varying from forty to eighty grams per diem, in its influence on the simpler psychical processes. This investigator found that there was a decrease in the ability to add figures, amounting in twelve days to about 20 per cent., while the power to memorize was diminished by about 70 per cent. The action of alcohol as affecting reaction times and ‘association’ was also studied. . . . Among the

¹ J. J. Abel, “A Critical Review of the Pharmacological Action of Ethyl Alcohol, etc.,” *Physiological Aspects of the Liquor Problem*, Billings, vol. ii. p. 125.

associations there was a decrease in the number of those classified by Wundt as 'inner' associations, and an increase in the number of 'outer' and sensorially disconnected associations.

"Inner associations are interpreted as a higher form of intellectual operation than the two other classes named. The damaging action of the alcohol was sometimes apparent on the very first day—sometimes only on the second day of the alcohol period. No experiments were made until from eight to twelve hours after the last administration of alcohol, and the influence of the acute or immediate action of alcohol as illustrated in Kraepelin's experiments does not enter into Smith's results. The conclusions are drawn that one-half to one bottle of wine, or two to four glasses of beer a day, not only counteract the beneficial effects of 'practice' in any given occupation, but also depress every form of intellectual activity: that every man who, according to his own notions, is only a moderate drinker, places himself by his indulgence on a lower intellectual level, and opposes the full and complete utilization of his intellectual powers."¹

In addition to the experiments conducted by Kraepelin and Smith, which are undoubtedly the most important, we should also take notice of the results of other experiments, some made over a third of a century ago.

In 1870 Exner experimented regarding the duration of mental reaction, during the influence of 150 grams of alcohol. The dose was undoubtedly excessive, and he found that it retarded mental action; he also discovered and put before the public for the first time the fact that the subject was deceived regarding the result, for he considered that the reaction was quicker.

In 1878 Dietl and Vintschgan continued the experiments of Exner. They showed that if the dose was not too large,—not over 45 grammes,—it produced

¹ J. J. Abel, *ibid.*, p. 127.

some acceleration of the mental processes. When 60 grammes were taken the duration was longer, and 90 grammes very quickly caused diminution of mental work.

With some experiments on animals in 1883, Danillo confirmed these results. He injected into the venous system of a dog a solution of 30 to 45 per cent. alcohol, the amount being four to six grammes of the solution per kilogramme of the animal's weight. He found after the injection that the region of the cerebral cortex, which is concerned with the movements of the dog's limbs, became inexcitable to a current of electricity.

Warren used only small doses, administering by the mouth twelve to fifteen grammes of alcohol in a much diluted solution. In three cases the alcohol resulted in a pronounced acceleration of mental processes; in one case it produced a long retardation.

Fuerer added to Smith's results the observation that the renewal of indulgence in alcohol after a period of abstinence, showed a depression in mental work on the first day.

Destree has shown that the paralysis of the motor centres is manifested in weaker doses than Kraepelin used.

It is generally admitted that the primary and immediate effect of alcohol in small doses is that of a quickening and heightening of mental processes. We know that for a little while reaction time is shortened, and there is always a feeling of exuberance after alcohol has been taken. Kraepelin made a personal observation in an intellectual experiment which confirms that of Exner already cited. During this period of acceleration immediately after taking a dose of alcohol, he judged that it was much easier to learn by memory twelve places of figures than under normal conditions. When he came to examine the records he found that instead of having accomplished his task more easily and quickly, it had, as a matter

of fact, been accomplished more slowly. Two other investigators in the same laboratory confirmed this result by means of similar experiments on themselves. This is a striking example of the deceptive effects produced by alcohol, and the lack of ability to judge when under the influence of a small dose. The higher intellectual centres concerned with judgment are benumbed.

We have further testimony along the same line. Brunton says, "A celebrated author once told me that if he wrote under the influence of a small quantity of alcohol he seemed to himself to write very well, but when he came to examine what he had written, the next day, after the effect of the alcohol had passed off, he found that it would not stand criticism." We have also the following from Professor G. Bunge:—"Intoxicating drinks never make a man brilliant. The prevailing notion that they do is based on self-delusion, is only a symptom of incipient paralysis; in proportion as self-criticism is diminished, self-approbation rises."

What has been termed "Dutch courage" is the result of defective judgment. It has been observed among some soldiers who were naturally cowardly, that after they had partaken of alcoholic beverages they seemed to be brave; but the fact was, they were not in a condition to appreciate the danger, and hence they eagerly charged the enemy. The higher faculties were inhibited, and where they might reasonably have feared, they saw no cause for halting. The effect of alcohol on the thinking powers, according to observation and experiment, is disastrous, and finally the alcoholic is ruled entirely by the lower mental faculties and he becomes a machine. We turn now to consider the reason for this.

It is difficult to distinguish what are called the higher intellectual faculties from the lower—that is, we cannot draw a sharp line of distinction between thinking and reasoning on one side, and perception, imagination, and memory on the other. The latter

are always included in the former, but thinking and reasoning are not so restricted as perception and memory, and with them we are able to accomplish much more. The higher, constructive, imaginative processes are very closely identified with thinking and reasoning, and may even ascend to loftier heights, being in turn freer and less restricted than the thinking powers. The distinguishing difference between thinking and the higher imagination is that while both are representative, thinking is abstract and imagination is pictorial. Now, with this very close relation existing between thinking and these other intellectual factors, it is evident that the higher processes of the intellect must fail if the lower ones do.

To be enabled to reason, the mind must be stored with facts of observation or instruction. This presupposes perfect qualities of sensation and perception which unfortunately the alcoholic does not possess. His store of facts is limited, and confined mostly to events of years ago, on which he dwells and which he inserts at every opportunity. He usually has one humorous story—only one, but all his friends are well acquainted with it; one tale of wonderful prowess is also very familiar. His reasoning is circuitous and faulty, usually running in one rut or circle.

His deficient memory is a great drawback, because whatever his experience he is unable to reproduce it, and thus his store of observations and of facts which he has heard is not augmented. The imagination, so closely related in some parts and so useful to the thinking processes in all its departments, being obstructed, the thought processes must suffer thereby, and especially the higher reasoning powers. The dependence of thinking upon the will is manifested in two ways; first and most inclusive, through what is known as voluntary attention, and second in the inhibition of extraneous elements of consciousness.

Purposeful thinking is difficult, entailing as it does long continued effort in one direction, the holding of one thought in the mind for a time in order that

others might be compared with it, analyzing and combining, endeavouring to force or invite contributing thoughts, and using the whole mental power in the most fatiguing manner. Children and lower races of men are incapable of this except in the most rudimentary way. The alcoholic is in a similar state; his faculties are so stunted and unfitted for hard work of this kind that he is only able to reason in the most puerile fashion. He cannot hold himself to a definite object for any length of time on account of his lack of will power, and, consequently, on account of the loss of ability for concentrated effort.

The physical basis of the higher intellectual powers is necessarily complex. We can posit no organ of the higher faculties or no specific localization.¹ In primary intellection, a somewhat relatively prolonged and complex excitement of associated cerebral centres is required. "The physiological conditions are fulfilled only when two or more cerebral processes, belonging to different areas of the brain, are united by spreading over the connecting association tracts, and so forming a larger unity (?) of combined cerebral excitements."² Besides this, it requires the psycho-physical conditions necessary to prolonged voluntary attention, and on account of the nature of the higher intellectual faculties, using as they do the other mental powers in all their complexity, there are also required the conditions necessary for the activity of all the different mental factors.

If any particular region could be named as the specific physical basis of the higher intellectual qualities, it would be the central tracts of the frontal region of the cortex,³ but, as we have just said, the whole brain is in use probably more than in any other mental activity. In addition to this, accompanying the exercise of the higher intellectual powers, there is frequently an innervation of certain muscles, particu-

¹ H. Lotze, *Outlines of Psychology*, pp. 141f.

² G. T. Ladd, *Psychology, Descriptive and Explanatory*, p. 291.

³ J. Sully, *The Human Mind*, vol. i. p. 390.

larly of the eyes, head, and articulatory apparatus, causing muscular tension,¹ so often the concomitant of voluntary attention.

The pathological changes in the brain of the alcoholic are sufficient to prevent the operations of the higher intellectual faculties. The destruction of the nerve cells, which are constantly degenerating, hinders the direct and uninterrupted flow of impulses which form the physical bases of memory and association of ideas in imagination, and the lack of a sufficient quantity of blood of the proper quality, is detrimental to the spontaneity which judgment and reasoning require. There cannot be that facility of construction in the mind of the alcoholic, so necessary to the mental synthesis which judgment presupposes, the nervous correlation of which would be the explosive state of healthy nerve cells.

In the cerebral excitement caused by a fresh indulgence of alcohol the ideas run wild, all inhibitory influences are removed, and all manner of thoughts are thrown together without any apparent relation or association. This we call a state of drunkenness; but with the alcoholic the continued use of alcohol seems to paralyse the intellectual powers so that there is a lack of mental activity as a whole, and especially of the higher sort. The mental inefficiency is an inevitable effect of the brain changes, and in chronic cases in which the lesions have been permanent, it may not appear until after years of abstinence. Where indulgences are continued the breakdown is surer and more rapid, the higher centres being the first attacked and destroyed, the lower ones having control when freed from the inhibitory action of the higher ones.

The latest and most highly-developed cells first feel the paralyzing toxic effect according to the laws of degeneration, and as the reason and judgment depend upon the cells in this category, we must expect this portion of the mind to feel the effects very early. The reason, being the highest form, would naturally

¹ J. Sully, *The Human Mind*, vol. i. p. 390.

show the earliest decline, for in reason the mind is exerted to make an inference from two judgments already present, a new judgment being the result. Judgment, proper, follows next in the order of decline. The judgment is the essential and simple quality, uniting things already in consciousness, but of itself adding nothing new. The decline of this synthetic power is the great misfortune of the alcoholic as far as the intellect is concerned, and this is in reality where we notice the injury most. The stimulus to judgment, which may be nothing more at times than an observed change in our surroundings, is lacking on account of the dulled perceptive powers, and on every side we find the foundation for the intellect decaying, so that the loftier part of the structure is soon a complete wreck.

We may wonder why some of the intellectual powers act more readily immediately after the indulgence in a small amount of alcohol; the conclusion from Professor Kraepelin's experiments was that alcohol made easy the cortical liberation of movements, the transformation of ideas and memories of movements into deeds, but no real mental power is given. The feeling of power, ability, and accelerated mental action is due to the facility for liberation of movements from the cortical areas. The injurious intellectual effects of alcohol last ten hours, and the continued use of alcohol from day to day, at the rate of sixty grammes each day, gradually decreases mental ability. The consumption of eighty grammes of alcohol per day causes the ability for work to deteriorate from the fifth day onwards. If the use of alcohol is then discontinued the intellectual power begins to increase towards its normal condition, but by reverting to its use the intellectual power begins to decrease more rapidly than before.

In this chapter we notice the same disastrous results of alcoholic indulgence upon the remainder of the intellect as in the case of the memory. The primary effect upon the imagination appears to be

that of stimulation, but the alcoholic is devoid of control. The later effects make the imagination valueless for any of its higher uses. The drunkard is weak-minded and without initiative. All judgment, especially that of a moral character, is more or less invalid, and on account of this he is unfitted for social intercourse. Experiments show that small doses of alcohol at first quicken and heighten mental processes, but the later effect is retarding and debasing. The inebriate is unable to judge concerning his own faculties, and his reasoning centres around a defence of his indulgence. As an intellectual wreck, he is an object of pity.

CHAPTER V.

WILL.

Does will depend on the physical?—Freedom of the will—Abnormal condition of the will—Physical basis—Order of decline regarding movements—Inverse order of development—Influence of other faculties—Memory—Intellect—Affective nature—How alcohol affects the different factors of will—Ideals—Deliberation—Lack of inhibition—Control—Impulse—Fixed and insistent ideas—Four alternative situations given by Stout—Lack of control by lessening nervous energy—Effect of injury of the vascular system—Choice—Desire—Effort—Examples of lack of effort in alcoholism—Delusion of free will—Inability for sustained effort—Influence of the physical—Theory regarding will and the blood supply—Lack of nourishment—Fatigue—Experiments of the writer—Tap-time—Ergograph.

THE discussion of the will or volition is taken up for consideration next in order, because of the recognized importance of this faculty to our subject. No more common comment is made upon the alcoholic, both by the careful psychologist and the unlearned observer, than that he has suffered a loss or decay of "will power." He continues to be an alcoholic on this account. We shall probably not be able to see the detailed relation between the abnormal will and the degenerate condition of the nerve elements that we were able to trace in the examination of the memory; yet we trust that we can accept with some degree of probability, if not certainty, this account of the effect of the continued use of alcohol upon the will, which effect we will find to be of a degenerating character.

The connection between mind and body, as far as will is concerned, is vague, some would say impossible

to find. If the will is a power of the mind, the true spiritual self, can we posit for it any dependence upon the brain at all? Does it not transcend the physical action of the molecules of the nerve cells? Is not this the point where we can say that the mind rules in a despotic, unconditional manner? These and many other similar questions could be asked, to all of which we must reply in the negative. Even if we affirm that we are dealing with the highest factor in man's nature, the most spiritual part, we must hold here as elsewhere the interdependence of the mind and the brain.

We here meet the ever-present, much-discussed, and misunderstood question of "freedom of the will," and notwithstanding its importance in other discussions, we wish to omit it here, even if we were able to throw any new light upon it. It is irrelevant in this treatment, and it is neither necessary nor pertinent to approach it. Lest some implications might unwittingly, or perhaps necessarily, be introduced, it might be well to state that while the writer does not believe in the "freedom of the will," because this phrase has become meaningless, he believes both from the standpoint of psychology and of ethics in the "freedom of the self." We must inevitably have some opinion on the subject, and work from that; however much we may try to shun the question, our discussion is unavoidably coloured by our opinion. This much having been said, the subject, as far as we are concerned, is dropped.

We turn then to examine the abnormal condition of the will of the alcoholic. Almost every writer on the subject of alcoholism deals with this mental degeneration, but usually in general statements; the purpose in this chapter is to investigate the matter with some detail. We shall find that the deviations from the normal are dependent on a changed condition of the physical basis. This derangement appears very early in alcoholic degeneration, so early that some

have placed it as the first symptom.¹ The different faculties are so interrelated that it is difficult at times to affirm a chronological order, and as will is dependent upon the intellectual processes, it must follow them very closely in the order of deterioration. The loss or impairment of the will is best understood by comparison with the healthy and developed will, in addition to the description of the abnormality. In comparing the psychical differences we must also compare the brain elements, showing the effect of alcohol on that part which we consider the basis of the will.

What is the physical basis of the will? Do we find a will centre? It does not seem so, and it is therefore necessary to disagree with those writers who posit a definite seat of voluntary movements. This location is differently conceived of as the *corpora striata*, the frontal lobes, or the outer layer of the cortex: this seems to be carrying the subject of specific localization too far. As we were able to find no special seat of the memory, so we cannot posit a special seat for the will; but as with the memory, the basis of the will is in the centres concerned with the special act. Thus, we would say that the seat of will for the motor acts connected with the arm is in these motor centres of arm movements, and not that a message comes from a seat of will in another portion of the brain commanding these centres to move the arm.

The higher voluntary activities are characteristic of man, and because they are acquired to a greater extent than the actions of animals, any injury to the brain causes far more damage to man than to animals.

¹ A. Gustafson, *The Foundation of Death*, p. 160, says—"This power (of will) is the first stronghold to be attacked by alcoholism. If alcohol were a sentient being it would hardly act with greater apparent intelligence than it does in its insidious sapping and mining of the will, as if it knew that redoubt once carried no further resistance need be feared. In this subjugation of the will, alcohol incidentally but very remarkably defines the distinction between will and intention—so often mistaken for each other, to the moral shipwreck of the mistaking ones. In alcoholism the will is destroyed."

We have seen that the acquired activities are far less stable and more easily destroyed than the instinctive and reflex movements; and not only this, but the latest acquired, and the most complex and highly developed activities are the first to suffer deterioration through injury. We must recognize the importance of the will in the mind of man, for it is the controlling, guiding, enforcing, or inhibiting agency—it is the manly character of man. It is the last stage of evolution, especially when concerned with moral conduct; it is the latest and highest product of social development, and as such being most complex, it is among the first activities to suffer injury and undergo dissolution according to the rule, "Last to come is first to go, first to go is most to go. First to come is last to go, last to go is least to go."¹

In the decline of the motor apparatus of the alcoholic we find this order. The trouble starts with the voluntary movements of the hands,² while reflex movements are all right. The trouble continues with the arms, legs, tongue, and lips, the order being according to the volition necessary, until only the pure reflexes are left.³ In the mental expression of will the incapacity for sustained attention is one of the first symptoms of impairment of the mind, because the highest expression of will is the power of voluntarily holding the attention for a long continued period of time. Voluntary fatigue, as a temporary

¹ A. D. Waller, "The Sense of Effort: an Objective Study," *Brain*, vol. xiv. p. 245. Further, H. Maudsley, *Body and Will*, pp. 273f., remarks, "Nowhere is to be found a more miserable specimen of degeneration of moral feeling and impotence of will than is presented by the person who has become the abject slave of either of these pernicious indulgences (alcohol and opium). . . . Alcohol entering the blood is carried by it to the inmost minute recesses of the brain, and acts there injuriously upon the elements of the requisitely delicate structures. So its finest, latest organized, least stable parts, which subserve moral feeling and supreme will, are marred."

² In speaking of the alcoholic, H. Maudsley, *Pathology of Mind*, p. 486, says, "One cannot help feeling sometimes that he could grasp better, and make more use of his legs, if he would exercise more will."

³ E. Fournier, *Dictionnaire de Médecine*.

impairment of the mind, shows the same symptoms as some disorders of a permanent nature, the fatigued nerve cells exhibiting chromatic phenomena analogous to those of alcoholism. It is found that the cell of higher function is, relative to the amount of effort which it can produce, more exhaustible than the cell which is subordinate to it in the cerebro-muscular chain; and the will, standing at the pinnacle of organization, is most seriously affected by injury.

As the will develops through a certain course, we will find it degenerate in inverse order until we have the very lowest form of movement. The will is developed by means of attempts at willing, and it degenerates as the volitional effort becomes more and more difficult: the very lack of attention, by the phenomena of habit, works against the effort being made, and consequently the will is exerted less. As the will is the highest factor of self, and comprehends all the other mental qualities and is dependent on them, it is obvious that if any of these more fundamental faculties are destroyed or even impaired, it must inevitably affect the work of the will. This is not only true of the will in general, but as each separate volition is the expression of the whole self at the time, and thus of a hierarchical co-ordination, if any element in the co-ordination is paralyzed or destroyed, the whole system is thereby injured or entirely ruined.¹

We have already seen that in the alcoholic the memory is deficient, or at times almost totally lacking. This comes on in the early stages of alcoholism, and it in turn affects the will, for it is memory which makes the distinction between will and some lower forms of conation. Instinct presupposes no memory—*i.e.*, real conscious memory—but will does; so it is a very important and distinguishing factor of will.

¹ T. Ribot, *The Diseases of the Will* (trans. Snell), p. 120. H. Maudsley, *Physiology of Mind*, p. 450, says, in addition, "The loss of co-ordinating power of our ideas and feelings, in their irregular and independent reactions, reveals the deterioration of the will."

Perhaps the most important effect of the loss of memory to the will would be in the matter of ideals or ends. The mind in willing must have some end toward which it is working, but the end can be only before the mind through memory. If memory is lacking we cannot have the range of ideals or ends. The catalogue of ideals must necessarily be shorter, and as it becomes narrowed more and more, the will is contracted until perhaps only one end comes before the mind—viz., that of being further affected by alcohol, and the will degenerates into an impulse which has only to be suggested to be gratified.

Deliberation is impossible without memory, and for a complete and profitable deliberation it is necessary to have an unimpeded association of ideas, so that the matter may be viewed from every standpoint related to the ideals, and presented to the mind. This is necessary to give a valid expression of the self. In will that is unimotived, where there is no deliberation, memory is still needed. Take for example a simple muscular movement: we must have the idea of that movement before we can perform it. These movements are first made reflexly or instinctively, yet consciously for us, and then by remembering them we are able to repeat them voluntarily. When movements, although reflex, have not made themselves felt above the threshold of consciousness, the idea of them is not known, and therefore cannot be remembered; then the movements are never possible volitionally. Examples of such movements would be those of the intestines or blood vessels.

With every movement there must be the idea of the movement remembered, apart from the end in view. There must be a mental conception made up of memory images of certain sensations, defining the special act to be accomplished. Of course, we would not contend that every portion of the movement is remembered; but the series as a whole is recalled, and the will stimulates the first number of the series, and association and habit finish the work. Thus, not

even a simple muscular movement can be performed without memory as one of the chief factors. Dr. D. Hartley has gone so far as to say, "All our voluntary powers are of the nature of memory. . . . In morbid affections of the memory the voluntary actions suffer a like change and imperfection." Agreeing with the last part of the quotation, the first part is undoubtedly too strongly stated, although containing an element of truth.

In the chapter on memory it was shown that the memory declined in inverse order to the reception of events. This means that in advanced cases, only memories of the younger years were retained; and as will is a matter of development, all the memories present would be those of undeveloped will. The ends set before the mind would be those of childhood, which may account for the puerile actions of the alcoholic; the memory of acts would be of a like period of time, so that we would naturally expect these also to be childish, just as in fact we find them to be. In speaking of the general degeneration of the mind and the deterioration of memory, we have been treading familiar ground, and as the preceding discussion has shown these things to be facts, so in showing the relation of will to these in a general way, we feel sure that as our premises are true, so are our conclusions.

Let us turn to another relation; we have already found that the intellect¹ is deficient, and by showing the relation of will to the intellect it will follow that will is lacking here. While will and intellect are reciprocally dependent, we wish now to show only the dependence of the former on the latter. Will has been defined as the act of an intelligent being acting intelligently;² Spinoza has told us that "the will and the intellect are one and the same thing."³

¹ By "intellect" here we do not include the memory, for that has been already discussed; but judgment, reasoning, cognition, etc.

² J. C. Murray, *Handbook of Psychology*, p. 409.

³ B. Spinoza, *Ethics*, part ii. prop. 49.

Both these expressions set forth a truth, but carry the idea of similarity to an extreme. The intellectual quality separates will from lower conative phenomena. In volition, besides the use of the intellectual factor in deliberation, there is associated a judgment regarding the attainableness of what is desired, for unless we judge that we can secure what we want, we do not will it, but it remains a wish or a belief. Will is not creative, but only selective and modifying, and so rests on recognition. All choice is judgment put into execution, and any failure to will through hesitation, comes from the defective character of the individual, in part on account of abnormal intellectual states.

The value of the intellect to volition is further seen in the necessity of adapting means to ends to bring about the action desired. When we find the intellect weak, the impulses are correspondingly strong; and if not a loss, at least an impairment of will ensues. In the growth of the will we may also see the great value of the intellect, for here there must be a certain development of ideas presupposed, because the extension of will means the extension of ends to be attained. It has been said it is because the alcoholic does not recognize the fact that he is an alcoholic, that he does not will to stop;¹ and as soon as he does realize that he has this enslaving habit, he discontinues the use of alcohol, thus laying the full responsibility of the continued destructive indulgence upon the intellect. This is only partially true; many persons do know that they are alcoholics, and deplore the fact bitterly, yet are unable to use their wills to correct it. The dependence of will on intellect is very apparent, and knowing the latter to be impaired, it necessarily implies a weakness of the will.

Let us turn now, and in a few words examine the relation of the will to the affective side of life in the abnormal condition of alcoholism. The will depends

¹ W. James, *Psychology*, vol. ii. p. 565.

as much on the feelings as on the intellectual states; some would say more. The development of will is dependent on the growth of the feelings, for feelings increase desires. Pleasure, pain, and the emotions are springs of action; not only do they increase the power of the will, but they may also weaken it—as, *e.g.*, in fear, anger, and remorse; in fact, the control of the feelings is the supreme test of the power of the will. In alcoholism we find an exalted condition of feelings of a certain kind. The feelings and emotions connected with the lower part of man's nature are exaggerated; these consist of the appetites and passions, which when aroused are so difficult to control. As the will grows weaker we find them taking on more of an impulsive nature, and controlling the actions of the alcoholic. And why this? We shall see later in the discussion that the feelings too are impaired in the inverse order of experience, and as the higher and more manly feelings come only with the developed nature, when these decline we have left only the strong, unreasonable feelings connected with the lower centres, which are the last affected, and are of an instinctive nature—rooted and grounded in our very nature as animals. As these are the only feelings left, and as they are all of one kind, there is no strife of feelings; no higher feelings to assist in the control of the lower ones. These latter have all the strength of the affective nature, and become so impulsive that the enfeebled will has no longer power over them, and after one or two impulsive successes, the way is made clearer for an impulsive rather than a volitional rule.

Having seen the effect upon the will of the degeneration of the mind as a whole, the memory, intellect, and affective nature, we now turn to the special factors of the will, and notice the effect of the use of alcohol upon them. Will is distinguished from the lower conative activities by a conscious end to be attained. This is impossible with the alcoholic; not because there is any particular physical basis for

ends and this is destroyed, but as we have already seen, through the deterioration of the intellectual qualities. Without ideals there is no will. In deliberation the alcoholic is especially weak. If he could deliberate, there would be more hope for him, but the control of thoughts is largely lost. He has no ends to set before himself, and all forms of thought concerning any end which may be presented to him lead to the one end or impulse, that of gratification of his appetite. Could he calmly think in a deliberate way, his passion might have time to subside, and give him more of an opportunity to have ideals come before his mind.

It requires an act of will to deliberate, and being unable to voluntarily attend, deliberation is conspicuously absent in the life of the alcoholic. The power of attention is very necessary in all normal acts of life. In such simple acts as that of sight, it requires fixing attention for clearer vision, and accommodation follows. In all higher acts of life the necessity for attention is still greater, and any diminution is disastrous to voluntary mental experiences. This lack of control of feelings, impulses, and all mechanical activity is the keynote of the alcoholic's condition as far as will is concerned. It seems to be a special attribute of alcohol to exalt the mechanical activity of the mind, and at the same time the power of volitional control is diminished. This is true, not only as far as they are compared with each other, but absolutely. Coleridge is pointed out as a standard example of this effect. In his late years he had little or no control as far as voluntary attention was concerned, his ideas rambled over the whole universe with no recognizable thread of unity; the whole stimulation seemed to be physical and impulsive.

We must recognize that the lack of control is due more to the absence of inhibition than to the exaltation of the impulses. Impulses are always strong in the healthy will, but usually under good control where the individual can say: "This far and no.

farther"; but if the inhibition falters it is fatal for future volition and control.¹ The nature of the impulses must be taken into account. The control develops in the following order:—muscular, feelings, and ideas. In degeneration the control of ideas goes first, then the control of feelings. We can see that the most important control is first lost, and when one comes to lose control of ideas and feelings he is a mere machine. With the control of feelings lacking, the mind, deficient in concentrative power, is lamentably deranged by any kind of emotional excitement, so far as any volitional effort is concerned. Muscular control is also frequently lacking; and one form of this, tremor, we find as a common symptom in the first stages of alcoholism. This is especially seen in the hands, about the mouth, in the lips and tongue.

This loss of control and exaltation of the impulsive nature may be divided into two classes: first, those who are unconsciously in this condition; and second, those who are consciously afflicted. The latter division corresponds with those who have what we call fixed ideas. There are many alcoholics of the first class. Those who can drink or leave it alone, but usually drink; those who can stop drinking whenever they want to, but never want to; men who are actually self-deceived. They drink, not because they are impelled to, but because they are hot or cold, fortunate or unfortunate, sleepy or insomniac: it matters not what reason is given, it is sufficient oftentimes to satisfy the affected mind of the alcoholic, even if it is unreasonable and incredible to his friends.

In these cases the impulse is sudden, and unconsciously followed by execution. The alcoholic does not think of resisting the impulse until it is too late, and then if questioned concerning the reason why, an

¹ For a comprehensive description of inhibition, see S. J. Meltzer, "The Role of Inhibition in the Normal and in some of the Pathological Phenomena of Life," *Medical Record*, June 7th, 1902.

excuse is presented, which is reason at least to him. These impulses fit into his lower nature, and are thus natural to him. It is similar to a certain idea which comes into consciousness corresponding to the higher self in will, and is frequently not distinguished. The character of the impulse will depend largely on constitutional tendencies of the individual derived from inheritance, and modified by his conditions of life prior to alcoholic excesses, and the effect of alcohol upon him mentally and physically; it is thus independent of will in persons whose control is impaired.

Another reason why it is confounded with will is because it is internally stimulated, although the occasion is not unusually an external stimulation, which it either immediately furthers or inhibits. Thus the alcoholic recognizes the contents of a bottle as whisky, or the building near which he is standing as a saloon; these are occasions for the arising of an unconquerable thirst in the form of an impulse, which is immediately gratified. This impulse has a double reason for its force: not only is it an object of appetite, which normally is most impulsive, but it is also an object of habit, which apart from all appetite or passion gives a certain impulsive nature to acts within its power.¹ Whenever we find such a case, we find also an absence of social and moral considerations which should provide motives and reasons to the controlling, inhibiting power; so that the idea does not come into relation with the whole self which the will requires, but action follows these isolated tendencies. There is not here even a conflict of impulsive tendencies: one impulse has the whole field and keeps it.

In the first class the impulse is unconscious, and deliberation is annihilated; but in the second class of cases where we have what are called fixed ideas, there may be some deliberation, but of an external character, and with a conclusion which is inevitable

¹ N. Kerr, *Inebriety*, p. 302, sets forth the hypothesis of an appetite centre in the brain, which is deranged by the effects of alcohol.

because of a lack of control. When the impulses are strong, but are not entirely beyond control, a partial direction and inhibition may be secured. An impulse of this kind might be called an insistent idea, in contradistinction from a fixed idea. In the first stages of alcoholism this is common, but later the impulse consciously gets beyond the power of the will.¹ What is seen here is a demand for attention in proportion to the insistence of the idea, until finally the alcoholic cannot possibly withhold his attention from the one absorbing idea—viz., that of further indulgence and its consequent effect, which soon gains dominance in consciousness, and is quickly acted upon. The most normal person cannot prevent feelings and impulses from arising, nor can he say, "Be gone!" and be immediately obeyed; but he can direct his attention to other things, and thus escape: this the alcoholic cannot well do.

Sometimes the alcoholic is a slave to this impulsive idea: he develops a true mania, as much as any monomaniac. This mania has been called dipsomania, and is irresistible when fully developed. It is but an extension of common experience: consciously we are carried away by some impulse—it may be in regard to a small, unimportant thing—and are unable to control our course. Stout² gives the following

¹ See E. Cowles, "Insistent and Fixed Ideas," *American Journal of Psychology*, vol. i. pp. 226f. In regard to this class of alcoholics, A. McDonald, *Abnormal Man*, p. 113, says:—"There is a weakness of will to carry out good resolutions, and a consciousness of this leads some to request to be placed in asylums, for they are morally certain in advance that they cannot resist temptation. Thus one has been known to have his daughter carry his wages home, as he could not pass a saloon on the way without going in, if he had any money with him." We have also the following from C. F. Palmer, *Inebriety: Its Source, Prevention, and Cure*, p. 107:—"Coupled with this loss of truthfulness is that weakening of the will which always accompanies chronic alcoholism. How many of his broken promises are due to a debilitated will, and how many to a decay of his veraciousness, it would be impossible for the victim himself to determine. Doubtless his intention to break off his evil habit is sometimes honest, and the failure is due to the paralysis of the will."

² G. F. Stout, *A Manual of Psychology*, pp. 606f.

statements regarding reasons for indulgence. He says that the commonest cases of involuntary action are those in which an idea becomes fixed through intense appetite or craving, arising from organic conditions—*e.g.*, irresistible craving for alcohol. There are four possible situations:—1. Indulgence in the drink may be contrary to the man's express volition at the moment when he drinks—this is rare. 2. A preformed resolution to refrain from action; but at the moment when he drinks, the impulse is so strong that the volition is temporarily in abeyance. 3. Action takes place before a voluntary decision has taken place; he acts during deliberation, before he knows his mind. 4. Organic craving may be the motive of a genuine volition, but so against his interests—the real self—as to be involuntary. Here there is full deliberation.¹ The first of these four divisions seems out of the range of possibility. He may not intend to get intoxicated; he probably does not once in a hundred times, but as for not willing to take that drink *at the moment* when he does so, this seems to contradict all psychology of the will. He may not have intended to drink the preceding moment, but how does he do so against distinct volition? There is no true volition in impulsive action. The other three examples are pertinent, and agree with what is said above regarding impulse.²

¹ Notice also the following from W. B. Carpenter, *Mental Physiology*, pp. 636f.:—"The debasing influence of continued alcoholic excess is, unfortunately, but too apparent. . . . While weakening the will and exciting the lower propensities, it blunts the moral sense also. . . . Vain is it to recall the motives for a better course of conduct, to one who is already familiar with them all, but is destitute of the will to act upon them."

² N. Kerr, *Inebriety*, pp. 302f., says:—"Serious as are the injuries inflicted by intoxicants on the intellectual faculties, the loss of inhibitive capacity is a hundredfold more detrimental. To these must be added the progressive paralysis of the will. The damage done to the understanding is great, but infinitely more terrible are the decrease of control and the benumbing of volition. Many inebriates, as long as they retain consciousness, through all their outbreaks know what they are doing, hate with a perfect hatred their drunken excesses, but are as unable to exert their will as is a terror-stricken animal helpless under the fascina-

We have discussed this subject of self-control under the head of deliberation, for self-control means deliberation and inhibition of impulsive action in order to deliberate. Two aspects of self-control have been discussed—viz., increased power of impulse, and decreased power of will. These have been figuratively expressed as follows:—The driver may be so weak that he cannot control well-broken horses, or the horses may be so hard-mouthed that no driver can pull them up: with the alcoholic it may be both. The power of self-control varies with the nervous force,—fatigue, loss of vigour through over-exertion, and ill-health cause noticeable loss of self-control. The decline of self-control is one of the earliest symptoms of on-coming senile decay and of mental disease. We have before stated that the effects of alcoholism were those of premature senility, and here we have another application of the statement. We can all recognize how the exhaustion of nervous energy lessens inhibitory power in the matter of irritability. When fresh and healthy we are invariably good-natured; but the tired, over-exerted, unhealthy man is very easily irritated, and not infrequently the slightest occasion will throw him into uncontrollable passion.

We have clearly seen in discussing the physiology that the nervous energy is lessened, and continues to be decreased more and more as the blood vessels are more clogged and are unable to convey nourishment to the brain, and any lack of nourishment affects the higher and later developed nerve-centres, these being less stable than the lower. In control, as in memory, the alcoholic becomes a child, and his natural tend-

tion of a boa-constrictor. Their moral faculties are even more deadened by the poison than their intellectual. Alcohol is a puissant will-paralyzer. Such an inebriate is a captive, retaining the possession of his senses though these are somewhat dulled, and the will is powerless to make an effort at deliverance. Again and again does he resolve to drink no more, but resolution is overborne by the dominating drink impulse or drink crave. This volitional disablement, this palsy of the will, is a direct effect of a pathological degradation.”

encies are let loose; as the child and the savage are creatures of impulse to a great extent, so we find the alcoholic. Thus, we have the saying concerning him, "What a man is when he is sober will come out when he is drunk," because of his utter lack of control. We were able to show when dealing with memory that association, depending upon the connection between the different cells and centres, was interfered with on account of this connection being destroyed or injured. If will means control, it is through the co-ordination of all the centres in just proportion to their importance. This, we can see, is impossible if the connection is imperfect. Taking the alcoholic as we find him, there seems to be a total incapacity for deliberation in his degenerated mental condition.

A few words will be sufficient to deal with two other factors of the fully developed will—viz., choice and desire. It is enough to say of the former that without deliberation we cannot have choice, for deliberation is its *sine qua non*. In regard to desire, we either have too much or none at all, according to the standpoint from which we look at it. In the description given above we might say that desire is all that there is, but impulse is not desire in its highest form. Desire should suppose a choice, or a normal mind taking a liking to something which agrees with and fits into the whole self. In alcoholism only one part of the self is considered, so whether we take the view of too much or too little desire, we recognize it as abnormal; and if we were able to will, it would lead us astray, for a normal desire could not be carried out.

We now turn to the factor *par excellence* of the will—viz., effort. If a reform is ever to take place in the alcoholic, it must be through effort. If there should be a real desire for departure from alcoholic influence, it requires a great effort to overcome the habit and impulses, and in his weakened condition the alcoholic cannot well put this forth. Even in normal conditions our will flags, and cannot be brought to do what we

would like, and what we know to be right. If all the faculties were normal except the will, the defect would be very apparent and serious. The term "abulia"¹ is used for cases of this kind. How many drunkards there are who have all the inducements of a good home, a healthy body, a moral life, etc., for a reward of abstinence, who admit all the arguments brought forth, who recognize their duty in the matter, and yet are not able to make the effort!

Sometimes the alcoholic claims a great desire for a reformed life, yet tells you frankly that he has not strength to try, and knows that he cannot reform if he does try. A gentleman of high standing and eminence in his profession was brought to the writer for help by his clergyman. He said that he wanted to get rid of alcohol, he recognized the danger, saw the effects, but lacked power to stop; he concluded by saying: "I'll be honest, though; if there were a glass of whisky on the table here, as much as I want to stop and know that I should stop for my own sake and that of my family, I would drink it." Examples of this kind could be enumerated without limit; one more will be given. A gentleman prominent on two continents in his profession applied for assistance to the writer. He wanted to stop drinking, it was ruining him for his work. He spoke freely concerning the injury to himself and family, and with tears in his eyes begged for help; but he was unable to make any effort himself in that direction. He would often not

¹ We have the following from E. C. Spitzka, *Insanity*, p. 251f.:—"The inebriate generally exhibits above all a marked enfeeblement of the will. This enfeeblement of the will is at first manifested in the inability of the inebriate to resist the temptation to drink. Numerous cases are on record where prosperous business men and capable men of letters, feeling this abulia, voluntarily went to an asylum for inebriates, and within its walls carried on their labours as well as before they had formed the alcoholic habit. But, with the continuance of vice, the volition becomes impaired with regard to other matters as well, and the confirmed and deteriorating inebriate becomes the tool of others. He attends fairly well to duties of a routine character, but is devoid of initiative, or, if he has it, is inconstant and easily diverted from his purpose."

even make the effort to come for treatment, notwithstanding his longing for relief. He died at an early age from the effects of alcoholic excess.

One of the frequent delusions of the alcoholic is that he has ability to stop drinking any time when he wishes to. The delusion of free will is very common, and seems to be a part of the disease. He seldom thinks that he cannot stop, but for some other reason he continues to drink. This delusion of being able to will to stop at any time is encouraged by friends who also believe it to be true, and condemn the patient for failure to carry it out.

If the work of the person has been carried on for some time by reflexes and impulses, the will does become impotent, especially against strong habits. If a single effort is hard, a continued effort is correspondingly difficult. This is why reform is so difficult to attain. An alcoholic holding an article in his hand—*e.g.*, a ball or a jug—will often drop it if he is not fixing his attention on it. The motor brain cells seem to require continuous reinforcement to act for any length of time. There not being sufficient reinforcement in the alcoholic's brain to act spontaneously, he must force the process by continued attention, and even then prolonged action is impossible for him. A steadily-kept resolution is a great manifestation of nervous force, the neural correlation of which is a prolonged tension of one and the same group of cortical elements. If the resolution does not last—and in the alcoholic it is often broken in an hour—it is because there is not in his organism the possibility of repeated work in the centres concerned with volitional effort.¹ It is this steadiness or firmness of will which is the essence of will. The physical condition of effort is that of a fulness of nervous energy, ready to over-

¹ T. Ribot, *The Diseases of the Will* (trans. Snell), p. 53. Notice also the following from I. Ray, *Medical Jurisprudence*, p. 543:—"The mind of the inebriate is incapable of the long-continued efforts which once were easy, and of concentrating the whole force of its faculties on the subject submitted to its examination."

flow, and a free passage of good blood from one part of the brain to the others.

One can well see that the condition of the nervous elements in the brain, pointed out in the discussion on physiology, would seriously interfere with the function of the centres, which are the physical bases of will. On account of the highly developed system which will supposes, the cells could not be in the state of decay and degeneration described without making impossible any delicate movements, such as we must suppose occur in the changes which take place during the performance of acts of will. Not only the degeneration but the pressure and misshaping, due to crowding on account of pathological growths of connective tissue in the brain, must seriously interfere with the process.¹

But the basis of all is the blood. On account of the bone receptacle in which the brain is enclosed, the mass of cerebral material must be constant. It is therefore impossible for any great amount of blood to enter or leave the brain very quickly, for the only other element of changeable quantity in the brain is the spinal fluid, which cannot flow quickly, and is small in quantity compared with the blood. If one part of the brain requires more blood hurriedly, the other portions must give up their supply. In willing a certain part to function, and in putting forth effort in connection with a certain movement, more blood is required in the centres concerned with the movement, and the other parts are anemic on account of their sacrifice to the centres functioning. This puts all the effort of the mind upon one portion of the brain, which alone is in a condition for work. We

¹ J. F. Lydson, in writing on Toxemias and their relation to Alcoholism, etc., says—"In all cases of inebriety there is primarily a weakened will power incidental to unstable nerve equilibrium. This may be due to acquired organic disease or to heredity, or may be peculiar to the individual himself, and bear no relation to heredity or disease. Its recognition is important if we would cure the disease. It certainly should be considered in studying the general relation of alcoholism to crime, for it is the key to the situation."

know that attention has the effect of drawing blood to the organs to which we are attending, and that the will works largely through the means of voluntary attention. As it is with other parts of the body, so we may expect it to be with the centres of the brain; when attended to, more blood is drawn to them and taken from the neglected parts, making the centres on which attention is concentrated more explosive, and the discharge in their direction is more easily made. In the alcoholic brain the mobility of the blood is seriously impaired, so that it cannot quickly move from one centre to another, and hence will as a whole, and especially effort, is retarded; the centres the least used become less easily hyperemic, while the blood more easily flows to the centres of habitual action.

It is also necessary for the blood to contain nourishment to sustain nervous energy, and keep the cells intact; it must be free from any injurious matter, and come in normal quantities. The effete matter must also be taken away, so as not to interfere with the metabolism. But none of these conditions do we find adequately fulfilled in the alcoholic brain, and notwithstanding our inability to define the exact molecular change which takes place in the individual cell as the concomitant of the effort of will, we can undoubtedly say that these pathological changes do interfere to prevent these molecular changes, so that no effort of will can be made on account of the physical disability.¹

¹ W. B. Carpenter, *Mental Physiology*, pp. 636f., speaks concerning the relation of will to physical conditions, as follows:—"There is no class of aberrant mental phenomena which is more deserving of careful scientific study than that which is produced by the introduction into the blood of substances which have the special property of perverting its normal action on the brain. For in the first place these phenomena bring into strong relief the contrast between the augmented automatic activity of the cerebrum, which manifests itself in the rapid succession of thoughts, the vividness of images, and the strong excitement of feelings,—and the diminished volitional control of which we have the evidence in the incoherence of thought, the incongruity of the imaginary creations, and the extravagance of the feelings. And in the second

Several references have been made in this chapter to the effect produced on the will by fatigue, which shows how a lessened nervous energy causes an impotence of will. Let us consider this further, remembering the histological similarity between fatigued and alcoholic cells. In fatigue, a periodicity of speed is noticeable in voluntary actions, which is generally agreed to be due, not to peripheral or muscular, so much as to central fatigue. This is true whether the action is voluntary muscular contraction, such as tapping upon a telegraph key; more purely mental work, such as adding long columns of figures; or voluntary attention, such as listening to a watch placed at such a distance that the ticking can just be heard.¹ The periodicity is not the only phenomenon; but finally, sooner or later, according to the individual, the over-exerted centres refuse to respond at all. This may be seen in experiments with the ergograph, of which examples will be shown. The reason for this failure is not simply because the subject refuses to work on account of pain, but he is positively unable to make an effort; and the time comes when, regardless of

place it is perfectly clear that this disturbance of purely psychical action, affecting not merely what may be regarded as the functions of the brain, but the exercise of that attribute of man's nature which seems most strongly indicative of a power beyond and above it, is produced by agencies purely physical. For it is not only that the balance between the automatic activity of the brain, and the directing and controlling power of the will, is disturbed by the exaltation of the former, so as to give it a predominance over the latter. On the contrary, the absolute weakening of volitional control is clearly a primary effect of these agencies; being as strongly manifested when the automatic activity (as often happens) is reduced, as when it is augmented. And this weakening is still more obvious, when not merely the quality of the blood, but the nutrition of the brain has been deteriorated by the prolonged action of 'nervine stimulants'; the will becoming, as it were, paralyzed, so that the mental powers are not under its command for any exertion whatever, while even its controlling power over bodily movements may be greatly diminished."

¹ W. P. Lombard, "The Effect of Fatigue on Voluntary Muscular Contractions," *American Journal of Psychology*, vol. iii. pp. 24f.; W. Wundt, *Human and Animal Psychology* (trans. Creighton and Titchener), p. 256.

the motive, whether physical or mental—*e.g.*, pain or fear—there will not be a single contraction in response to the effort.

In some experiments made on persons who were deprived of sleep for ninety hours,¹ it was found that the voluntary motor ability decreased in waves, according to the time of day and the length of time awake. In some other experiments with tapping, a walk, which fatigued the person generally, made the voluntary movements slower;² and in experiments in control of the reflex wink, the control was lessened after long continued work at the desk.³ Thus we find in pathological conditions, when a person is weakened by brooding over troubles, he has not strength of will to resist the brooding; but if health can be restored, so that the cells have their normal supply of energy, he can turn his attention to other things.

The repair of will power comes through nutrition, while, conversely, loss of will is sure when the nervous force is lowered. Volition implies an intensive discharge of the nervous elements along a certain definite self-resolved line. In order to accomplish this, every cell must be so nourished as to be explosive when the impulse comes to it. The fatigued and alcoholic cells are not in this condition. Some of the aches and disagreeable feelings about the body, and principally in the head, causing worry and anxiety, the alcoholic is able at first to control by will, but later he loses power to do so and they become subjects of delusions. Kraepelin has shown directly that alcohol causes a slower reaction time for discrimination and decision.

These statements concerning general fatigue show

¹ G. T. W. Patrick and J. A. Gilbert, "On the Effects of the Loss of Sleep," *Psychological Review*, vol. iii. pp. 472f.

² F. B. Dressler, "Some Influences which affect the Rapidity of Voluntary Movements," *American Journal of Psychology*, vol. iv. p. 521.

³ G. E. Partridge, "Experiments upon the Control of the Reflex Wink," *American Journal of Psychology*, vol. xi. p. 245.

what we have contended all through this chapter—viz., that a loss of nervous energy affects will; and these experiments regarding voluntary movements, etc., show one of two things. While the voluntary movements of the finger, for example, are inhibited, we are able to will concerning other things. It must be either that the will has a definite seat, and we do will, but the connection between the will centres and these particular motor centres is temporarily incapacitated; or that the physical basis for will is in the motor centre concerned with each movement, and as the nervous force of the centre is exhausted, the will is correspondingly impaired. It is needless to say that we accept the second hypothesis.

Some experiments made by the writer in the Yale Psychological Laboratory, show the weakness and peculiarities of the will of the alcoholic probably better than anything else we could say in a purely descriptive way. The apparatus used was that usually employed in registering tap-time. A telegraph key furnished the means of breaking a four-ampère current, which passed through the primary coil of a spark-coil. The secondary circuit of the spark-coil was connected at one pole with a 100 v.d. fork, used as a marker, and at the other pole with the base of the recording-drum. Every tap on the key was registered by a spark on the waving line, drawn by the fork on the drum. The subject was seated at a table in an easy position, and told to tap as fast as possible until told to stop. A record was taken of the taps for five seconds at the start, and thereafter, not continuously, but for the same length of time at the beginning of every thirty seconds. Usually before the records were finished, the subject was told emphatically, "Now! tap just as fast as you possibly can." One record was generally taken after this. Most of the alcoholic subjects were secured through the kindness of Mr. P. C. Butterfield, Superintendent of Calvary Industrial Home, of New Haven.

ALCOHOLICS.

Name	F.	T. D.	D. F.	M. C.	D. H.
Age	29	37	39	41	45
	Av. P.E.	Av. P.E.	Av. P.E.	Av. P.E.	Av. P.E.
Start	167-0.5	157-0.5	174-0.9	192-1.0	173-1.5
After 30 sec. ...	183-1.5	153-1.0	171-0.9	215-1.1	154-0.6
" 60 " ...	194-2.2	156-1.2	183-1.7	223-1.3	167-0.7
" 90 " ...	196-1.5	159-1.0	188-1.4	232-1.2	176-1.5
" 120 " ...	197-1.0	156-1.2	187-1.0	224-1.7	179-0.7
" 150 " ...	198-1.6	161-1.2	194-1.5	240-1.0	174-0.6
" 180 " ...	204-2.0	161-1.2	192-1.5	223-1.0	172-0.8
" 210 " ...	216-5.4	160-1.0	192-1.8	236-1.8	174-0.9
" 240 " ...	209-4.0	161-2.2	193-1.2	221-0.9	179-0.8
" 270 " ...	205-0.2	160-2.5	163-1.5 ¹	215-1.1	179-0.9
" 300 " ...	212-1.3	158-1.6	185-3.0	209-1.0 ¹	177-0.7
" 330 " ...	207-1.0	156-1.6	—	—	191-0.7
" 360 " ...	216-0.7	158-1.8	—	—	160-0.1 ¹
" 390 " ...	204-0.8	159-2.1	—	—	184-0.9
" 420 " ...	213-0.9	168-3.9	—	—	—
" 450 " ...	205-1.5 ¹	167-3.3	—	—	—
" 480 " ...	205-0.9	175-5.0	—	—	—
General average	202	160	184	221	174

Unit of Time, $\sigma = 0.001$ s.¹ Spurt during this period.

ALCOHOLICS (*continued*).

Name	M. T.	D. ¹	C. C.	J. C.
Age	46	53	54	55
	Av. P.E.	Av. P.E.	Av. P.E.	Av. P.E.
Start	183-2.2	178-5.6	163-0.9	178-0.6
After 30 sec. ...	194-0.9	224-7.5	170-0.9	176-5.6
" 60 " ...	196-1.2	210-6.9	179-0.9	175-0.6
" 90 " ...	194-1.2	245-15.1	188-2.7	181-1.5
" 120 " ...	197-1.6	221-12.7	197-1.3	182-1.4
" 150 " ...	199-1.5	262-16.6	199-1.5	189-0.7
" 180 " ...	200-1.2	237-10.3	199-1.7	190-0.7
" 210 " ...	198-1.2	207-7.3	204-1.8	190-0.8
" 240 " ...	201-1.5	236-9.7	201-2.3	191-1.0
" 270 " ...	205-1.5	231-10.8	202-1.6	190-0.7
" 300 " ...	201-1.5	243-11.7	196-1.7	187-0.7
" 330 " ...	201-1.5	253-12.0	205-1.5	190-0.6
" 360 " ...	201-1.2	221-9.0 ²	198-1.8	166-3.0 ²
" 390 " ...	205-0.9	268-14.7	203-1.4	194-5.4
" 420 " ...	201-1.2	—	217-3.0 ²	—
" 450 " ...	—	—	210-1.0	—
General Average	198	231	195	184

Unit of Time, $\sigma = 0.001$ s.¹ Under the influence of alcohol bordering on delirium tremens.² Spurt during this period.

NORMALS.

Name	W. P.	A. F.	W. B.	F. W. M.
Age	33	34	35	39
	Av. P.E.	Av. P.E.	Av. P.E.	Av. P.E.
Start	134-0.4	126-0.9	162-1.1	152-0.7
After 30 sec. ...	146-1.1	153-2.1	155-2.2	185-1.2
" 60 " ...	172-0.5	160-1.9	150-1.8	192-1.0
" 90 " ...	175-0.9	169-1.6	137-3.3	189-0.9
" 120 " ...	173-0.5	178-1.4	166-3.3	190-0.9
" 150 " ...	180-0.7	179-1.6	161-2.6	179-0.9
" 180 " ...	186-0.6	175-1.3	176-3.5	189-2.0
" 210 " ...	173-1.4	179-1.7	180-1.5	197-1.1
" 240 " ...	177-1.5	177-1.5	170-4.3	191-1.4
" 270 " ...	179-1.2	181-1.4	192-2.7	168-0.9 ¹
" 300 " ...	114-0.8 ¹	184-1.4	157-4.2 ¹	181-1.1
" 330 " ...	143-0.8	177-2.2	131-2.9	—
" 360 " ...	—	192-2.6	—	—
" 390 " ...	—	187-1.5	—	—
General Average	163	172	161	183

Unit of Time, $\sigma = 0.001$ s.¹ Spurt during this period.

NORMALS (*continued*).

Name... ..	F. M.	W. E.	M. P.
Age	48	61	70
	Av. P.E.	Av. P.E.	Av. P.E.
Start	158-0.7	177-1.9	209-1.3
After 30 sec... ..	185-0.5	184-1.1	213-1.6
" 60 "	188-1.2	189-0.7	223-0.9
" 90 "	192-0.6	186-0.6	242-0.6
" 120 "	190-1.1	191-0.7	234-1.4
" 150 "	189-0.9	186-0.9	244-0.9
" 180 "	194-1.5	195-0.9	240-1.4
" 210 "	199-1.1	192-0.9	234-0.9
" 240 "	199-1.0	196-1.0	246-1.0
" 270 "	194-0.8	190-0.9	248-1.2
" 300 "	185-1.3 ¹	178-0.8 ¹	233-1.4 ¹
" 330 "	188-1.6	190-1.0	237-1.1
General Average ...	188	188	234

Unit of Time, $\sigma = 0.001$ s.

With the exception of one, all the alcoholic subjects were sober, and had been so for periods ranging from a month to over a year. With one exception, J. C., they were all mechanics or labourers—persons who worked with their hands. The normals also,

¹ Spurt during this period.

with the exception of F. W. M., were of the same walk of life. All the subjects, both alcoholics and normals, were males. Three of the subjects, two alcoholics and one normal, T. D., M. T., and A. F., were not required to spurt, but these records are inserted to show the steady decline in both the average and probable error, when no spurt was called for. One other, that of D., is excluded from the comparisons, on account of his being under the influence of alcohol at the time of the experiment.

Let us now look at the comparison between the alcoholics and the normals. The advantage is obviously with the normals, but as we would expect, does not show itself so much with the younger as with the older men. The ability to will is shown by the decreased average tap-time when called upon to spurt, while the probable error is an index of uncertainty—*i.e.*, lack of control. Compare the two youngest subjects, F., alcoholic, aged twenty-nine, and W. P., normal, aged thirty-three. Both spurt at command, but while W. P. lowers the average from 179 to 114, a decrease of 65, F., who has the advantage of age, decreases from 213 to 205, a difference of only 8. In this effort we also observe a difference in control; during the spurt W. P. lowers the probable error from 1.2 to 0.8, while with F. the uncertainty is increased from 0.9 to 1.5. Both of these men were healthy, strong, and intelligent,—in every way comparable; but F. had been drinking since he was fourteen years of age, and when twenty-five was not able to control himself; W. P. had lived his thirty-three years without touching liquor. The results of the experiments clearly show the lack of effort and control in the alcoholic. Look further at the rapidity of voluntary movements: the alcoholic's general average is 202, the sober man averages 163, which is a direct contradiction of the results as we would expect them if these two men were judged by their temperaments.

Let us look at others. Take two very much alike,

D. F., alcoholic, and F. W. M., normal. They were both thirty-nine years of age, and their general average was about the same, D. F.'s being 184, and F. W. M.'s 183. Their averages kept along very near together, and when called upon, both spurted about the same, and thirty seconds later the fatigue was about the same. Only one difference of importance is noticed, and that is in the probable error, to the disadvantage of the alcoholic. During the spurt F. W. M.'s probable error decreased from 1.4 to 0.9, and thirty seconds later had only risen to 1.1; but concerning the alcoholic we observe that during the time of the spurt his probable error increased from 1.2 to 1.5, and thirty seconds later it rose to 3.0, showing a great lack of control and stability.

The older men show a more striking difference. The two oldest alcoholics we have, C. C. and J. C., are fifty-four and fifty-five years of age respectively; the oldest normals, W. E. and M. P., are sixty-one and seventy years. Notwithstanding the great difference of age when a few years count so much, the normals make a much better showing. C. C., when called upon, fails to spurt at all, but the time is increased from 203 to 217, and the fruitless effort causes his probable error to rise from 1.4 to 3.0. Here we have a total lack of will power exhibited, and with it a great decrease in control. In the case of J. C. we have a spurt, but a very great increase in probable error, from 0.6 to 3.0, and thirty seconds later the probable error rises to 5.4.

In the normals, both W. E. and M. P. spurt: the latter, let us consider, being respectively sixteen and fifteen years older than the alcoholics. With W. E. the probable error decreases from 0.9 to 0.8, and after thirty seconds is only 1.0. M. P.'s probable error increases slightly from 1.2 to 1.4, but thirty seconds later is down to 1.1—a marked difference from that of J. C. or C. C. Something further very noticeable here, as in the former experiments, is the way in which the normals keep up the spurt into the next

thirty seconds, but the alcoholics fall back again. For the normals, W. B. gives us the best record in this respect. He averages 192 when asked to spurt, and immediately decreases the average to 157, and thirty seconds later it is still lower, being 137. J. C., alcoholic, gives us the example for the other extreme. Before the spurt he was at 190; he spurted to 166, and thirty seconds later was at 194—higher than before he spurted.

Take this out of the language of the psychological laboratory, translate it into a practical case, and what does it mean? The alcoholic is "spurred" to put forth will in some form, it may be to make and keep a resolution. He makes it; but while he starts well, he is unable to keep it for any time, and before long he is less powerful, as far as will is concerned, than he was before the resolution was made. With the normal it is not so, but he continues to exercise his will; it may even get stronger than before the resolution was made, but it is not likely to get weaker.

Although it does not directly come under our subject, it is interesting, in passing, to notice the one case of acute alcoholism of which we have a record, that of D. His average is very large, he is not capable of making repeated voluntary efforts very quickly, and, as we would suppose, his control is very weak. His smallest probable error is equal to the largest probable error which we are able to find among all the others—viz., 5.6, while it goes up to the enormous figure of 16.6. Under the influence of alcohol he is able to spurt, going from 253 to 221, with a decrease in probable error from 12.0 to 9.0, but it does not last; thirty seconds later his average is higher than it was before, 268, and the probable error has risen to 14.7. His case will be referred to later.

Another form of experiment was tried with the same subjects, and in designation the same initials will be used. In this the subjects were tested with the Mosso ergograph. Each one was seated comfortably with his arm resting upon a board to which it

was strapped. The tape was fastened around his middle finger, and at a given signal he was told to pull as far as he could to the beat of a sounder, which was connected electrically with a clock marking off the seconds. The weight used was three kilogrammes. Each movement of the weight was recorded on a drum by means of the ergograph pointer. Very much the same results were obtained as with the tap-time experiments. We reproduce a few of the records made.

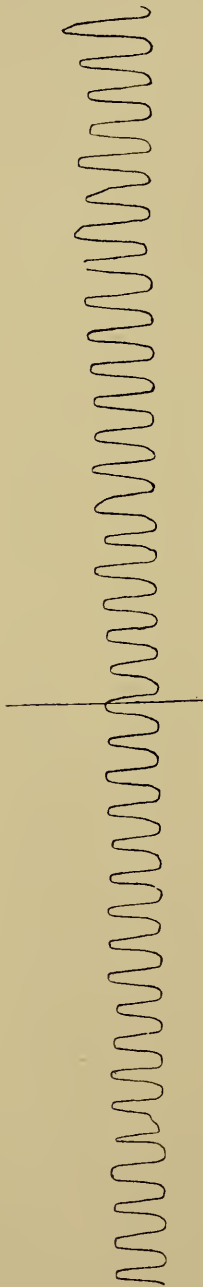


FIG. 12.—Section of the Record of T. D.

In Fig. 12 the drum was running more rapidly than in the later records, yet it has the advantage of giving better details. After the subject had been at work long enough to show a considerable shortening of the excursions of the pointer, due to fatigue, an effort was made to increase the length of the excursion by saying, "Now, pull harder, do your very best!" This corresponds to the spurt in the tap-time records. The vertical arrows point to the places where the spurt was ordered.

In this record we see an utter lack of any increase; the weight is not pulled one bit higher, and T. D., alcoholic, is apparently not able to put forth any more effort. In the tap-time experiments he was not spurred, but this record shows the most clearly of any example of the ergograph experiments, the lack of will—*i.e.*, power to put forth effort.

In Fig. 13 we have an example

of a lack of power after a short test. J. C., alcoholic, was not able to move the weight when called upon

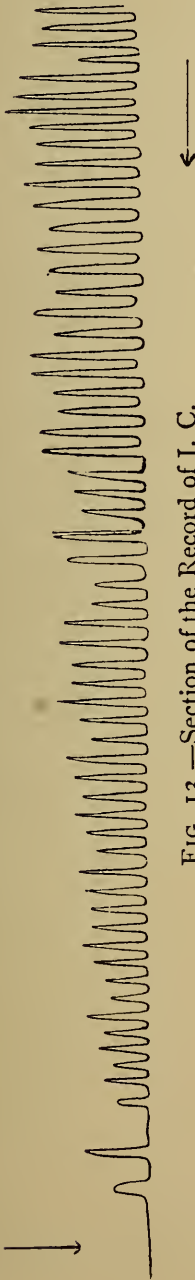


FIG. 13.—Section of the Record of J. C.

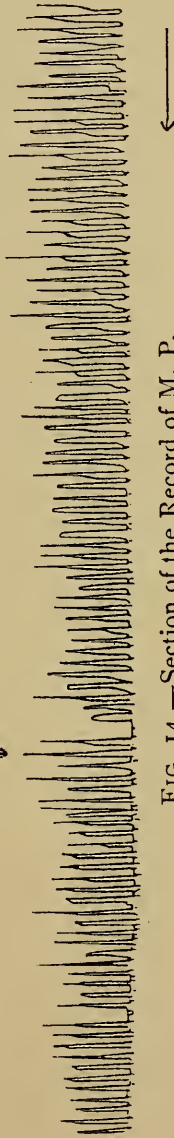


FIG. 14.—Section of the Record of M. P.



FIG. 15.—Section of the Record of M. C.

to spurt. The pointer had made eighty excursions in all, after which he could not move his finger. Com-

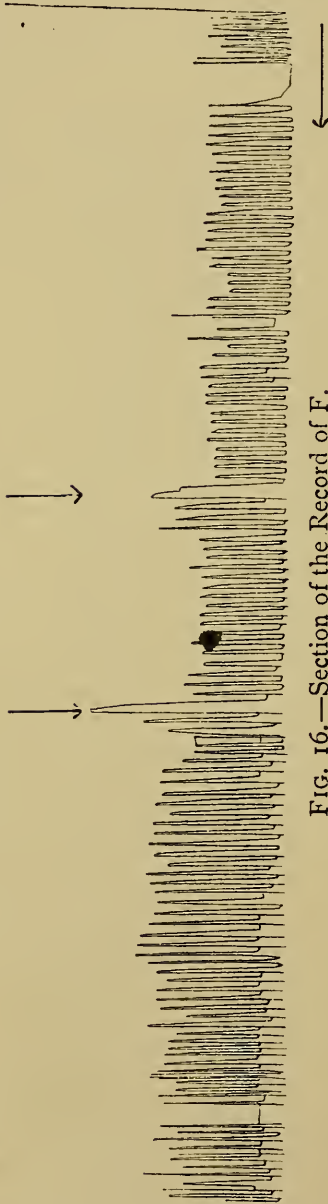


FIG. 16.—Section of the Record of F.

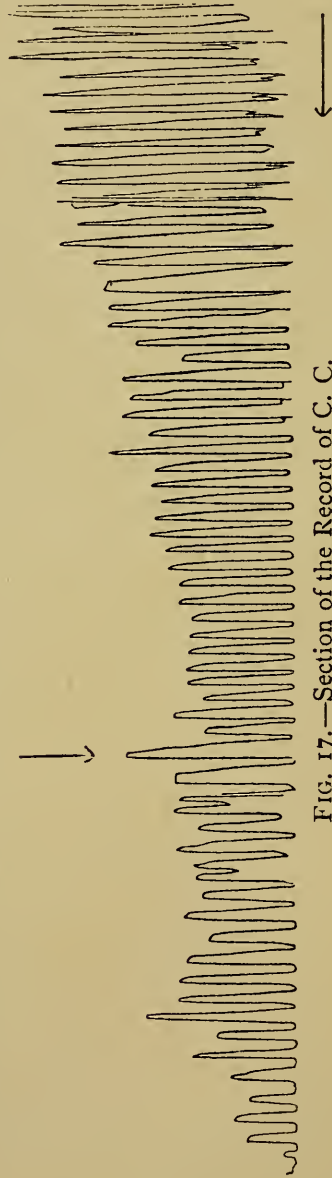


FIG. 17.—Section of the Record of C. C.

pare this with the record of M. P., Fig. 14. M. P., normal, is fifteen years J. C.'s senior, and although

we notice that he misses one stroke, yet he recovers himself without suggestion, and at the next stroke

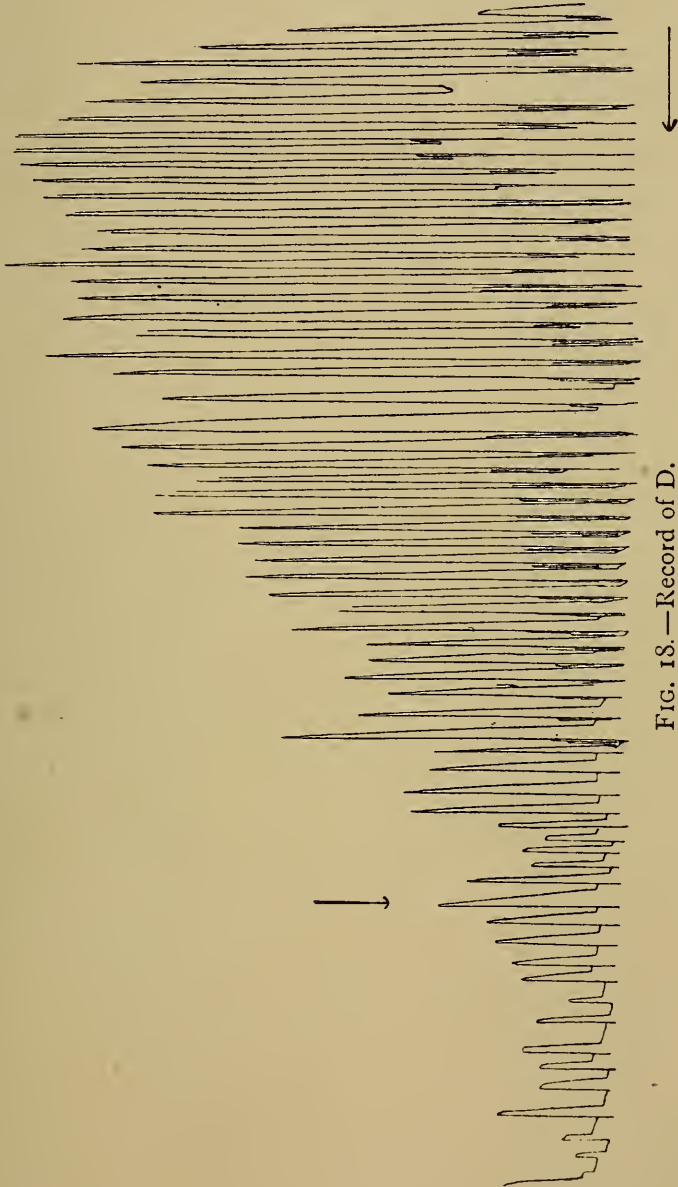


FIG. 18.—Record of D.

when commanded to spurt does so. Only twice does he miss a stroke in his whole record, both times re-

covering himself well, and at the end of 155 strokes, is still able to respond strongly.

It is difficult to tell whether or not M. C., alcoholic, spurts here when commanded. True, the weight is raised, but it corresponds to the regular rhythm of fatigue and recovery. Probably we can credit him with a small spurt, but it is very small indeed, compared with his record when he first began this experiment; the first part of this record is not shown.

In the record of F., alcoholic, Fig. 16, we can notice where his finger was powerless for three or four strokes, and in two other places where he was unable to relax his finger, showing a lack of control in both ways. At command he spurted, but lost time in doing so, taking the time of about two regular strokes to make the effort, showing that he could not readily control his power, or that there was no power immediately available.

The record of C. C., alcoholic, is quite like that of F. He spurts, but loses time in the effort; twice after that he is not able to relax his finger, and finally he becomes powerless. He is unable to move his finger after 65 strokes. Compare this record with that of M. P. The latter was pulling strongly at the end of 155 strokes, and this man fifteen years younger, was powerless at the end of 65 strokes. Compare these two alcoholics C. C. and J. C. with M. P., normal, and we will see the advantage that an abstemious old man has over a middle-aged alcoholic. We also insert the record of D., who was intoxicated at the time it was taken, but this is not for comparison.

The two following records, Figs. 19 and 20, are examples of normals, and the spurts by which they responded when commanded.

By looking over the results of these experiments we can see how they substantiate what has been said in the descriptive part of this chapter. Both in the results of the tap-time investigations and those of the ergograph, we find the alcoholic much inferior to the normal in his command and control of himself, and

lacking in ability to put forth effort. The tapping and the ergograph give slightly different results,

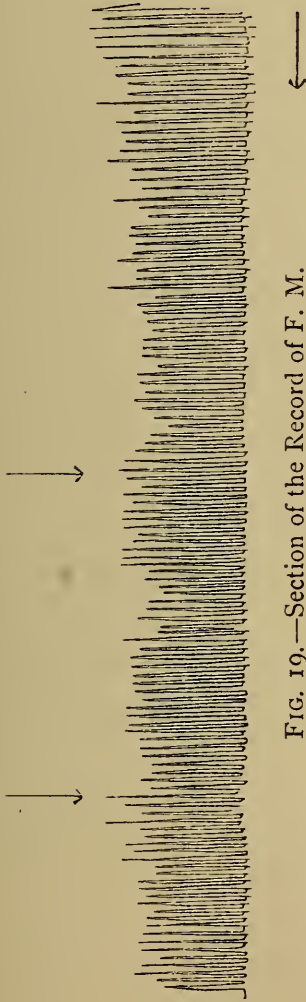


FIG. 19.—Section of the Record of F. M.

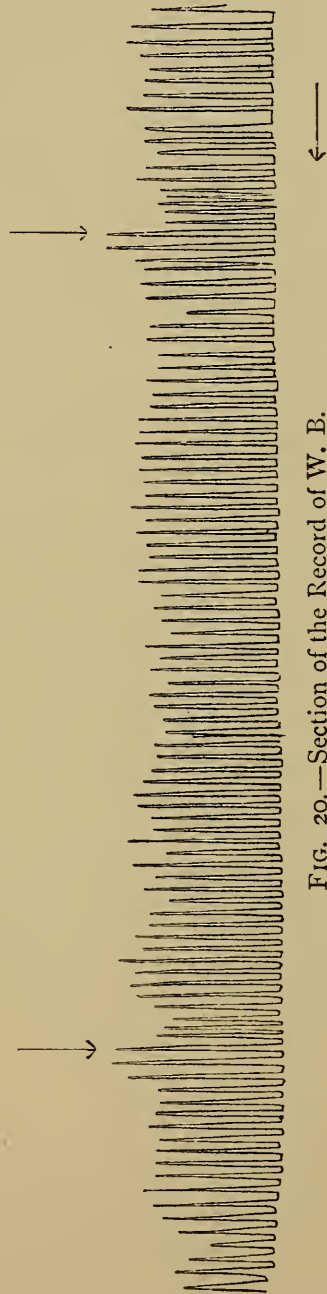


FIG. 20.—Section of the Record of W. B.

for the work is different. The tapping is very light work, and only the repeated efforts fatigue one, but lifting three kilogrammes with one finger is very tiring. Notwithstanding this, the results are quite in agreement. These alcoholic subjects were far from being of the most affected class, for these men had remained sober for some time, none less than one month. It might have been more interesting if the worst class could have been obtained, but as this lowest class is always more or less under the influence of alcohol, the task of arriving at the effect of the continued use of alcohol would have been defeated, and we would have had records of the effect of the continued use, added to that of the acute effects, depending upon the amount of alcohol recently taken. We feel that the testimony given by these witnesses has been quite conclusive.

We have found the lack of will to be a serious result of the use of alcohol. Not only as a whole, but all the factors of will are injured. The alcoholic is devoid of the power to act at the proper time and in the right way, no matter how much he may admit such action to be correct; on the other hand he is equally powerless to inhibit incorrect action which is in line with his alcoholic craving. He has the delusion of free will, and thinks he can stop drinking if he wishes, but on account of a lack of nervous energy he has not the ability for sustained effort. The blood supply has a powerful influence on the will. The experiments with ergograph and tap-time prove graphically what has been so long contended—viz., that the alcoholic has lost the power of putting forth effort.

CHAPTER VI.

EMOTIONS.

Emotional degeneration—Influence of bodily health as a whole—Description of alcoholic emotional states—Results of experiments on dogs—Suspicion—Selfishness—Loss of the higher emotions—Perversion of the affections—Fear examined as an example—Fear absent in intoxication—A characteristic symptom in delirium tremens—Application of the rule of degeneration—Emotional decline—Order of the acquisition of the emotions by the race inverse to the decline—Lack of nervous energy causes a mood which accompanies the lower emotions—Influence of bodily organs—Fatigue—Influence of memory—Writer's earliest memories of an emotional character—Cases cited—Influence of blood supply—Quantity and quality of blood both important factors—Why joyous emotions of youth do not reappear with the sad ones—Emotional peculiarities have effect upon drinking—Dependence of emotions upon all other faculties—Different theories of emotions stated—Facts of alcoholism favour that of centrally initiated feelings.

IN the study of the emotional nature of the alcoholic, we find a degeneration corresponding in kind as well as degree to that of the intellect and will. The way has been prepared in a small measure for our discussion, by references to the emotions in the preceding chapters, when discussing the relation of the emotions to the other faculties of mind. The emotions, in so far as they relate to the moral nature of man in general and the alcoholic in particular, will be reserved for treatment in the chapter on morals. This slightly restricts our discussion, yet this chapter is necessary to our subject, on account of the obvious emotional changes which are brought about by alcoholic indulgence.

Considerable discussion has taken place between psychologists on the evolutionary aspects of the emotions, for truly the emotions, notwithstanding their indefinite and changing character, do give scope for study in this direction. It seems that pathological cases, similar to the alcoholic, should be fruitful fields to explore; for the alcoholic in his lowest and most degraded stage becomes little more than a brute, as far as his emotions are concerned. The order of evolution, both regarding the race and the individual, can be traced in a general way by noting the order of decline, and then changing it to read inversely.

Of all the aspects of degeneration through the excessive indulgence of alcohol, there is no one more pitiable, neither is there one that causes more distress, than this change in the emotions. The principle, which we have found to apply so well in our discussion as far as we have proceeded, is also applicable to the emotions; in fact, this is the principle of degeneration in general. It is, that the latest evolved, most complex, and least stable states are those which are the first to be attacked, and the first to be destroyed by any detrimental agent; while the early, simple states remain until the last.

In addition to this principle we add another. We found in the previous chapters that general bodily health was necessary to the best normal mental activity; but with the emotions, the least change in the organs of the body, which may hardly be otherwise perceptible to the individual, may make a great change in the emotions. The reverse is also true: emotional states cause a great change in the functions of the bodily organs; so great at times as to incapacitate them, or, in relation to the heart, to cause instant death. Serious bodily disturbances may, or do, occur in all emotional experiences. Bright's disease, heart disease, jaundice, dyspepsia, diarrhœa, and other well-known changes in the respiration, involuntary muscles and secretions, as well as in the voluntary muscles, are sequelæ of different emotions. The emotions are

evidently correlated with serious nutritional disturbances, especially of the viscera, brought about without doubt by changes in the vasomotor nerves, and hence in the blood supply. The health of the brain has been our chief concern previous to this; we must now also consider the health of the alcoholic's whole body.

No one can well doubt the deplorable condition of the alcoholic as far as his emotions are concerned. He is emotional enough,—too emotional;—but the emotions are of a very low order. Every one is familiar with the absurdly emotional condition of the man who is intoxicated, perhaps for the first time; he either wishes to shake hands or to fight. The sentiments are neither worse nor better, but are not controlled: they are let loose and accentuated, and are revealed in their naked truth. To some extent the same is true with the chronic alcoholic; his emotions are uncontrolled,¹ but they are also deteriorated by continual indulgence so that only the lowest ones survive. There is commonly a feeling² of depression

¹ Besides there being an infinite variety of emotions, and an equally great variety of the same emotion, as far as its quality is concerned, we notice also a variety in quantity and method of approach. Thus, emotions may be strong or weak, and many degrees in between; they may come suddenly before we know it, or they may be gradual in appearance so that we can easily recognize their approach. Again, they may be intermittently strong and weak, or approaching suddenly for a time, then gradually; the terms sudden and strong, and the terms gradual and weak being at times more or less synonymous; although the gradually approaching emotion may attain great strength. The emotions which appear gradually are more or less under control, but an emotion wholly under control ceases to be an emotion; one characteristic of the emotion being its impulsive nature. Nevertheless there is a slight measure of control in the less violent emotions, which is quite easily recognized.

² The word "feeling" is very ambiguous, and may be the general term for all affective states. It may be the place here to make a distinction, or at least to call attention to distinctions which are made between different classes of feelings with which we have to deal—*e.g.*, emotion, sentiment, and mood. In a general way the sentiments are distinguished from emotions by having less response from the bodily organs, and by being connected with ideals. The mood is a persistent, emotional state with less reference to any particular object, but with the same particular feeling toward all objects.

with vague and gloomy feeling, and a continual apprehension of misfortune which is impending. His grief may easily become despair, and his lack of hope lead to permanent melancholy. To overcome this he indulges more freely in the beverages which have provoked it, and these prove temporarily remedial,¹ but only engender further depression. Coupled with this a morbid irritability of temper is a marked feature. He is peevish, and exaggerates his cares and his suffering. His rage and anger may be persistent and mischievous, or remittent and impotent.² "In women of weaker mind the character changes: they become sullen, taciturn sometimes; very often, on the other hand, they have expansive and even compromising ideas. Occasionally these two relations alienate."³

In Huss's well-known experiments, the dogs, to which he gave large doses of alcohol, became very irritable and were easily aroused by other dogs. In Hodge's experiments, where small doses were given, this irritability was not noticed. The alcoholic, whether a victim of large or small doses, is similarly affected in this respect; he is "touchy" and "explosive" when crossed in the smallest way.⁴ He is exacting, petulant, and hypochondrical. This disagreeable state he shows unmistakably, and that without sufficient cause. The victim of his anger may be the first person or object available, regardless of circumstances. Equally unreasonable is his suspicion. This suspicion is characteristic of some forms of alcoholic insanity, but even in his pre-insane days he is extremely suspicious. A conversation which he cannot hear, or the expression on the face of another, is referred to himself. He is suspicious of others' motives, and jealous of his wife, both without cause.

¹ R. C. Spitzka, *Insanity*, p. 251.

² B. W. Richardson, *Ten Lectures on Alcohol*, "Effect on the Mind," p. 57.

³ Dr. Thomeuf, "Alcoholism in Women," *Wood's Medical and Surgical Monographs*, vol. vii. No. 2, pp. 35of.

⁴ V. Magnan, *On Alcoholism* (trans. Greenfield), p. 8.

Acts of kindness are misconstrued, and he may think that persons are taking advantage of his condition to rob or injure him, and he makes "much ado about nothing." Distinct and uncontrollable suspicions are very frequently noticed. His faith in others may be shaken on account of a consciousness of duplicity in his own mind, but it seems rather to be from a lack of judgment and balance, and a failure to perceive the correct relations of things.

His selfishness is very noticeable. He is utterly heartless as a general thing, and anything approaching apparent altruism will probably have a selfish motive if examined carefully. His self-indulgence in the face of what he knows to be right and the appeals of friends and family, would naturally cultivate this. He is an egotist of the most unpleasant, graceless type. He dwells upon his own excellencies and ability, as well as his worries and fears, and is ever encouraging his egotism by constant contemplation of his own exaggerated virtues. For others he cares nothing: the cries of his wife and children, the claims and entreaties of his parents and friends he hears, but is perfectly indifferent to them. The once loving and obedient son strikes and tries to kill his mother;¹ the wife whom he cherished and regarded with the tenderest affection, he now loathes and seeks to injure. He looks upon the world and every part of it as fulfilling its duty only when he is provided with alcohol or anything else which he wishes. He has lost all consideration for others, and is no longer sympathetic or charitable.

His egotism may show itself in another form; he may be very presumptuous and unduly confident of his ability. Frequently he wishes to assist others in any difficult enterprise which they may be endeavouring to accomplish, evidently with the idea that he is far more able than they to bring about a successful culmination. This may even be ludicrous at times. Again, this egotism may be exhibited in the great

¹ N. Kerr, *Inebriety*, p. 55.

amount of sympathy which he has for himself, and concerning which he talks considerably. He also demands sympathy and consideration from others, and feels injured if he does not receive it. In some experiments made by Partridge, there was a very noticeable change made in the character of the associations after alcohol was administered. The egotistic associations were greatly increased; this was more conspicuous than any other change.

There is a noted loss of all the higher and finer emotions, his emotional life is restricted in variety. Motives which might naturally excite the higher emotions are unable to impress the alcoholic, or if they do, it is in a way not expected. The principles of self-abnegation, modesty, love, patience, fortitude, self-criticism, and self-control are lost,¹ and correspondingly, self-sufficiency arises. This self-sufficiency is the feeling which causes the alcoholic to think that he is extremely clever and acute; but his neighbours, who see things in their proper relations, do not share his opinions. Discomfort, pain, sorrow, anxiety, and fear are deadened and benumbed by every fresh indulgence, and his condition becomes chronically worse.

In women there is a diminution or total loss of shame,² and in both sexes there is a lack of pride in personal appearance and cleanliness. In Hodge's experiments with kittens, he found that the care of the body soon disappeared. "Along with this, all the instincts characteristic of healthy kittens, care of coat, cleanliness, etc., were almost wholly annulled."³ The alcoholic has lost all taste for work of all kinds, and those more elevating emotions which are occasionally felt even by the least cultivated minds have entirely deserted his soul. In a word, he shows an utter lack of the higher emotions, those which are the signs by

¹ A. Gustafson, *The Foundations of Death*, p. 109.

² Dr. Thomeuf, "Alcoholism in Women," *Wood's Medical and Surgical Monographs*, vol. vii. No. 2. p. 350.

³ C. F. Hodge, "The Physiology of Alcohol," *Popular Science Monthly*, vol. i. p. 602.

which we distinguish the true man. He is a stranger to true moral or religious emotions, although he may have periodic spasms of remorse when he cannot get anything more to drink, or is too ill to take any more. He has no sense of the beautiful, and intellectual emotions are very infrequent. All altruistic emotions are gone, and his condition is well summed up in what we have said before, that he is the lowest kind of an egotist.

There may be in him sudden and persistent perversions of the affections, where love is quickly transformed into hate; and frequently the general emotional content may be altered without any apparent cause. The subject may also alternate between extremes of love and hate. "The emotional vagaries of the drunkard take their colour according to his inheritance and daily habit. He is usually variable in his views and feelings—one hour easily pleased, happy and facile; the next, discontented and querulous, despondent, or obstinate. Frequently he develops a frothy sentimentalism, with a fondness for dreamy self-feeling and emotional expression, which relates chiefly to affairs of love or religion. Sometimes a settled gloom sits on the man that may be madness, or a morbid hilarity in which he dwells as in a happy world of his own apart from all misfortune. In some cases the emotional condition sways between the two extremes, the swing of the pendulum spreads over months or years—a kind of 'folie circulaire.' Or the emotional colouring may be of a lighter tinge, so that the moderate man becomes a silly optimist, or dons the darkened spectacles, and is unable to see the good that is, much less the good that will be."¹

Perhaps we could do no better than to take one state which we have not yet discussed, and ask why this one should be excessive, or why it should remain at all. Let us take a very characteristic one—viz., fear. We hope by the examination of this

¹ G. R. Wilson, *Drunkennes*, pp. 34f.

one emotion to show all the principles of emotional degeneration, and although we use fear as an example, what we say concerning it should be equally applicable to all those emotional states which still remain with the alcoholic. We have one difficulty in dealing with the emotions which we do not find to so great an extent when we consider the other mental faculties. The emotions differ so with different individuals, and differ so much in the same individual, that we cannot speak of one emotion—*e.g.*, fear, as a constant quantity. While all emotions of fear possess the distinctive factor which enables us to class them as fear, yet we cannot say that any one fear is identical either in quantity or quality with other fears which we have experienced; far less can we say that our fear is like that of any one's else.

First, let us say that in cases of simple intoxication, or even when an alcoholic is intoxicated, there appears to be an almost total lack of fear; the coward appears bold and aggressive—we hardly know him. The reason for this is that alcohol as a paralyzer does not make a man any more courageous, but deadens fear,—if we can make that distinction. His judgment is so impaired that he does not realize the true situation, but rushes in “where angels fear to tread.” Further, the alcohol for the time being causes an increase in the circulation, so as to restore temporarily the normal mental condition, or at least to counteract the baneful influence of a decreased amount of blood to the centres of the brain. If it is possible to frighten a person when drunk, the fear has the effect of sobering him, so that if the fright is sufficiently great, the man is immediately sobered; the task, however, is to frighten a drunken man. Fear is useful for the cure of some other ills, chiefly of a nervous character; we all know what a panacea it is when one is afflicted with nervous contractions called hiccoughs.

While fear is comparatively absent and impossible in simple intoxications, we find it the chief mental

characteristic of delirium tremens, and prominent in other alcoholic insanities. This excessive fear is occasioned by visual and auditory hallucinations and illusions brought about by the over-wrought nervous condition.¹ The fears of the alcoholic are of a different character from those of the person in delirium; with the alcoholic it is largely a matter of mood. It is a chronic condition, only awaiting an occasion to be manifested; it is, however, hardly as prominent a symptom as irritability. There is fear of friends and enemies alike; there is no courage to undertake any business enterprise, and moral courage is an unknown factor. A certain amount of fear is as necessary as courage in every normal person; why is the fear excessive and the courage lacking in the alcoholic,—a rule to which we find no exceptions?

For explanation we fall back first upon our old rule of degeneration, spoken of above. The latest received, most complex, and least stable acquisitions are first to go, while those acquisitions early developed and simple are the last to suffer from degeneration. Our religious sentiments and emotions, as well as those of æsthetics and the intellect, are of late development; as they are of exceedingly complex nature, they soon disappear. The whole decline is from the higher to the lower; those which deteriorate are recognized as the higher feelings. In the last chapter we found that the alcoholic did not have many ideals, and without ideals we cannot have these higher emotional states. There may seem to be an exception to our rule among these three sets of higher emotions. We would place the religious emotions the highest of these groups, but these may seem to out-last the others. In all religion there is a

¹ Notice the following from K. Heilbronner (Lecture delivered before the Medical Society of Halle, Germany, January 1901):—"There is generally a close connection between misuse of alcohol and the appearance of the emotion of fear. It seldom fails to be the initial appearance of those cases of delirium tremens which later show the typical humorous disposition. Most alcohol psychosis subsides without the excessive fear characteristics."

selfish factor—viz., that of salvation, and this may abide; but as far as true religious emotions, and certainly as far as moral emotions are concerned, they are among the first to disappear.

Ribot¹ gives the following order of emotional decline:—1. Disinterested emotions—æsthetic and higher forms of the intellectual; 2. Altruistic—social and moral; 3. Ego-altruistic—sexual love and religion; 4. Purely egoistic—anger, fear, nutrition. It all depends on what we mean by religion, whether we can agree with this classification. If we are to understand by the religious emotions those wrought up by frothy, sentimental platitudes, with great pity for the alcoholic as a basis, then we agree; perhaps it should even be placed in the last class. If we mean those emotions which accompany exalted and truly religious experiences, then we would place the religious emotions in the first class. The best solution of the difficulty would be to divide the religious emotions into two classes, those of the higher, exalted, and disinterested character, and those which have connected with them the selfish factor. We can then place the first division in the first class, and the second in the third class, and agree thoroughly with the classification as here given.

This brings us right to the heart of the matter; notice the emotions which we have enumerated as characteristic of the alcoholic, and we find them without exception of an egotistic character. Not only are those very highest emotions all gone, but the altruistic emotions, although attacked later, follow in the same way. The love of wife and children, the gratitude to father and mother, the duties as citizen, or the loyalty to friends are all forgotten; there is nothing considered but self, and that in the lowest and most selfish way. These emotions have disappeared in the inverse order of their acquisition by the individual.

There is a broader principle to consider, and one that is important in this question of degeneration,

¹ T. Ribot, *The Psychology of the Emotions*, pp. 425f.

and that is the order of acquiring the emotions by the race. This is where the evolutionary psychology may be of value to us. We have the following order in the general classification of feeling:¹—I. Feelings which primarily affect the conservation of the organism; II. Feelings which primarily affect the perpetuation of the race; III. Feelings which primarily affect the common welfare; IV. Feelings which primarily affect the welfare of others; V. Feelings which are neither conservative nor destructive; VI. Feelings corresponding with relations between interactions. If we follow this order for the evolution of the race, we find correspondence between individual and race development, and the general agreement of the order of degeneration with the inverse order of development.

We can see what is proven here, and what the theory of evolution has contended for—viz., the primacy of the egotistic emotions, for these are absolutely necessary for the survival of the individual. While we have called these egotistic emotions, many of them show themselves before a child has any idea of self, such as fear and anger; but they are all connected with selfish manifestations, and as such they appear first and last longest. This, then, is the first reason to give why fear persists when other emotions disappear. We now pass on to look for further cause.

The second reason we will state in the following way before explaining further. The lack of ability of the nerve cells to obtain proper nourishment causes a general lowering of nervous energy, which in turn causes a mood, of which these emotions are the legitimate fruit. Perhaps here we could use anger to better advantage as an illustration; or better, the two, fear and anger, can be taken along together. "It is evident that our emotional life is very much influenced by our bodily constitution. A healthy, strong, well-developed man, all of whose bodily organs perform

¹ C. Mercier, *A Classification of Feelings: Mind*, vol. ix. p. 337.

their functions rightly, must differ widely from a delicate, weak, deformed man with a defective organism. Heart, lungs, gall, liver, circulation of the blood, and respiration—even the conformation of the muscle and bones are of influence; so are sex and age, geographical, terrestrial, and cosmic influences.”¹ It is evident from this quotation that we should not only consider the cells of the brain, but the whole bodily organism as having influence.

If the organs of the body are in bad condition, we must expect that the fact will be shown through the emotions. With the alcoholic we know that such is the case, for there is perhaps not one organ in the body in a normal and healthy condition. In a normal person our old example of fatigue, which is temporary in its effects, shows similar phenomena. We quote the following:—“The essential characteristic of a fatigued nerve is its increased irritability; it reacts to less than the normal stimulus: and hence more or less spasmodically. For example, in a state of fatigue one is more likely to start at small noises; furthermore, one’s reaction is likely to be ill-directed, uncertain, prolonged. Let the same cause produce its natural effects in the workings of the intellect, the feelings, and the will, and we shall have, among other things, an important group of morbid . . . states. The following may be enumerated as examples:—Worry, despondency, bad temper, emotionalism of various kinds, over-sensitiveness, lack of decision in small matters, morbid introspection. . . .”² Among all the causes which produce anger, illness and pain stand out pre-eminently;³ and further, there has been noticed an agreement in the degree of pain and anger.⁴ Many children have been punished for a display of anger when they should have had medicine instead, or a rest; for irritability is often totally the result of a

¹ F. Kirchner, *A Student’s Manual of Psychology*, pp. 280f.

² G. A. Coe, *The Spiritual Life*, p. 73.

³ G. S. Hall, “A Study of Anger,” *American Journal of Psychology*, vol. x. p. 546.

⁴ A. Bain, *Emotions and Will*, pp. 172f.

physical state, and probably very seldom separated from physical causes.

If we look at the phenomena of fatigue under the most favourable circumstances, we find the same result. It matters not how pleasurable a stimulus may be, if we continue it long enough it becomes painful through fatigue, and causes irritability or anger. Huss, in his experiments with dogs which had received alcohol, already referred to, found them exceedingly irritable; while Hodge, in his experiments, found as a mark which distinguished the alcoholic dogs from others of the same litter which were non-alcoholic, their excessive fear.¹ The lack of nutriment thus affects animals in the same manner as men, as far as their moods are concerned. To show the gloomy, fearful moods of an alcoholic, the poetry of E. A. Poe is frequently alluded to, for it is well known that he was an excessive drinker of alcoholic beverages.² Other examples in literature might also be given. The relation between fatigue and lack of nourishment on one side, and fear on the other, was noticed in the infant daughter of the writer when she was not older than three weeks. When she was just

¹ C. F. Hodge, "The Physiology of Alcohol," *Popular Science Monthly*, vol. 1. pp. 805 and 807, says:—"It was not until alcohol had been given for nearly two months that it became quite noticeable that Topsy and Bum (alcoholics) were a little quieter than the others. This became gradually more marked. By September they were rather often caught napping in the shade, while Topsy and Nig (normals) were playing actively. They had developed also a cringing, trembling timidity, for which nothing either in my treatment of them or in their relation to other dogs could possibly account. . . . Bum has shown several mild paroxysms of fear, with some evidence also of hallucinations. . . . The tone of sadness, the same as is noted in Magnan's dog, is characteristic for Topsy and Bum. It can be lightened up at times so as hardly to be recognized, but still it is the prevailing tone."

² W. L. Howard, *The Perverts*, says:—"Science has changed many of the old views of the order of things in the last decade, but in nothing has she been so gracious as in taking away the stigma of drunkenness too long attached to that American genius, Poe. Born with intellectual powers beyond the ken of his contemporaries, he also tried to struggle through his physical life heavily burdened by a psychic form of epilepsy over which he could not possibly have control, and which at intervals held him in its impulsive grasp. Literature always recognized Poe's genius, science now recognizes his disease."

awakened from sleep, had been recently fed, and was receiving her bath, she allowed the nurse to handle her without any apparent fear of falling; but when the bath was taken under dissimilar conditions, when she was tired, sleepy, and hungry, it was impossible to move or turn her without the little hands flying out in an apparent movement to avert a fall.

If one wishes any further evidence concerning the relation between nutrition and the emotions, especially the lack of nutrition and the lower emotions, he has only to read himself, and notice the daily rise and fall of strength and the concomitant emotions. In the morning a general good nature and exuberance of spirits exists, gradually diminishing until evening comes with irritability and gloom, which cannot be dispelled until after the night's rest and recuperation. A man's temper varies with his health. In addition to saying, "Laugh and grow fat," we should say "Grow fat and laugh"—mood depends on the nervous system. We trust that we have said enough to make plain what we have stated as the second answer to the inquiry, Why does the alcoholic have the aforesaid emotional states?

We will now state and endeavour to elucidate a third answer—viz., the memory of the alcoholic declines so that only the states of his early life are remembered. The emotional states have to share the fate of all other mental factors, and so his emotions come to be those of boyhood. Childhood emotions coincide very closely with those of the alcoholic, and as the memory of the feelings is not lost so quickly as that of events, he is proportionally more emotional. Up to the age of puberty a child is selfish, and altruistic feelings do not arise to any great extent until there begin the physical and mental changes of that time. In cases of arrested development in children, or those who are degenerates, there are lacking the social, moral, and all higher feelings; but they have the lower feelings abnormally developed.¹ Before

¹ H. Maudsley, *Physiology of Mind*, p. 372.

puberty a boy is a most complete egotist, and some have thought that but for the adolescence change he would always remain so, with the disadvantage of a continued deterioration. It is stated that eunuchs are cowardly, envious, untruthful, deceitful, and devoid of all social feelings.¹

If this is so, and the alcoholic is but a boy in emotion, except that he has not the advantage of the boy's physique, we would expect him to have all the egotistic feelings of a boy, but in the worst form. Not only in the inferior quality, but in the disproportionate quantity, the alcoholic is excessively emotional. The memory is responsible for this, because the emotions are less easily forgotten than other experiences.² Some personal experiences of the writer are convincing to him at least, and to show how tenacious the emotions are, compared with other mental states, they will be briefly related.

The earliest memories of my life are memories of feeling—*i.e.*, they are all of an affective character. The events connected with them all took place when I was four years of age; I remember nothing earlier, and nothing more until about two years later. The events themselves I have no remembrance of, but only certain emotional states connected with them. I was living in the city of Halifax, Nova Scotia, at the time of the occurrence of the first three of these four—these three are best remembered.

First case. One afternoon I was taken out for a walk in the Public Gardens by my nurse. I saw my uncle some distance away and wished to go to him; this the nurse agreed to, and I started. Before I could get to him my uncle moved away, the nurse had also moved, and I was lost. My weeping attracted two little girls, who took me to their home, reported me to the police, and at nine o'clock in the evening

¹ H. Maudsley, *Pathology of Mind*, pp. 453f.

² J. Ross, "On Memory," *Brain*, vol. xiv. p. 47, says that although the emotional experiences may be isolated and devoid of associations, they are remembered easier than some events often repeated.

my uncle came and took me home. I remember nothing of the circumstances—not the sorrow of being alone or lost, nothing of the little girls and the strange home, nor of my home-coming; but what stands out distinctly and indubitably in my memory is the feeling of satisfaction when nestling down in my uncle's arms when he came to take me home. I try to analyze the feeling, and it resolves itself into one of warmth after being chilly, although this could not be, for it was summer, the flowers were blooming in the gardens.

Second case. After watching my father shaving one morning, I tried to follow his example. I got his razor and went out on the front stoop to take my first shave. The circumstances I do not remember—either the stoop, the razor, or the cut, of which I still carry the scar; but the feeling of pride that I was able to have the razor and shave is still quite easily recalled.

Third case. One day when my mother was entertaining visitors, I went to my father's desk in an adjoining room, grasped a piece of paper, which as it happened was a note of considerable value, and returning to where my mother was, placed it on the fire in the grate. The circumstances again have faded away. I have no remembrance of the visitors, the room, the grate, the paper, or the punishment which came later; but I do distinctly remember the feeling of pride connected with placing the paper on the fire before other people.

Fourth case. This case I am not so sure of as the others; it seems like memory to me, but not so clear and distinct. The circumstances happened in a hotel in Amherst, Nova Scotia. I ventured down into the smoking-room one day, where I was given a piece of tobacco to chew by some one present. Again the events have vanished from memory—no remembrance of the room, no recollection of the feeling of nausea as such; but the part which seems to linger in memory is the feeling of inability to keep my eyes open when

being carried to my room, and the great feeling of relief and satisfaction when they closed—this, of course, being a feeling connected with the nausea.

Recognizing the danger of interpreting imagination as memory in these early experiences, yet I can say that the first three of these are undoubtedly memory; the last one may be misinterpreted imagination. We will notice that not only are all these memories of an affective character, but they are also egotistic; not fear this time, nor anger, but two out of the four are pride, one joy, and the fourth, the least clearly remembered, perhaps strictly not to be classed among the emotions. If this experience is general—*i.e.*, if the emotions are better remembered than other states of childhood, this accounts, at least in part, for the phenomenon of the disproportionate amount of emotion in the alcoholic's experience.

The memory of recent emotions fails, as does the memory of all other mental experiences.¹ The anger, fear, or joy of yesterday may have entirely passed from the mind, and the person whom the alcoholic considered his worst enemy yesterday may be his best friend to-day; or, on the other hand, some isolated impressions of the experience may last, just sufficient to cause an unreasonable, persistent ill-feeling. The latter is not so common, for the alcoholic has not strength of purpose sufficient to carry out even an expression of ill-will against another.

In the emotions, as with all mental states, the blood supply has a great influence. Brain, heart, and arm pulsations are immediately changed by the slightest emotion;² and a blood supply normal in quantity and quality, with ample provision for a

¹ H. Spencer, *Principles of Psychology*, vol. i. pp. 235f., says—“That feelings excited when the general circulation is very vigorous are more revivable than usual, is a truth that may be variously exemplified; . . . revivability of feeling excited during a state of feebleness is comparatively small. The effect of depressed circulation, whether produced by disorder or by age alike shows this.”

² A. Mosso, *Fear* (trans. Lough and Kiesow), pp. 64f.

ready transference from one part of the body to another, as well as from one part of the brain to another, is an admitted necessity for normal emotions. The career of an emotion seems to be limited physically,¹ for if the intensity is weak either through voluntary control or for other reasons, the extensity is greater; but if the emotions are very intense, they are less extensive.

The statement has been made² that anemia with poor nourishment is the cause of morbid emotions. The general lack of nutrition has been spoken of, but we must remember that the quantity as well as the quality of the blood is important. By referring to the first chapter we will see that in the alcoholic neither quantity nor quality is equal to the standard. If the blood vessels and nerves are out of order, it is impossible that the organic rebound, so necessary in all emotional states, should take place; and generally we find that the emotions which have anemia as a concomitant are the ones which remain in the alcoholic. Some might think that there is one great exception, that of anger; but we rarely if ever see that hypernemic form of anger in the alcoholic, except when the circulation is greatly increased by an excessive amount of alcohol. The anger characteristic of the alcoholic is rather the sullen, morose irritation, which is present in connection with the anemia. We would not say that emotions requiring hypernemia are impossible, but at least they are not frequent.

Emotions can be increased or decreased in intensity by altering either the quantity or quality of the blood. Anger and fear, as well as fatigue, are accompanied by a change in the composition of the blood. Would it be carrying the simile too far to surmise that the change wrought by alcohol may be analogous to that concomitant with anger and fear, and thus these two emotions are assisted? Of the

¹ G. T. Ladd, *Psychology, Descriptive and Explanatory*, p. 550.

² C. Fere, *La Pathologie des Emotions*.

blood supply of the alcoholic we know one thing, and that is that the arteries are so closed by pathological growths, as to be unable to deliver the normal supply of blood. This corresponds in effect to contraction of the arteries by the vaso-constrictor nerves. We know further that, in general, fear and sadness are accompanied by vaso-motor constriction, while joy and one form of anger are accompanied by dilation. It is not hard, then, to draw the conclusion that the quantity of the blood has its effect upon the emotions in determining which ones shall survive.

More than any other mental state, the emotions use the whole brain¹ and nervous system. At first the emotion is only concerned with one set of nerve cells or centres, but the excitement attending spreads to those other centres nearest connected with the first set, and later over the whole system. In looking for a physical basis we cannot give it a narrow localization; but rather we would say that the emotion depends on the quantity and quality of the stimulation of the different nerves and centres all over the body, together with the mood of the person at the time of the excitation. We see, then, that both the brain and the various organs of the body have an influence; for while the brain may incite, and to a certain degree control the emotions, it is also true that if the organs are in such a condition that they cannot conform to the changes normally required by the emotion, the emotion is thereby hindered or inhibited.²

Now we come to another question, which we will try to answer in the language of another. The question is this: Even if the early emotions are the ones which remain, do we not find among early emotions those of joy as well as sadness? Do we not find emotions of brightness as well as of gloom?

¹ In regard to the physical basis of the emotions in the brain in common with the intellect and will, we do not believe that any particular portion of the brain is a special seat of the emotions, but rather think that the centres in use for other functions have an emotional function also.

² G. T. Ladd, *Outlines of Physiological Psychology*, pp. 402f.

Why are these not represented in our list? Mr. Spencer assists us here.¹ Pains are more intense than pleasures.² The idea of pain follows its antecedent into consciousness more readily than the idea of pleasure. There is a small number of painful feelings which are strong, a large number of pleasurable feelings that are less strong, and a much larger number of feelings which are but slightly pleasurable. When the nervous pressure is high, the current is forced into less permeable lines—*i.e.*, into the slightly pleasurable feelings; but as it gets weaker it goes only into the most intense lines, and when at its lowest, the content “comes to be composed mainly of the aggregate of faintly aroused, painful feelings—so producing gloom, and groundless fear and despair.” The energy is low and goes into the most permeable paths; joyous emotions are thereby eliminated, as we truly find them to be in the alcoholic.

Closely connected with this are other modifications of organs, which may not be in harmony with the expression of the emotions, and prevent the bodily symptoms which accompany and augment the primary emotional feelings. As the blood both in quantity and quality fails to fulfil the conditions of the emotions which are lacking, and conforms to the conditions of the remaining emotions, so the change wrought in the bodily organs may be antagonistic to the joyous and other absent emotions, and favourable to the gloomy and fearful emotions which remain. For if the bodily organs “are set in the opposite way” to the customary effect of an emotion, that will in a large measure prevent the appearance of that emotion.

¹ H. Spencer, *Principles of Psychology*, vol. i. pp. 603f.

² In common with all feelings the emotions have a special subjective reference, and are generally pleasurable or painful, and are so classed; although the hedonic element is a mixed and sometimes contradictory one, as when, for instance, the pleasure of being angry is spoken of, or the joy of grief. Notwithstanding this hedonic element in the emotions, we find that pain or pleasure of a special sort and emotions are mutually exclusive: that we cannot have one when we are experiencing the other.

The opposite effect should also be noticed: not only does alcoholism cause a change in the emotions, but changes in the emotions may cause a drinking bout. Men drink on account of their depression and grief, or their exaltation and joy. The emotions more than any other faculties seem to contribute to causes or occasions of drinking. It is the impulsive or emotional men in whom we expect to find the alcoholic or dipsomaniac,¹ and in this we are not often disappointed. The genius, or emotionally unbalanced suffer most in this particular, for alcohol provides the exhilarating effects which such natures demand, even if the effect is only temporary and administers to a more depressed condition later.

We have given a description of the emotional states of the alcoholic, and have endeavoured to explain the cause for them. We have to look a little further at the relation of these emotional states to the other mental experiences. Perhaps sufficient has been said concerning the specific relations, but in general, let us add, that not only does general degeneration cause an emotional deterioration, but a derangement of the emotions is more wearing on the nervous system than perhaps any other mental disorder, so all the faculties suffer in an especial degree if the emotions do. The emotions must

¹ Notice the following from P. C. Remondino, "A Study of the Causes and Nature of Dipsomania," *Quarterly Journal of Inebriety*, vol. xxiii. p. 136:—"It is curious to note the retroactive effects of music upon the emotions and the impulses, as exemplified among different temperaments. Pathetic music will drive some to drink, and I have seen cases wherein the immediate individual emotional environments became so accentuated by the effect of this form of music as to bring on a sudden suicidal determination, just as the 'Marseillaise' spurs all the latent belligerency of the French of the South into martial frenzy. As St. Augustine wisely observes, there are perils which we should not attempt to overcome, but wherein discretion is the better part of valour and where it is more prudent to flee. An emotional nature, which knows by experience that its poise cannot be disturbed without risks, should by all means avoid all causes of disturbance and not subject itself to any trials in which it will surely be vanquished; so that whatever the bard may say about the man who has no music in his soul, such (dipsomaniacal) natures had better avoid music that is not of the lightest order."

depend upon all the other faculties—memory, will, imagination, intellection; and they in turn depend upon the emotions. The ideas which produce the emotions are reciprocally acted upon and disturbed, so as to have the train of thought disarranged and disorganized. There is no cognition free from emotion, and no emotion free from cognition. Lotze says, "The force of ideas, therefore, seems to me to rest on their concatenation with emotions; and if I spoke of their strength I should use the word merely to express the fact that they are victorious over others, and the understanding that their victory occurs in this way, and no other." This refers to the promotive power of emotion on the thoughts; so the emotions according to their strength have either an inhibiting or promoting effect upon the thoughts, and the effects on all the other mental states is far-reaching.

We have tried to eliminate all discussions of theories in our treatment, except in so far as they directly concern our subject. We inevitably come in contact with one discussion, to which, while we have treated the emotions without direct allusion, we now devote a small amount of space on account of the light which our subject may throw upon it.

The discussion is between persons advocating different theories of the emotions. The arguments are centred now, as for the past few years, in the arena in which are placed what might be called by way of distinction the physiological and psychological theories. The former is young and strong. It appeared in 1884, having been brought forth simultaneously and independently by C. Lange and W. James. This theory in some form has been accepted by many psychologists, but the opposite theory is now gaining strength, for experimental evidence tends to confirm it.¹

¹ In a recent lecture given at Yale University, Professor Sherrington, of Liverpool, stated that his experiments on animals confirmed the view of Professor Ladd rather than that of Professors James and Lange.

According to the theory of Professor James, the bodily changes follow directly the perception of the exciting fact, and what we call the emotion is solely the feelings originating in these organs. "I now proceed to urge the vital point of my whole theory, which is this: If we fancy some strong emotion, and then try to abstract from our consciousness of it all feelings of its bodily symptoms, we find we have nothing left behind."¹ All psychologists will admit that the feelings from the different organs of the body are important factors in the emotion; that is not the dispute. The statement that the emotion consists of nothing but this is the point where the disagreement arises.

The opponents of this theory, chief among whom is Professor Ladd, would deny that because the organic feelings are inseparably connected with the emotion, they are the emotion. In a few words we will endeavour to present Professor Ladd's theory.² The occasion of the emotion may be a presentation, imagination, memory, or thought. Accompanying this is some form of feeling, which for some reason connected with the peculiar disposition of the individual, causes a fixation of the attention, and by the addition of the associated trains of mental images the affective accompaniment is intensified. The physiological concomitant of this factor is a nerve storm in some limited portion of the brain which quickly spreads to other centres, gathering intensity both physiologically and psychologically. In addition to the excitement of the brain itself, there is an unorganized surplus which "overflows" and "sweeps down the different paths of exit upon the lower centres and upon the different systems of muscles, upon the vascular and secretive and respiratory systems; and then, from the peripheral parts, return currents sweep backward further to disturb the

¹ W. James, *Psychology*, vol. ii. p. 451.

² For a fuller discussion of this theory see G. T. Ladd, *Psychology, Descriptive and Explanatory*, pp. 534f.

centres that lie within the brain." When the bodily organs react with special and a confused mass of sensations, a mixed feeling ensues, entailing the bodily organs and augmenting and heightening the original centrally initiated feelings. The emotion comes to be an extremely mixed and complicated state of consciousness, and may for the time being occupy the whole field. This "bodily resonance" or "somatic reaction" is recognized as an important factor in the emotion, but only a factor, and not the total content of feeling, for the feelings which are centrally initiated are also recognized.

The discussion concerning these theories has been long, and the arguments for and against manifold, but we cannot state them here, only in so far as our subject calls them forth. The contribution which alcoholism makes to the subject is twofold. In the first place it does not seem that the expenditure of energy which causes the great cerebral deterioration in alcoholism is shown by peripheral reflexes and reactions, but to account for this we must conclude that there is energy disseminated in the brain itself apart from that shown by the effect of the stimulation of the motor nerves. If this is so it would pave the way for the view of centrally initiated feelings, as well as those feelings for which the periphery is responsible.

The method of degeneration gives the other suggestion. Why should one set of emotions decline and not all? It cannot be that the peripheral organs are injured or the peripheral nerves deranged, for if this were so the emotions as a whole would deteriorate according to both theories, which is not the case. The reason is that the higher centres in the brain are injured. These centres, which when excited give rise to the feelings of the higher emotions as such, having degenerated, they cannot entertain the peculiar modifications which are the bases of the emotions which depend on these centres. As will be readily seen, both of these suggestions favour the theory as set forth by Professor Ladd.

The emotional degeneration brought about by the use of alcohol corresponds to the decline of the other mental states. The general bodily health influences the emotions more than the other faculties, by encouraging certain moods. In the alcoholic the higher altruistic emotions disappear, and the strength of the whole nature goes into the lower selfish ones. In examining fear as an example we found the law which applied to the degeneration as a whole. The decline of the emotions proves to be in inverse order to the acquisition by the race. The early memories are usually emotional ones, but the joyous emotions of youth do not appear with the sad ones. The emotional peculiarities of the individual have a great influence upon the question of continued and uncontrolled drinking. The quantity and quality of the blood, the state of the bodily organs, and other somatic factors, have a great effect on the emotions of the alcoholic. The study of alcoholism contributes to the discussion of the theories of the emotions favouring that of centrally initiated feelings.

CHAPTER VII.

SENSES.

Importance — Exaggeration of some senses — Sight — Both peripheral and central causes of the disorders—Atrophy of the optic nerve and its terminations—Change in the pupil—Eye catarrh—Amblyopia—Amaurosis—Methyl and ethyl alcohol affect differently—Nystagmus—Results of experiments—Ridge, Kraepelin, and Reis—Effect on expert shooting—Disorders of sight in alcoholic insanity—Central disturbances—Psychic and sensorial blindness—The intellectual element in all sight—Lack of accommodation—Unity of mental processes and the effect of the other faculties—Hearing—Little local disorder—Illusions—Direct effect—Meningitis and central disturbances—Experiments—Smell and taste—Perversions are dangerous symptoms—Not very frequent—Results of experiment—Touch—Hyperæsthesia—General disorders—Results of experiments—Muscular sense—General considerations—Experiments.

IN common with the other parts of the nervous system, the senses are affected by the continued indulgence in alcohol. The importance of the normal function of the senses is obvious. Locke's statement, which omits the activity of the mind, nevertheless contains its grain of truth—"Nihil est in intellectu quod non fuerit in sensu." If the senses are disorganized and disordered, the mind cannot otherwise perform its proper functions. Without exception we do find injury to all the senses, and in advanced cases there does not appear to be any clear perception. The impairment is both cerebral and peripheral, sometimes showing itself more plainly in one particular, and again in the other. Alcoholic neuritis has its effect upon every special sense, and this in turn may start hallucinations and illusions. The extent of the abnormality in the senses is shown by

these more than in any other way, for at times they are very persistent.

The senses are often exaggerated at first, giving periods of hyperæsthesia and hyperalgesia, but this is only temporary. It is soon followed by a deadening of the senses, and a misinterpretation of the message which they wish to give. The affections of the eyes are the most common and most troublesome, and for that reason they will be given a more plenary treatment in this chapter. The relation to central disturbances will be given when discussing the injury to the eyes. This is applicable to all the senses, but is not repeated with the discussion of each one.

Sight.—Of the special senses affected by alcohol, sight suffers the most. This is seen not only in the hallucinations of vision so common in most cases of alcoholic insanity, but in actual eye affections as the result of continued indulgence, and sometimes in total blindness. It is difficult to posit the specific cause in many cases, and while many investigators lay emphasis on local troubles, others again find the difficulty in central disorders.¹ Probably both are right, for the influence of alcohol upon the nervous system both central and peripheral is well known, and this together with vascular disorders accounts for all the abnormalities which we are able definitely to trace. As with so many other disorders, we are not able to show a direct and proportionate relation between the known lesion and the recognized effect, nor in some cases are we able to detect any lesion at all. We will attempt to give some of the recognized physical changes due to alcohol.

A very common and most serious change wrought by alcohol is the atrophy of the optic nerves and their

¹ W. L. Andriezen (1903 Annual Meeting of the British Medical Association), *British Medical Temperance Review*, vol. vi. p. 269:—“The condition of the chronic alcoholic was due not to changes in the periphery or cord, but in the brain. . . . He had found in post mortem examinations, distinct evidence of changes in the cortex in those who had had visual hallucinations, and had been able to affirm these before he knew the history of the case.”

terminations. "According to a total of 166 cases (atrophy of the optic nerve) gathered by Galezowski . . . nine per cent. are due to alcoholism."¹ Uhthoff refers most of the changes in vision to this cause.² In reference to this, Spitzka reports the case of a gentleman in later years suffering from alcoholic dementia, in whom "the distinguished ophthalmologist, Knapp, discovered atrophy of both optic nerves some years before marked mental impairment had set in."³ This is usually shown in the discs, sometimes in only one or again in both eyes. It commences with simple congestion, uniform redness of the disc with softened edges, gradually passing into neuritis or papillitis with paler discs and slight œdema. This condition of neuritis is found in chronic alcoholism, and in post mortem examinations shows itself in thickened and opaque meninges.⁴ "Uhthoff examined a thousand cases of severe alcoholism in inmates of asylums, and found that 13.9 of these suffered from pathological whiteness of the temporal half of each disc, with a central scotoma in every case. He found this condition in only one out of a hundred apparently healthy men, whom he selected for comparison. Moreover, Moeli has stated that he has detected changes in the optic disc in 15 per cent. of the cases of delirium tremens examined by him. When the condition of the nerve has been ascertained by microscopical examination, granular degeneration of the nerve-fibres has been found in some cases. Out of seven cases examined post mortem by Uhthoff, two showed interstitial neuritis, with marked increase of the connective tissue. The changes were most distinct just back of the globe, and did not extend far back."⁵

¹ H. D. Noyes, *Diseases of the Eye*, p. 314.

² W. H. Welch, "The Pathological Effects of Alcohol," *Physiological Aspects of the Liquor Problem*, Billings, vol. ii. p. 371.

³ R. C. Spitzka, *Insanity*, p. 252 note.

⁴ H. D. Rolleston, "Alcoholism," *A System of Medicine*, Albutt, vol. iii. p. 863, says, "Optic neuritis in alcoholic subjects may be due to chronic meningitis."

⁵ W. R. Gowers, *Medical Ophthalmoscopy*, p. 274.

As the trouble progresses, atrophy follows the neuritis.¹ In addition to diseased nerve and disc, we find that at times there is a pathological condition of the retina. The neuritis may cause some changes to the retina—as, *e.g.*, white spots, but a few cases of double retinitis have also been noticed in chronic alcoholism.² Milder affections of the retina are more common. Dr. Gowers³ reports one which we quote: “In a fatal case of alcoholism, Lawford found during life widespread cloudiness of the retina, with normal discs, and without any central colour scotoma. After death the retina of one eye was examined by Edmonds and himself; there was œdema of the nerve-fibre and ganglion-cell layers, and in the outer nuclear layer there were spaces filled with a clear effusion, between the Müllerian fibres.”⁴

The change in the pupil is quite noticeable, but the descriptions vary, the agreement being that they are not normal. They may be dilated or contracted, and may or may not fail to react to light⁵ and accommodation. Hyslop affirms that where there is a failure of reaction to light, regardless of whether the pupils are dilated or contracted, there is almost invariably a history of syphilis in addition to that of alcohol. “Inequality is present in about forty per cent. of the cases; and irregularity of the margin is also com-

¹ Wernicke mentions atrophy of the optic nerve following alcoholic stupor. (*Grundriss der Psychiatrie.*)

² One case has been reported by Dr. Sharkey, *Transactions of the Pathological Society*, London, vol. xl. p. 359. Dr. Ord has also reported a case.

³ W. R. Gowers, *Medical Ophthalmoscopy*, p. 275. Reference is also made to opacity of the retina by the same author: *Diseases of the Nervous System*, vol. ii. p. 975.

⁴ Acute alcoholism does not often exhibit any eye disorders, but Jäger found a case of retinitis in delirium tremens.

⁵ D. H. Tuke, “Alcoholism,” *Dictionary of Psychological Medicine*, says, “Pupils are dilated and do not react well to light changes.” T. L. Brunton, “The Face and Pupil in Alcoholic Neuritis,” *British Medical Journal*, says, “I have noticed that the reflex of the pupil to light is rapid and extensive, whereas the contraction of the pupil on accommodation to a near object is slight and sluggish, or entirely wanting. Indeed, in one or two cases I have observed a dilatation instead of contraction on accommodation.”

paratively frequent.”¹ The inequality of the pupils is not so significant as the failure to react to light. The cornea may also be affected so that its transparency is duller.

On account of the appearance of eye-catarrh during delirium tremens, disappearing with the critical termination, some have concluded that the alcoholic poison has an inflammatory effect upon the conjunctiva, similiar to certain bacterial poisons.² The most common disease of alcoholism is called amblyopia which may precede any ophthalmoscopic change. It is more common in regular than periodic drinkers. It varies in degree from a slight dimness of vision to dulness and defect in the recognition of certain colours. Tobacco amblyopia is well recognized, and is so similar that some observers affirm that tobacco is the sole cause, most alcoholics being also users of tobacco. The alcoholic cause, however, seems to be well established now.³ Galezowski found dyschromatopia for green and violet, which he looked upon as a symptom of retinal anæsthesia. Before the defect for white light is recognizable, the vision for red may be found defective, extending over that portion of the eye from the *fovea centralis* to the blind spot.⁴ At first this can only be tested at very short distances; both the red and green appear as different shades of grey. The field of vision may be restricted for a time, but recovery is frequent.

It is not on account of a revival of sensitive consciences that the railroad directors have begun a rather sudden crusade against the use of intoxicating liquors and tobacco by employees engaged in operating

¹ T. B. Hyslop, “Alcoholic Insanity,” *A System of Medicine*, Allbutt, vol. ix. p. 326.

² W. V. Jauregg, “The Poisonous Action of Alcohol in Nervous and Mental Diseases,” paper read at Eighth International Congress, Vienna, 1901.

³ H. D. Noyes, *Diseases of the Eye*, p. 320, says, “In alcoholic amblyopia we usually find a dull, red nerve, with swollen veins, rather heavy borders, and torpid circulation. In tobacco amblyopia the nerve is lighter and more nearly normal.”

⁴ W. R. Gowers, *Medical Ophthalmoscopy*, p. 273.

trains; but it is the recent recognition of this disease of amblyopia as a result of these indulgences that has been the cause of the strict orders in regard to the use of these things. This central scotoma, which deprives the patient of the recognition of red and green, is disastrous to the railroad employees, for these two colours are the ones most exclusively used in operating trains. So insidious is the appearance of this disease that only an accident may reveal to the engineer that he is unable to recognize the signals. Of course there are other reasons on the part of the directors for their desire to be rid of drinking men, and intoxicated men they will not tolerate; but this one reason is enough to discourage the employment of tipplers.

De Schweinitz¹ shows the relative proportion of causes of toxic amblyopia in the following table:—

Alcohol	64
Alcohol and tobacco	45
Tobacco	23
Diabetes	3
Bisulphid of carbon	2
Lead	1

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We can see how potent alcohol is in the production of this disease, which is recognized by all authorities

¹ G. E. de Schweinitz, *The Toxic Amblyopias*. See also "The Toxic Amblyopias; being a Review of some Recent Literature on the Subject," *Ophthalmic Record*, April 1902, where he says, "On this point the statistics of Adler are important. Among 100 private patients he concludes that alcohol was the greatest factor in 86 per cent., but nearly all the patients smoked more or less; only four per cent. maintained that they were non-smokers. In 12 per cent. the patients smoked and did not drink. In his hospital practice there were 19 per cent. of nicotine amblyopias and 81 per cent of alcohol amblyopias, but he frankly admits that the testimony of the patients, in so far as their habits were concerned, was not trustworthy. . . . Uhthoff's examination of 327 cases of intoxication amblyopia revealed a pure tobacco-amblyopia in 41 cases. The remaining 286 are divided about equally into cases of alcohol-amblyopia alone, or when alcohol was the most potent factor, and cases subject to the mixed influence of alcohol and tobacco."

to be followed by such grave consequences,¹ and according to some authorities it is increasing rapidly in America at least.

Recently a number of cases of amaurosis have been reported, caused by methyl alcohol.² The same effect has been produced by inhalation as by drinking. Of the former method of receiving the blinding effect, most cases, concerning which publicity has been given, have been in men who have been employed in shellacking beer vats, where the shellack was mixed with Columbian spirits. Ventilation of the vats was almost completely shut off. In one case the patient was completely blind for one week, then improved so that he could distinguish large objects, when again vision began to fail.³ Cases of death and blindness are not uncommon as a result of drinking wood alcohol.⁴ In this case the patient, a woman, drank a bottle of clear alcohol, and awoke blind after a stupor of several hours; she afterwards partially recovered her vision. In many cases of blindness following the drinking of essence of peppermint and Jamaica ginger, it is probable that the effect has been produced by the presence of methyl alcohol

¹ C. Richet, "Alcohols," *Dictionnaire de Physiologie*, vol. i. p. 241, says, "Du côté de la vision, on a noté l'amblyopie alcoolique, caractérisée d'après H. Romiée, par l'affaiblissement de l'accommodation, pouvant aller jusqu'à la paralysie: les pupilles sont peu mobiles, souvent inégales, il y a diminution rapide de l'acuité visuelle, daltonisme, quelquefois dyschromatopsie complète. Les modifications des papilles peuvent se transformer en atrophie grise progressive." Notice also the following from Soelberg Wells, *On the Diseases of the Eye*, p. 449:—"This toxic effect may be produced by alcohol, tobacco, lead, or quinine. The amblyopia met with in drunkards (*amblyopia potatorum*) generally commences with the appearance of a mist or cloud before the eyes, which more or less surrounds and shrouds the object, rendering it hazy and indistinct. In some cases the impairment becomes so that only the largest print can be deciphered; but the sight may be completely lost."

² See H. V. Würdemann, "Blindness from Inhalation and Ingestion of Methyl Alcohol," *Medicine*.

³ For fuller account of case, see *Ophthalmic Record*, December 1899.

⁴ F. van Fleet, "Alcoholic Amaurosis," *Quarterly Journal of Inebriety*, vol. xxiv. p. 459; C. Stellwag, *On the Eye*, p. 219, speaks of it as more common.

in the mixture, substituted by unscrupulous manufacturers on account of its cheapness. No case of amaurosis has been noticed by the writer as a result of drinking ordinary alcoholic beverages,¹ but only the stronger forms, either pure or ethyl alcohol, or some liquid which contains methyl alcohol.

Nystagmus has been observed in a few instances of alcoholism, but some doubt if it was caused by alcohol;² Berkley, however, says it is not uncommon, owing to the defective enervation of antagonistic eye-muscles.³ In a reported case of tea intoxication⁴ nystagmus was present in both eyes. In indirect, as well as direct ways the effect of alcohol on the sight of chronic drinkers is seen. Dr. Gould, in a lecture in Cleveland in 1903, said, "The enormous waste for alcoholic drinks during the past year can be traced in at least one-tenth of the actual loss to the evil effects of eye-strain on the nervous system and digestive organs. The sleeplessness and irritation with disturbed digestion, described by the term nervousness, headache, biliousness, is traceable to eye strains." While the effect on the eyes might be considered one of the lesser evil results of alcohol, any disorder caused upon so important and useful an organ as the eye must be recognized as of great moment.

Some interest has been taken in the effect of small doses of alcohol upon the sight, on persons who do not ordinarily indulge in alcohol, as well as on alcoholics. In some experiments conducted by Ridge,⁵ ten subjects were used. They were first tested by noting the distance at which a row of letters could be read with one eye; then two drachms of alcohol were given in most cases, and experiments made on

¹ N. Kerr, *Inebriety*, p. 98, says, "Alcohol, although not so common as tobacco, amaurosis is to be met with."

² T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 326.

³ H. J. Berkley, *Mental Diseases*, p. 251.

⁴ Dr. Gorden, *Indian Lancet*, October 23, 1901.

⁵ For full account see *Medical Temperance Journal*, April 1882.

the same eye of each individual, with the letters rearranged. On an average, every one had to approach nearer in order to distinguish the same letters, the general average without alcohol being 9.375 feet, and with alcohol 8.538—*i.e.*, the distance had to be shortened 9 per cent. In the very thorough experiments made by Kraepelin, where the normal vision would enable him to read letters one half-inch long at a distance of thirty feet, one half-hour after an ounce of spirits had been given, the distance at which the letters could be read was eighteen to twenty feet—*i.e.*, the distance had been shortened 35 per cent. In these experiments more alcohol had been given than in the experiments by Ridge. In Kraepelin's experiments it was seen that forms and shapes were blurred and indistinct except when seen very near. Colours distinguishable before alcohol was given were found to be obscured or lost altogether afterwards.¹ Red lines had faded away and were totally obliterated, showing effect upon the central part of the eye. In 1895 Reis made some interesting experiments on eye-measurements under the influence of alcohol. His apparatus consisted of a strip of wood one metre in length, the divisions of which were marked on the opposite side from the observer. A sliding marker was moved until the subject judged the pointer had reached the centre of the bar. Equal illumination of both halves and a good light were provided. Ten readings were taken in every trial, the pointer starting alternately from the left and right sides. The mean variable error was computed for every trial. In the normal trials $Mv. = 0.19$ cm. Fifteen minutes after 80 cc. of 95 per cent. alcohol, properly diluted and sweetened, were taken, it was found that $Mv. = 0.44$ cm.; and one half-hour later $Mv. = 0.40$ cm. Twenty minutes later a second dose of the same amount was taken. Directly after the

¹ T. D. Crothers, "Demonstrated Pathological Changes from Alcohol," *Journal of the American Medical Association*, December 1903.

second dose $Mv.=0.46$ cm., and later the result was 0.90 cm. The trials were discontinued as soon as symptoms of mild intoxication appeared. Further experiments confirmed these results. In some experiments with wine, the error was not increased so much as with the pure alcohol. The experiments showed between normal and alcoholic influence the following differences respectively:— $Mv.=0.10$ cm. to 0.42 cm., $Mv.=0.17$ cm. to 0.64 cm., and $Mv.=0.20$ cm. to 0.69 cm.

Abel¹ speaks of the results of alcoholic indulgence which he observed while attending a sportsman's tournament, where experts were competing in a live-bird match. "I . . . was struck with the quick and accurate shooting of a man who, on inquiry, was found to be a shot of national reputation. After this man had not missed a bird in some twenty odd shots, I observed that he laid down his gun, and went to the building containing the bar-room; I followed and observed him in the act of tossing off a glass of whisky. Once more, an hour later, he made a trip to the restaurant. The effect of the whisky was soon shown by numerous misses, and at the close of the day's shooting this man was fourth on the list, the first prize having been won by a stolid-looking man who made no trips after whisky."

The effects of these disorders are seen in all forms of chronic alcoholism, and in alcoholic insanity we find many more perversions of sight than in other forms of insanity. Hallucinations and illusions of sight are very frequent, being usually fleeting and terrifying. Objects may become confused and colours altered. *Muscæ volitantes* with the clouds and mists accompanying, figures, lines, and flying things, strange floating forms, at first when the eyes are closed, and afterwards even when the eyes are open, are the bases

¹ J. J. Abel, "A Critical Review of the Pharmacological Action of Ethyl Alcohol, with a Statement of the Relative Toxicity of the Constituents of Alcoholic Beverages," *Physiological Aspects of the Liquor Problem*, Billings, vol. ii. p. 139.

of illusions, and give rise to delusions.¹ The chapter on insanity will give the reader a better description of the nature of these hallucinations and illusions.

In dealing with the disorders of the sense of sight we have so far been concerned with the end organ only, but undoubtedly the central disturbances are equally great, although it may be more difficult to localize them from a physical standpoint. We must recognize that no perception can take place, that we cannot see anything without an intellectual element entering into the process. "All perception is interpretation; and from partial or mistaken interpretation all degrees and kinds of hallucinations and illusions result."² Any injury to the brain which would affect any portion of the optical centres would certainly affect the perception of things as far as sight is concerned fully as much as injury to the eye. If the ideas for which the optical images stand have a still different centre, and the optical impulses must be carried from this centre to the centres for the ideas in general, then any interference with the association fibres connecting these two centres must be disastrous to the visual perception of things regardless of the condition of the eye. Thus we have what has been called psychic blindness by some writers, in distinction from sensorial blindness,³ the former being some difficulty with the association fibres connecting the optic and ideational centres, so that a sensation cannot be correctly interpreted; the latter, some impairment of the end organ preventing a correct or perfect sensation reaching the optic centres.

It is easy to lay too much emphasis upon this distinction, for the two are so closely connected,

¹ F. E. Anstie, "Alcoholism," *Reynolds' System of Medicine*, vol. ii. p. 152, says—"Flashes of light are a more serious phenomenon, and their occurrence at night, just before the patient drops into his first uneasy half-slumber, is frequently the immediate precursor of the more definite visual hallucinations."

² G. T. Ladd, *Psychology, Descriptive and Explanatory*, p. 370.

³ W. James, *Psychology*, vol. i. pp. 41f.

and sight is not possible without the ideational connection. There are not two kinds of vision corresponding to this division of blindness, but only one, and any attempt to think of vision without the intellectual element is liable to give us a false psychology of sight; and further, in psychic blindness we cannot be sure that the end organs do give us a perfect sensation. In regard to some other defects, we are liable to lay undue emphasis upon the condition of the eyes, forgetting the part which the centres have to play. It is quite as certain that some forms of colour-blindness have central origin, as that they arise from an abnormal condition of the retina; and, on the other hand, some flashes of light which the patient claims to have seen in his hallucinations may not be hallucinations, but some internal stimulation of the optic nerve due to the pathological condition of the nerve or the retina. So much of a unit is the whole nervous mechanism and the organ for stimulating it, that it is difficult to say at any time the trouble is here and nowhere else.

Knowing as we do the condition of the brain, we can certainly say that the association tracts are not in their normal condition, and also that both the optic centre and the ideational centre are abnormal. With these physical bases in the brain in a pathological condition, we can posit another reason for abnormal sight. We fall back again on our old example of fatigue. We know that when the retina is fatigued there are important modifications of the sensations of light and colour. The brain cells, in alcoholism, were found to be similar to the condition of the fatigued cell, and the retina would probably respond to alcohol as the brain cells do. If this is so, we can point out a direct connection between the effect of alcohol and disorders of sight in the alcoholized condition of the cells of the retina. The movement of the eyes with tired and lame muscles increases the size of the perceived object,¹ and from

¹ G. T. Ladd, *Psychology, Descriptive and Explanatory*, p. 366.

what we know of the effect of alcohol upon the capacity of any of the muscles for work, we can say that the eye-muscles in common with the others must be in a tired condition; and as paralyzed eye-muscles interfere with localization, we must expect some result on the localizing power, from our knowledge of the effect of alcoholic indulgence upon these muscles. In the inability of the eyes to react to accommodation, we have a further reason for perversion of sight. The writer well remembers an experience of lack of accommodation; looking out of the window at a distant object, suddenly he saw an immense bird some distance away of such large proportions that he was startled, but was reassured a moment later to find that it was a fly which had passed in the line of vision not far from his eyes. Judging from this, the lack of accommodation may be a potent influence in determining the nature of the alcoholic's delusions, or in starting his hallucinations and illusions. The disturbance of the circulation, both central and peripheral, probably has an effect upon the functions, so as to give abnormal impressions.

We must go still farther in our search for a cause for these frequent disorders of sight in the alcoholic. So unified are the mental processes, so dependent is one upon all of the others, that no portion of the mind can be affected without its having a corresponding effect upon the others. Thus, as memory, imagination, judgment, feeling, and will are all necessary to correct perception, so any derangement of these parts of the mind affects visual perception. It is hardly necessary to point out the dependence of perception upon memory. We see things, we know them to be certain things, because we remember the idea which a certain sensation conveyed to us before. Further, we are able to see certain distances on account of our memory of former experiences. The element of suggestion is dependent on past memories, and also has in it the element of imagination. We see what we imagine regarding the relations of space: here the

bases of hallucinations and illusions come in, and the bases of normal perception as well.

To the work of the judgment we have already referred in the connection of the optic with the ideational centre. Every perception is a form of judgment regarding the sensation received. The effect of feeling is indirectly noticed principally in its relation to attention. Our feelings concerning an object in a measure determine our perception of it, or the part of the object which we see. Directly the feelings tend to quicken the perception, sometimes to such an extent as to make it erroneous. By will we exclude the extraneous objects so that we can fix our attention upon the thing which we wish. By the aid of the will we also mix colours, fuse images, make ourselves see things as we know they ought to be, and we find frequently that voluntary attention is necessary for correct accommodation.¹ With visual perception depending upon these other faculties of mind, is it any wonder that the alcoholic cannot see well? We know that he is not normal in any one of these particulars, so we must come to the inevitable conclusion that were his eyes perfect he would still be unable to see correctly.

Hearing.—The sense of hearing is interfered with by alcohol as are all the senses, but not so seriously as the sight. Most authorities on alcohol agree that the hearing becomes less acute, and that there are minor troubles, but no otologists claim any specific disease which is caused by alcoholism. Some mention the effects of alcohol on sight and hearing as if they were equally serious,² but this is not the case; for alcohol is responsible for considerable partial or total blindness, but no deafness at all is caused directly by alcohol. There are, however, some disorders of hearing; but they appear to be largely of central

¹ For a fuller discussion of these relations see G. T. Ladd, *Psychology, Descriptive and Explanatory*, pp. 363ff.

² E. S. Talbot, *Degeneracy: Its Causes, Signs, and Results*, p. 108, says, "It interferes with the functions of the eye and ear nerves."

origin—at least the end organ is not injured as in the case of the eye. The auditory nerve may be injured, but probably the centres of hearing are more seriously affected.¹ Special and extraordinary sounds, such as a buzzing or a rushing wind in the ears,² singing, humming, booming as of distant guns, the chime of half-heard bells,³ whistling monotonous, and inarticulate voices are heard, and if continued may become the bases of hallucinations and illusions, and later of delusions. These sounds are frequently accompanied by a dull, diffused headache. It seems that hallucinations and illusions of hearing develop in proportion to the diminution of auditory acuteness, and, as will be seen in the chapter on Insanity, these illusions and auditory disturbances tend to engender delusions of persecutions, enemies, ghosts, and wild beasts. These hallucinations and illusions are not so frequent in acute cases, but when there is a tendency to chronicity, they are relatively more often noticed.

There is, however, a more direct effect on the hearing, as can be seen by the two following quotations:—
 “In a certain number of cases (inflammation of the middle ear) . . . frequent taking of the stronger alcoholic drinks (undiluted) contributes very apparently towards keeping the pharyngeal mucous membrane in an irritated condition. If the patient is allowed to continue the habit, the physician will find it an uphill task to cure the aural disease.”⁴ “Those which act most prominently in the latter capacity (as exciting causes to chronic catarrh of the middle ear) are . . . dietic excesses, and particularly the immoderate use of alcohol and tobacco.”⁵ It can thus be

¹ N. Kerr, *Inebriety*, p. 98, says:—“The sense of hearing is apt to be seriously impaired. . . . The impairment of the various senses usually arises, not so much from the organs of sensation, as from the paralysis of their nerve apparatus.”

² F. E. Anstie, “Alcoholism,” *Reynolds’ System of Medicine*, vol. ii. p. 152.

³ G. R. Wilson, *Drunkennes*, p. 42.

⁴ A. H. Buck, *A Manual of Diseases of the Ear*, p. 180.

⁵ C. H. Burnett, *System of Diseases of the Ear, Nose, and Throat*, vol. i. p. 334.

seen that alcoholic indulgence may act as a contributing cause to certain inflammatory conditions of the middle ear, but apart from these the effect seems to be almost wholly central. The central disturbance of the vascular system is probably a cause of certain of the noises heard in the ears.¹ The hyperæmia, the immediate effect of alcohol in the system, causes at times tinnitus and sometimes vertigo; and the anemia, the result of the pathological changes in the blood-vessels, produces giddiness or subjective noises, with or without impairment of hearing. With the vascular system in the abnormal condition which we know it to be, with the constant anemia in some parts, and the occasional hyperæmia, the various noises seem to be accounted for as far as their initiation is concerned.

Meningitis frequently brings on unilateral or bilateral deafness, due either to the inflammatory changes in the corresponding nerves in the cranium, or to an extension of the inflammatory process to the labyrinth. The meningitis found in the alcoholic may cause the lack of acuity of hearing or the periodic deafness seen in some patients. With the disturbance of the central cells and association tracts, which, in regard to deafness, is the most serious trouble, it is not necessary for us to deal, for the description of central influences which has been given in dealing with sight is equally applicable here. If the centre is diseased, we cannot hope for the correct interpretation of the sensations, no matter how perfect the end organ may be.

In experiments made with small doses of alcohol

¹ A. Gustafson, *The Foundation of Death*, p. 133, says:—"Noises and ringing and buzzing sounds are heard in the head, now suddenly and for brief periods, again for longer or even very long periods of time. The cause of these sounds is simple enough. The arterial tension being reduced, the blood flowing through the internal carotid arteries into the skull, through the bony channel called the carotid canal, presses on the walls of the relaxed vessel, dilated under the pressure of the blood, and conveys vibration, from the pressure of the blood, to the walls of the bony canal. The vibration is communicated direct to the immediately contiguous auditory apparatus, and thus every movement of the blood becomes a murmur of sound, varied in intensity and quality by the varying tension of the artery."

we see the same marked effect which was apparent with sight. Kraepelin's experiments showed that where normally the sound of a watch ticking could be heard at thirty or forty inches from the ear, in a half-hour after alcohol was taken the watch must be moved to within ten to fifteen inches. Certain sounds could not be distinguished, and certain tones were confused or lost. This was especially true of musical tones. The intoxicated man usually speaks several keys higher than natural, because he is deaf and cannot hear his own voice except by speaking in a higher key.¹

Smell and Taste.—Perversions of smell and taste are not so common or so oppressive as those of the other senses; yet they do occur, and are more frequent in alcoholic than in other forms of insanity.² They are usually found in the later stages of alcoholism, and are considered by some to be very serious symptoms. Winslow says:³—"In all cases of excessive indulgence in alcohol that I have seen, in which the senses of taste and smell are deranged, either in a small degree or by total deprivation of the same, it is a clear indication that the brain itself is affected."

There are frequently dietic delusions on account of these disorders, and the alcoholic may become very fussy concerning his food, or refuse to touch it on account of a strange taste and smell, which he may interpret as poison. He may experiment with different kinds of food to minister to a varying appetite, as he craves one article of food at one time and then another.⁴ Dr. Hyslop⁵ tells us:—"Perversions of taste may arise in many ways, and are commonly associated with alcoholism. The perversion may take the form of a morbid exaggeration of all gustatory

¹ T. D. Crothers, "Demonstrated Pathological Changes from Alcohol," *Journal of American Medical Association*, December 1902.

² H. J. Berkley, *Mental Diseases*, p. 250.

³ L. F. Winslow, *Mad Humanity*, p. 426.

⁴ *Quarterly Journal of Inebriety*, vol. xxiv. p. 217.

⁵ T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Albutt, vol. ix. p. 327.

sensations, but much more frequently the sense of taste is diminished or absent. Parageusia is seen in nearly every form of insanity; and in alcoholism it usually takes the form of complaints that poison or filth is put in the food. Perversions of smell, especially when there is an olfactory stimulation proceeding from a disordered stomach, may take the form of offensive and foul odours, to which false objective significance is given."

Among the total disorders the abnormal taste and smell form a small part of the trouble. As with the other perversions of sense, the central disturbances are an important part of the disorder, although the local effect may also be important. Tea-tasters and expert smellers of essences and perfumes find that alcohol incapacitates them for their specific work, while it may not interfere with their other duties.¹ It is probable that the local action of the alcohol on the throat and mouth is as much responsible for this as the cerebral effects.

In 1851, Fröhlich made experiments on smell giving 200 cc. of a forty per cent. solution, which produced narcotizing effects in ten minutes. When tested ten minutes after alcohol was taken, the subject could better detect pure odours like musk than when normal, but he was not nearly so sensitive to substances which irritated as well as produced an odour, as ammonia. An hour after alcohol was taken the subject found it difficult to differentiate substances with pure odours closely allied, and it required longer to form a judgment regarding a given odour of pure quality; vapours of ammonia, strong enough to cause frequent sneezing, were hardly noticeable.

In the experiments of Kraepelin and others it was found that the sensations of taste were deranged. The quantity of flavouring substance used in mixtures containing bitters, salts, and acids, detected by

¹ J. J. Abel, "A Critical Review of the Pharmacological Action of Ethyl Alcohol," etc., *Physiological Aspects of the Liquor Problem*, Billings, vol. ii. p. 137.

normals, had to be increased from one-third to one-half after an ounce of alcohol had been taken. The odour of carbolic acid, which was readily discerned normally, was unrecognized at a short distance, and only faintly perceived when brought up closely after alcohol had been taken. The effects on both taste and smell lasted some hours.

Touch.—The skin seems to be affected by alcoholism next seriously to the sight. Common cutaneous sensibility and tactile sensibility are both disordered, sometimes to such an extent as to be, like sight, the bases of hallucinations and illusions, and later of delusions. The exaggeration of sensibility seems to be confined to the skin, for none of the other senses show this phenomenon to any appreciable extent. This hyperæsthesia of the skin, or of the deep parts, is common at the beginning of chronic alcoholism, and at a more advanced stage anæsthesia is noticed.¹ Sometimes in this hyperæsthesia, mere contact will cause a sensation as of burning, or of a sharp cutting edge: and one case is reported where the patient was troubled with what Fischer called polyæsthesia, in which one point is recognized as two or three points.² In some cases the hyperæsthesia is general, in others it is distributed indiscriminately in patches over the surface of the body.³ These patches may also present the phenomena of hyperalgesia. The exaggeration of the sensibility of the skin probably corresponds to the beginning of the vascular disorders, when the presence of the alcoholic poison in the blood and insufficient nourishment irritate the central nerve cells and cause them to overact.⁴

Beside this effect upon the central nerve cells, the

¹ Dr. Thomeuf, "Alcoholism in Women," *Wood's Medical and Surgical Monographs*, vol. vii., No. 2. p. 349.

² W. B. Lewis, *Text-book of Mental Diseases*, p. 357.

³ T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 327.

⁴ H. J. Berkley, "Studies on Lesions produced by the Action of Alcohol on the Cortical Nerve Cells," *Brain*, vol. xviii. p. 494. See also H. Tuke, *Dictionary of Psychological Medicine*.

peripheral nerves and their endings may also become particularly sensitive to impressions.¹ When, however, this tingling, burning, and stinging are attributed to the power of electricity, and witchcraft,² we must consider the lesions to be more especially of a central character. As nutrition is further withheld from the nerve cells, altered metabolism results, and we find anæsthesia and analgesia.³ This is at first temporary, but becomes more permanent, rarely becoming complete. It is shown mostly in delayed and imperfect perceptions. Sometimes this is observed in the form of a unilateral hemi-anæsthesia, or it may be local or general. There may be numbness or tingling accompanying this anæsthesia, which is found almost entirely in the extremities, especially the legs.⁴ In addition to the exaggeration and diminution of sensibility, there is frequently noticed perversions of senses, such as formications, sensations of cold, hot flushings, feelings of "needles and pins," and tingling. Not infrequently very severe pains and cramps are felt, especially in the extremities, due to neuritis, according to most authorities.⁵ Whatever the cause, they are extremely severe, and difficult to eliminate. Peripheral neuritis is one of the common disorders of alcoholism, and much of the trouble with the different senses is due to it. It is found more commonly in

¹ C. Richet, "Alcohols," *Dictionnaire de Physiologie*, vol. i. p. 238, says, "Les nerfs sont affectés en même temps que la partie des centres nerveux, d'où ils émanent."

² T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, vol. ix. p. 327.

³ T. B. Hyslop, *ibid.*, p. 327, says, "Conditions of diminished sensibility can be partially explained from a physical point of view; but we are quite in the dark as to the neural processes underlying normal perception; and there is as yet nothing to demonstrate the physiological or pathological reasons why the perceptive processes may be normal, and yet the interpretation of them so wide of the mark."

⁴ E. Lancereaux, *Traité de Médecine et de Thérapeutique*, Article "Alcoholisme," p. 221, says, "Les troubles objectifs, de beaucoup les plus importants, consistent en une analgésie symétrique, que commence par les extrémités inférieures, etc."

⁵ H. D. Rolleston, "Alcoholism," *A System of Medicine*, Allbutt, vol. iii. p. 855, says concerning the pains, that they "appear to be neuralgic and gouty, rather than the result of definite neuritis."

female alcoholics,¹ some authorities giving the ratio of three to one. The sensations of temperature are also abnormal. The hallucinations and illusions arising in connection with disordered cutaneous sensations are almost characteristic of alcoholics: waves of goose-flesh suggest snakes, and itching suggests ants, etc. The central disturbances are as prominent here as in connection with the other senses.

In 1851, Lichterfels made some experiments, giving forty grammes of pure alcohol in 160 cc. of water. Ten minutes later he found that the dorsal surface of the forearm could not perceive compass points until they were 55 mm. apart, which could be distinguished only 34 mm. apart when normal. One hour after taking alcohol the points had to be separated 60 mm.

In 1882, Ridge made some experiments, not using the ordinary æsthesiometer, but a piece of apparatus where the middle point between two others was to be determined by the fore-finger passed through a hole so that the points were invisible. The subject himself moved the central point. A dial was constructed on the opposite side recording the number of degrees of error. The subjects when normal averaged, with five trials each, 23 degrees of error. After two drachms of alcohol were given, the same subjects with the same number of trials averaged 38 degrees of error.

In 1884, E. Kramer made experiments in which he found that on the thighs the sensitiveness of the skin to compass points fell, after alcohol was given, from 4.2 to 5.8 cm.; and on the anterior portions of the leg below the knee, from 3.2 to 6 cm. Ten minutes after alcohol was given the lowered sensibility was noticed. In these experiments we must make some allowance for the flushing of the skin, as a result of the alcohol, for hyperæmia and anemia of the skin lower its ability to discriminate points.²

¹ J. Stewart, *American System of Practical Medicine*, Loomis-Thompson, vol. iii. p. 735.

² J. J. Abel, "A Critical Review of the Pharmacological Action of Ethyl Alcohol," etc., *Physiological Aspects of the Liquor Problem*, Billings, vol. ii. p. 136.

In experiments by Kraepelin and others the "temperature sense" was found to be disordered by alcohol. The capacity to distinguish bulbs of hot and cold water placed on the skin was lower, for normally they could be distinguished when only an inch apart, but after taking alcohol they had to be separated two or more inches. Rough and smooth surfaces were also confused. Hyperæsthesia was found to exist in some cases for the first half-hour, then anæsthesia lasted one or two hours. The skin sensations were deranged a much longer time than sight or hearing.

Muscular Sense.—The so-called muscular sense, by which weights are distinguished, comprising a number of different sensations from skin, tendons, muscles, etc., is impaired as are the other varieties of sensations. This may be so severe that the patient is unable to tell his exact attitude, the position of his limbs, or the direction and extent of his movements.¹ A centre, called Kinæsthetic, is posited by some, and this would naturally be involved in the disorders of this sense. The nature of these sensations is so complex that it forbids any exhaustive treatment of them here.

In experiments by Lewis² with Galton's apparatus for testing the discrimination of weights, it was found that there was a distinct impairment of this muscular sense in the alcoholic—in some cases considerable difference in weights could not be distinguished.

In Ridge's experiments, in 1882, both small and large doses showed an effect upon the discrimination between weights. The average showed that the sensibility was diminished about one-third by alcoholic indulgence in amounts differing from one-half to four drachms.

In 1893-94 Jacobj made some experiments in muscular sense, and found that small differences in weights were estimated more accurately after a

¹ G. R. Wilson, *Drunkennes*, p. 42.

² W. B. Lewis, *Text-book of Mental Diseases*, p. 301.

small quantity of alcohol than in a normal condition. This he thought was caused by the paralyzing action of alcohol on one of the cerebral processes involved in the final judgment. He affirmed that sensations arising from the tension of tendons have, as such, no influence on the formation of a judgment of the differences between two weights. He assumed that judgment is formed by mental comparison of the amount of enervation expended in overcoming the resistance offered, with the time that elapses between the moment of the outgoing muscular impulse and the actual occurrence of the resulting movement. When the factor of time reaches a minimum the ability to distinguish weights ceases. Alcohol prolongs time, and hence makes discrimination more accurate. Larger quantities depress mental functions so that discrimination ceases, and one is not able to distinguish differences between weights.

In this chapter on the senses we have found the sight to be most seriously affected. This is exhibited in different cases by atrophy of the optic nerve and its terminations, changes in the pupils, eye catarrh, and other disorders. Amblyopia is the chief disease, but amaurosis and nystagmus are less frequently present. The results of numerous experiments have proved the loss of function by the use of alcohol. The central disturbances are important in the disorders of all the senses; in hearing especially, the central troubles are largely the causes of any abnormality. Perversions of smell and taste are dangerous symptoms, and comparatively common in alcoholic cases. Touch and the muscular sense are also found to be affected. Experiments with all the senses show the frequently exaggerated sensibility with small doses of alcohol when first taken, but a deadening and lack of sensitiveness as the indulgence progresses.

CHAPTER VIII.

MORALS.

Moral equipment—Questions discussed—The moral life of the alcoholic—Relation to physical conditions—Conduct and the weather—Result of the deterioration of the different mental faculties—Memory—Judgment—Emotions—“Ought” feeling—Sexual feelings—Will—Senses—Lying—Why the morals are so soon affected—The alcoholic as a criminal—Statistics and computations—Responsibility—Is the alcoholic responsible when drunk?—Conditions of responsibility—How far is the alcoholic responsible when approximately sober?—Is he responsible for his present condition?—Heredity—Nutrition of the fœtus—Imbecility and alcoholic parents—Hereditary alcoholism—Facts certain whatever our theories—Statistics—Atavism—Dr. Sollier on heredity and alcoholism—Degenerates among the offspring of alcoholics—Faulty citations—Predisposition checked—Mother’s influence more powerful than father’s—The alcoholic mother—Infantile acquired alcoholism—Lactation—Responsibility further discussed—Effect of other diseases—Effect of struggle for existence—Sorrow—Sociability—A drunkard responsible to a certain extent—W. James on the drunkard.

IN glancing at the title of this chapter, it may seem out of place in a work on psychology. To discuss it fully it undoubtedly would be, but we wish only to discuss the psychological aspect of the subject in our treatment here. Psychology is concerned with what is, and not with what ought to be; so we wish to give not the theory, but the facts of ethics, only in so far as they affect our subject. Every person who is developed normally is supposed to be equipped morally—at least that is our supposition in this chapter. He is thereby capable of moral conduct; and if capable, is more or less responsible for his actions.

We recognize the development of the moral equipment, and must also admit the possibility of degeneration. The latter occurs to such an extent at times that we do not hold persons responsible for their actions. Thus we class together the infant, whose faculties are not developed sufficiently to allow of moral conduct, and the person suffering from senile dementia, whose faculties have degenerated and declined so that he is a child again; neither of these persons is held responsible for conduct. We also consider incapable of moral conduct the person whose mind is so affected as to be considered insane: he is equally irresponsible.

One of the chief questions which will come before us in this chapter is this: Is the alcoholic responsible for his conduct? This will be discussed under two divisions: first, Is the alcoholic responsible for his deeds either when drunk or sober? and second, Is he responsible for getting intoxicated? The answers to these questions will help us to classify alcoholism, for it has in the past been classed very largely according to the profession or views of the person dealing with it. The clergyman called it a sin, the physician classed it among the diseases, the lawyer said it was a crime, and the social reformer named it a vice. It cannot very well be all of these at once, but it may be a combination of two or even more. Besides the question of responsibility, we wish to treat the general moral condition of the alcoholic, as far as his excesses have caused a change from the normal moral states, endeavouring to assign causes as far as we can. Not even here can we escape the influence of the physical upon the mental; but we find that the general health, as well as the condition of the brain, has much to do with the moral conduct of man. We shall also endeavour to show the influence of the degenerate condition of the other mental faculties upon the moral, as well as the reciprocal action of the defective morals upon them.

Let us turn to the facts of the moral life, as they

are exhibited in those who have indulged in an excessive use of alcohol for a prolonged time. It would seem that when dealing with the morals we were entirely out of the realm of the physical, but here even in this higher life of man, the influence of the physical not only cannot be ignored, as it is by many writers on moral conduct, but it must take an important part. As has been so well said, "It is not enough to say that passion is strengthened and will weakened by indulgence, as a moral effect: that is so no doubt, but beneath that effect there lies the deeper fact of a physical deterioration of nerve element; for the alcohol and opium enter the blood, are carried by it to the inmost minute recesses of the brain, and act there injuriously upon the elements of the exquisitely delicate structures. So its finest, latest organized, least stable parts which subserve moral feeling and supreme will are marred."¹

We might be criticized for saying that most misconduct is the result of pathological states; probably this is making the statement too strong. If that were so, we would not have so much need of the moralist as of the physician to bring about the ideal life. Let us invert and modify the statement in this way: all pathological bodily states have a tendency to lead—yes, force—the person experiencing them, away from the moral life.² Some of the best persons we know are intense sufferers from somatic diseases; but they are good notwithstanding their ill-health, rather than because of it. It requires a sound mind for the best moral life, it requires a sound body for the best mental life. It is but stating a fact with which we are all

¹ H. Maudsley, *Body and Will*, pp. 273f.

² P. C. Remondino, "A Study of the Causes and Nature of Dipso-mania," *Quarterly Journal of Inebriety*, vol. xxiii. p. 137, says—"Morality and its offspring—chastity, sobriety, industry, wealth, comfort, and respectability—are not, after all, as they are too often represented, such heaven-born attributes, as any accidental shifting of our bodily health or physical condition may quickly make or unmake them. An accident or an illness may convert the most philanthropic or benign individual into a cruel or rapacious pirate; or a like accident may convert a cruel and vicious debauchee into an evangelist."

familiar to say that a poor breakfast, a sore finger, indigestion, and other irritating bodily conditions have an effect upon conduct. Not that they are the exciting causes of crime or immorality, but rather that they influence the person as far as mood is concerned, and a very insignificant stimulus is then sufficient to precipitate an immoral action.

Investigations recently made on the relation between conduct and the weather¹ show that inclement weather of any kind is concomitant with a marked increase in crime, as proved by the police records, and the conduct of children in the schools. The reserve energy is demanded when the weather is disagreeable, and produces a condition similar to that of fatigue. Emotional states are plainly influenced, and as far as they have effect upon the conduct, it is detrimental. In the case of the weather, it is the loss of the reserve energy producing a change in the emotions that to a large extent is the cause of the harmful influence on the conduct. It is noticeable in direct connection with our subject, that drunkenness is increased on very cold days, and days when the humidity is excessive. High winds have also a great tendency to augment the number of cases of drunkenness.² Drunkenness was increased one-third when the temperature was near zero, or when the winds were very high. We might expect this result at the time of very cold weather, on account of the stimulating effect which alcohol produces when first taken, and the paralyzing effect which it has in large quantities. Both results would help the alcoholic to forget the cold. Very many other examples will occur to every one from his own experience, of the effect of physical states and conditions upon the conduct; so, in dealing with the result of the physical condition upon conduct, we are entirely within our sphere.

¹ E. G. Dexter, "Conduct and the Weather," *Psychological Review*, Monograph Supplement; E. G. Dexter, "Ethics and the Weather," *International Journal of Ethics*, vol. xi. pp. 481f.

² N. Kerr, *Inebriety*, p. 171, speaks of the bad effect of dull, sultry days, fog and dampness, and winds, especially east winds.

The effects of the deterioration of the different faculties upon the conduct will now be considered. We found a serious deterioration of the memory, especially of recent events, and that an alcoholic was living largely in his remote past—*i.e.*, in his childhood. Amnesia, particularly of the feelings, is a great drawback to conduct; for, as with the alcoholic, both the bodily feelings caused by over-indulgence—*i.e.*, nausea and pain—and those feelings of remorse which accompany the uncomfortable bodily feelings being forgotten, there is lacking a great incentive to sobriety. This feeling of remorse, let us explain here, is not caused by the moral considerations involved—not that he has injured his family or society, not that he has done something that he knows is not right; but he is sorry because he has been sick and is inconvenienced thereby. This remorse invariably follows sickness brought on by over-indulgence.

These feelings, which would be some incentive to control, being forgotten, and only the ever-present desire for stimulation being present, the alcoholic gets no help as far as the memory of the feelings is concerned. The childhood memories being an important factor in his life, and these not being of a developed moral character, we cannot expect the alcoholic's moral nature to be strong through memory. Children are innocent, not because of their exalted characters, but because they are impotent. A person with a man's power and a child's character would be an exceedingly dangerous individual. Slightly modified, this is the alcoholic's condition.

The judgment is so affected as to leave the alcoholic in such a condition that he is largely unable to judge right and wrong; or, if he is able to judge the end, and has will enough to put it into execution, he is not able to judge well the means. About his work, as well as in his morals, he goes the longest way around to accomplish anything. He will not use what judgment he has about particular things. He,

in common with all others, admits that it is wrong to get drunk; but he does not intend to get drunk, he only wants one drink, or a second drink. He does not judge regarding this particular drink, or if he does, he judges incorrectly. He wants it to strengthen him, to steady him, or even to give him courage and strength enough to resolve to take no more.¹ His reasoning is not sound, and if you present the most logical arguments, he either draws a wrong conclusion, or else admits your conclusion in an uninterested, listless manner.² Only a rational being can be moral: one must be able to reason from cause to effect to reach an approximately moral life. The alcoholic does not do this. Perhaps he does not recognize the inevitable conclusion of the life he is leading; he may be led astray by false hopes of a better constitution, not drinking so much, drinking different beverages, or many other circumstances which separate him from his friend in like distress. These reasons may seem puerile,—they are, but not to him: he does not perceive the relations correctly.

He must use his judgment to determine the possibility of an action, for we can only be held responsible for conduct which it is possible to accomplish. He judges many things impossible of attainment, simply on account of his own inertia and lack of force.

¹ The writer had a rather amusing experience of this kind. A man came to the house one evening and asked for "the minister." His breath was foul with whisky, and his appearance was that of a man who had been drinking. He asked for a private interview, and the supposition naturally was that he desired a loan of sufficient money to purchase another drink. He began in the orthodox beggar fashion, confessing that he had been drinking, etc. He continued by saying that his poor old mother had begged him to stop drinking, so he finally consented to sign the pledge, and went and got another drink of whisky that he might have strength enough to carry out his resolution. A pledge was written out and signed.

² I. Ray, *Mental Hygiene*, pp. 91f, says—"And thus it is that advice, admonition, and reproach are all equally lost upon this class of persons, and the end is the same in nearly all: they lose all rational control over their conduct, abandon their employments, desert or abuse their families; and though they commit no act of violence, they, at least, destroy the peace and threaten the safety of those around them."

Further, in the earlier stages of judgment (with children or savages), feelings largely, if not wholly, determine the judgment. A judgment is scarcely more than a declaration of feelings.¹ The alcoholic, being child-like, is thus devoid to a great extent of true judgment, being led by his feelings to a further indulgence, regardless of the moral or utilitarian aspect. Being in this condition, we cannot expect him to possess those virtues which come as the result of a sound judgment.

In our study of the emotions we found that they follow the common law of degeneration, the higher developed, more complex, least stable ones going first. The higher feelings which tend to assist the moral nature are among the first victims. We also found that all the emotions remaining were of an egotistical character. Some egotistic emotions are necessary to the moral life, but the emotions which are left to the alcoholic, and the variety of these egotistic emotions, all go to show that as far as the feelings are concerned, he is in a low condition morally. He is totally selfish, lacking in all noble and manly emotions.²

These are but the secondary moral emotions: what shall we say concerning the primary moral emotion, the feeling of obligation? This is universal with the race, and all persons feel that they ought to do what they believe to be right. Is it true also of the alcoholic? One further statement regarding the feeling of obligation, which can best be given by using a quotation: "It should be noticed . . . that the early movements of the feeling of obligation are very frequently strongest in the direction of that which is sensuously painful or expulsive."³ We may say that, as far as he does retain the feeling of obligation, it is

¹ G. T. Ladd, *Philosophy of Conduct*, p. 130.

² H. Maudsley, *Pathology of Mind*, p. 486, says regarding the moral condition of the alcoholic: "His moral sense is blunted or destroyed, so that he loses all the feeling of moral responsibility, and becomes cunning, cowardly, untruthful, and untrustworthy."

³ G. T. Ladd, *Philosophy of Conduct*, p. 77.

in the degenerated, child-like manner. He ought to do that which helps him to escape pain or injury. Even a child does an act because he knows the failure to accomplish it will result in a flogging. A flogging, sickness, or other painful feelings teach the child what he should do. The pain is interpreted by the alcoholic as a lesson in what he should do, and he has not courage to resist it. He has, as the one pressing obligation,—the duty to himself—to rid himself of the painful sensations resulting from abstinence. This is nearer to him than anything else, and he tries to give reasons to substantiate it. He may admit that perhaps he ought not to drink, or he may endeavour to show why he should.

If the "ought" feeling is present in any form, it is weak; he does not drink so much because he ought to, but because he wants to. He drinks now without thinking of the right or wrong of it—he drinks now because he must, whatever may have been his ideas about it in the past. In one mood he admits everything that is said to him, admits all his obligations and duties; in another mood, he as quickly and decisively denies all that he has formerly admitted. These feelings of remorse cannot be counted on very much, they are of such an egotistic and selfish character. He is therefore in no condition to possess or practise any of the virtues of feeling.¹

We will remember that the emotions which remained were of an immoral character. There seems to be a difference of opinion regarding one feeling which is the cause of much immorality—we refer to

¹ We have the following from H. Maudsley, *Body and Will*, pp. 273f:—"His finest moral sensibilities are extinguished, and his least fine blunted. Steadily selfish to his own selfish wants and persistent to gratify them, he is insensible to the feelings and claims of his family, whose dearest interests he sacrifices without real compunction, and indifferent to the obligations and responsibilities of his social position. He will often profess to you very fine sentiments, and perhaps indulge in the pleasant debauchery of a visionary imagination inspired by an intensely egotistic feeling and stimulated by the drug, but uncontrolled by realities, the disciplinary and disagreeable hold of which the drug has deadened or destroyed."

the sexual feeling. Some authorities say that the sexual feeling is annihilated; others affirm that the feeling is still present, and is even exaggerated, but on account of the impotence of the alcoholic he is unable to gratify it.¹ We know that alcohol when first taken has the power of exciting different feelings, but in a person in a condition which we know our subject to be, we think it hardly possible for the sexual feeling to remain in much advanced cases. The divergence of opinion may be due to the fact that one is speaking of a chronic alcoholic in an advanced stage, while the other is referring to the single intoxications of one who has not been drinking long. Again, one authority may be speaking of men and another of women—alcohol may affect the two sexes in different ways sexually. The impotence is admitted by all.²

¹ Notice the following quotations:—"Alcoholism appears to diminish fertility of both sexes, and to lead to a stunted and ill-developed offspring."—H. D. Rolleston, "Alcoholism," *A System of Medicine*, Allbutt, vol. iii. p. 864. "La puissance génitals, du reste, est, comme la force musculaire, diminuée par les excès alcooliques."—E. Lancereaux, "Alcoolisme," *Traité de Médecine et de Thérapeutique*, p. 221. "The sexual desire is diminished, and indeed abolished in alcoholic patients."—Dr. Thomeuf, "Alcoholism in Women," *Wood's Medical and Surgical Monographs*, vol. vii. No. 2. p. 350. "Alcohol at first heightens the activity of the sexual instincts, while at the same time it decreases the power of sexual satisfaction."—H. J. Berkley, *Mental Diseases*, p. 253. "The chronic drunkard may experience this companionship of vices (sexuality), not of his own seeking, but as one of the inevitable fruits of his habit."—G. R. Wilson, *Drunkenness*, p. 33. "Alcohol is apt to provoke the animal passions and incite to lust, even when it has destroyed the power."—N. Kerr, *Inebriety*, p. 106. "Lower or animal impulses exert themselves, freed from control to which they are ordinarily subject."—J. M. Fothergill, "Effects of Alcoholic Excess on Character," *Popular Science Monthly*, vol. xiv. p. 382. "Les fonctions génitales sont affaibles, parfois même jusqu'à l'impuissance, et cela est fort heureau, car les alcooliques chroniques n'engendrent la plupart du temps que des êtres porteurs d'une tare physiologique: nervosisme, epilepsie, criminalité."—C. Richet, *Dictionnaire de Physiologie*, vol. i. p. 242.

² We have the following from L. G. Robinovitch, "Infantile Alcoholism," *Quarterly Journal of Inebriety*, vol. xxv. p. 231:—"Probably a direct toxic action is exercised on the reproductive elements. Testicular atrophy has been observed, and in women addicted to alcohol, menstruation ceases prematurely and the ovaries atrophy."

The will is an important factor in morals. We cannot have a moral act without will, and cannot have a moral character without continued will in one direction. We remember the condition of the will in the alcoholic, as was shown in the chapter on that subject. It flags, and after very slight exertion fails altogether. What kind of a moral character can we expect, even supposing that all the other faculties are intact, if the will is defective? If the feeling of obligation demands one course of action, which may be difficult to attain, and the will is weak, can we ever expect its consummation? No, the other faculties are useless without the aid of the will. Bain¹ has gone so far as to say that moral inability is simply a fault of the will, being a weakness of motives, and it can be remedied by the aid of new motives. But moral inability is a matter of degree, and while this may be true of some, and sufficiently strong motives could be devised to influence them, we think that there are others who would be beyond this. It might be said of the latter class that they go beyond the bounds of the moral; this we will have to consider later when we take up the question of responsibility. We might say in a general way that we are virtuous in proportion to our self-control, for the virtues of the will are most important, especially with the alcoholic.

We found in our discussion of the emotions the alcoholic to be a coward. He is a coward indeed, the lowest kind of a coward, and there is nothing he fears so much as physical pain. If he feared the disapprobation of conscience or friends, the ruin staring him in the face, the displeasure of God, or the destruction of his family, there might be some hope for him; but he fears only the pain and discomfort caused by the abstinence from his regular dram. There is no incentive for the good will here, no motive for reform. The habit of the alcoholic's willing is against him; he has not been in the habit of opposing his appetite,

¹ A. Bain, *Emotions and Will*, p. 475.

and to exert his will against a lifelong habit is difficult, shall we say impossible?

Connected closely with the defects of the will can be noticed an indecision of character in the alcoholic; he has an uncertainty and infirmity of purpose which are very characteristic. One minute or day he chooses a certain line of action, and the next he repudiates it. He knows not what he wants, and is never satisfied with his present circumstances. What is true of his resolutions for reform, is characteristic of his whole life: he has not stability enough to carry out any one idea; he is good and bad, innocent and criminal, filled with worthy plans and low ones all in the same breath. A threat and an expression of good will are equally possible, and one is puzzled in which to believe; it is safest to believe neither, for both are alike unreliable.

The senses have their influence also. It is impossible to judge the relations between actions correctly, if we do not perceive correctly. This has been referred to before when speaking of the alcoholic's lying. He lied, it was said, for two reasons at least: one because he did not perceive correctly, and the other because he did not remember correctly. These are but the minor reasons; alcoholic excess seems to destroy all shame as far as it is concerned with the departure from the truth. The learning is not difficult; "every one is a potential liar." It seems an easy way out of a difficult position at times, and this the alcoholic evidently thinks. He begins to dissemble and deceive, first denying his drinking at all, and later the quantity of which he has partaken. All sorts of deceptions are practised to hide the fault from family, friends, and society.

The lying habit is established and resorted to on all occasions, until he lies even to his own disadvantage, and does not recognize the difference between falsehood and error. Of all references made to the subject, the writer has yet to find one authority who does not speak of the alcoholic in unmistakable terms as a confirmed liar, and from his own testimony

it is even difficult to arrive at the facts of his case.¹ Of a goodly number of alcoholics examined by the writer, there is yet to be found one whose friends did not give the same testimony concerning him; and, further, not one of them when asked denied that he was a liar, or showed any shame concerning the admission. With truthfulness lacking, we cannot expect a virtuous life; for truth is the basis, the

¹ Notice what is said of the alcoholic's truthlessness by the authorities quoted here:—

“Drunkards are irresolute, facile liars.”—O. Everts, *What shall we do for the Drunkard?* (Pamphlet). “The alcoholic is a purposeless liar.”—H. D. Rolleston, “Alcoholism,” *A System of Medicine*, Allbutt, vol. iii. p. 855. “He [the alcoholic] is a shameless liar.”—J. M. Fothergill, “Effects of Alcoholic Excess on Character,” *Popular Science Monthly*, vol. xiv. p. 380. “He [the alcoholic] is not necessarily an intentional liar, as he may not see things as they actually exist.”—N. Kerr, “Alcoholism and Drug Habits,” *Twentieth Century Practice of Medicine*, vol. iii. p. 48. “The drink-craver is always a falsehood-teller—we can never believe a word he says; and many of us are of the opinion that the tendency to untruthfulness descends to the children of these people.”—B. W. Richardson, “Twenty-one Historic Landmarks,” *Ten Lectures on Alcohol*, p. 20. “This (lack of truthfulness) is often observed in the character of the inebriate. Truthfulness is a fundamental virtue, and when it is impaired the character is undermined, and strong drink makes a deadly assault upon it.”—C. F. Palmer, *Inebriety: Its Source, Prevention, and Cure*, pp. 106f. “For the most part he is untruthful and untrustworthy, and in the worst end there is not a meanness of pretence or of conduct he will not descend to, nor a lie he will not tell, nor a degradation he will not undergo, scarce a fraud he will not perpetrate, in order to gratify his absorbing craving.”—H. Maudsley, *Body and Will*, pp. 273f. “I have never known a drunkard who was not a liar, but usually he is a bad liar. There is a constitutional disability to perceive the truth and appreciate it, and a gradual development of the untruthful habit. At first he may simply resort to inexactness and exaggeration for self-protection, but afterwards he takes to deliberate falsification, and makes a rapid descent through evasion, concealment, and duplicity to gratuitous and cruel lying. At the same time his whole habit of mind tends towards dishonesty.”—G. R. Wilson, *Drunkenness*, p. 30. “One of the most distinctive features of habitual and periodic inebriety is an utter disregard of truth. Females lose the sense of truth even more completely than do males. Seen in the very act of laying down the just emptied glass, lady patients have coolly and solemnly denied to me that they have partaken of the contents. There is an alcoholic paralysis of the perceptive faculties whereby the inebriate is unable to perceive or understand truth. Alcohol may well be called the ‘mother of lies,’ as it is probably the origin of more untruths, even in formerly truthful persons, than any other fountain of falsehood.”—N. Kerr, *Inebriety*, pp. 20, 80f, 299f.

foundation-stone of morals. In view of the alcoholic's untruthfulness and his generally criminal record, it seems strange that according to computations, only 26 per cent. of the perjurers are alcoholics. The reason for this low percentage has been given that perjury requires motives, and motives are not plentiful with the intellectually degenerate alcoholic.

His lying has an effect which we noticed in dealing with the emotions; because he does not tell the truth himself, he is suspicious of others, and does not believe anything that is told him. The distrust is not confined to the verbal statements of his friends, but it soon spreads over all their actions. He does not believe in the fidelity and loyalty of his wife, he distrusts his attendant: his whole life becomes filled with distrust, which soon, through a diseased imagination, leads to hallucinations and illusions of persecutions and acts of violence caused thereby.

We may now ask and endeavour to answer the question, Why do morals deteriorate so quickly? Some say that they are the first to go.¹ The development of the highest moral life is the result of the highest development of all the mental faculties, intellect, feeling, and will. It is impossible for any of these to degenerate without causing also the degeneration of the moral life. It is no contradiction to say that the memory deteriorates first, and that the morals go first, for the morals would deteriorate as the memory does. The most complex, highly-developed, unstable parts of the mind are the first to suffer degeneration, and it is obvious that when the morals are depending upon the proper functioning of every part of the mind, the least trouble would cause a derangement of the moral conduct of the person thus suffering. With the decline of the moral nature,

¹ H. Maudsley, *Body and Will*, p. 273, says, "When the mind undergoes degeneration the moral feeling is the first to show it, as it is the last to be restored when the disorder passes away: the latest and highest gain of mental evolution, it is the first to witness by its impairment to mental dissolution: the first effect of mental degeneration, it is the last to witness to full mental regeneration."

there is one more link broken in the chain which might have drawn the alcoholic out of the danger of ruin and destruction: one more incentive, the chief one, to a reformed life is lost.

It is only fair to say that the alcoholic is not really wicked and vicious; he has not courage and force enough for that. We very seldom know of his committing great crimes, but it almost seems that he has the monopoly of the petty offences, for prison statistics show that a majority of the inmates are alcoholics. It is said that in Paris, in 1888, 72 per cent. of the convicted criminals of the year were found to be chronic alcoholics, while in Berne Canton the proportion was about 40 per cent.¹ Further, it has been estimated that about 70 per cent. of all perpetrated crimes are directly or indirectly attributable to alcoholism. Principally the offences were of the nature of disregard of the rights of others, the contempt of law and order, assault, disturbance of domestic peace, and robbery; for to all such crimes the habitual drunkard seems to be particularly prone. A moment of passion is frequently responsible for these.² Lombroso has computed that of one hundred crimes, alcoholism is the cause of fifty in France, and forty-one in Germany. Sachs states that in Germany "fully 50 per cent. of all crimes are committed under the influence of alcoholic excesses; in England and America the percentage is, no doubt, equally high."³ We think Dr. Davis has exaggerated the case when he says, "Careful and impartial investigations, both in this country and in Europe, have proved that at least 90 per cent. of criminals who prey upon the person and property of others—as thugs, highway-robbers, housebreakers, rioters, and murderers, are made such by the use of alcohol and other narcotic

¹ A. R. Cushny, *Pharmacology and Therapeutics*, p. 147.

² P. M. Lightfoot, "Alcoholism and Crime," *Quarterly Journal of Inebriety*, vol. xxv, pp. 159f.

³ Peterson and Haines, *A Text-book of Legal Medicine and Toxicology*.

drugs.”¹ The Rev. Mr. Horsley says that of the prisoners in Clerkenwell Prison, 75 per cent. come there through drink, and of 300 cases of attempted suicide, 172 were attributable to the same cause. In a paper by Dr. W. Wescott, “Alcoholic Poisoning in London, and Heart Disease as its Fatal Result,” the writer shows that alcohol is the most potent cause of crime, suicide, and sudden death in the great city.

“Inebriety in Scotland,” a paper presented to the Society for the Study of Inebriety, in April 1903, by A. Sherwell, speaks of the increase of crime in Scotland. All classes of crime have increased from an average of 344 per 10,000 of population for five years, 1883-87, to 393 in 1897-1901. “If we take the four principal classes of crime—viz., crimes against the person, crimes against property with violence, crimes against property without violence, and malicious injury to property—the figures are much less serious, but even these show a slight increase in twenty years. But it is when we return to the “miscellaneous offences,” of which drunkenness and disorder constitute more than two-thirds, that we see where the real increase has been, the figures in this class rising from 295 per 10,000 of the population in the five years 1883-87, to 345 in the five years 1897-1901, an increase of 17 per cent. . . . The closeness of the relation between intemperance and crime has become a truism, but it is nowhere more clearly demonstrated than in the criminal statistics of Scotland. Take the single fact that out of a total of 179,821 persons charged with criminal offences in 1900, no fewer than 114,207, or $63\frac{1}{2}$ per cent., were for offences directly connected with drinking. This lamentable figure, the commissioners are careful to tell us, is no exaggeration of the ‘charges resulting directly from over-indulgence in alcoholic liquor.’”

¹ N. S. Davis, “The Relations of Alcohol and Alcoholic Liquors to the Economic, Sanitary, and Moral Interests of the Home, Family, etc.,” *Quarterly Journal of Inebriety*, vol. xxiv. p. 257.

In the Report of the New York State Commission on Prisons for 1903, we find the following suggestive paragraph:—"During the last year there were 28,519 commitments to the jails, and 3,615 to the penitentiaries for intoxication. These figures do not include many thousand other convictions for the same offence punished by a fine, which was paid before commitment. It would appear that one half of the convictions in the criminal courts of the state are for this single offence." The report for the New York State Reformatory at Elmira, for 1903, says that of 1,700 inmates, of whom reports had recently been gathered, a total of 1,077 acknowledged drinking, of which 779 were moderate drinkers, and 298 drank to excess. The age limit of inmates being thirty years, we would hardly expect so many excessive drinkers in this institution.

Some of the greatest and most successful criminals do not drink; they cannot afford to in their business. Drinking would unfit them for their work and certainly mean an early capture by the police. The drunkard is not fitted mentally for great crimes, and so is not bad in that way. No doubt, though, that the prisons are filled with alcoholics, especially those in the first stages of alcoholism. Alcoholism frequently gives rise to criminal tendencies on account of the perverted moral judgment and general mental degeneration. The alcoholic's crime may take the form of immoral and indecent deeds. This lack of moral sense may often be found among criminals whose parents were both alcoholics, though they themselves have never used alcohol.¹ Lombroso recently tested the effects of alcohol on latent criminal tendencies. The subject of his experiments was a man who had surrendered himself to the

¹ In the 1902 Report of the New York State Reformatory at Elmira, statistics are given concerning the 11,293 inmates from 1876-1902. Of these, drunkenness in the ancestry was clearly traced in 4,047, or 35.84 per cent.; doubtful in 1,239, or 10.98 per cent.; and 6,007, or 53.18 per cent., had temperate parents.

police with the avowal that anarchists wished to make him their instrument for assassinating the King of Italy. The man seemed sane, but no corroboration of his story could be obtained. Unexpectedly, after drinking wine, he broke out into anarchistic threats. Acting upon this hint, Professor Lombroso administered alcohol to him in carefully-measured doses, and discovered that after he had drunk a certain amount, he developed violent criminal tendencies.

Sometimes a murder which he commits is unintentional on his part. He cannot judge how hard he is striking, and instead of a tap there is given a blow; it shows a lack of judgment regarding the force of the blow. But the chronic alcoholic is not found in serious frays; his anger is vented by less violent means. He scolds, complains, perhaps makes a show of fighting when he thinks there will be no response, and talks of his past fights, rather than endeavouring to engage in present or future ones. His immorality is largely of a negative, listless sort, unless forced to what he considers self-defence through the vividness of his hallucinations, illusions, or suspicions, when he will kill or do anything to protect himself.¹

We now pass to the subject which requires most of our attention in this chapter: that of the responsibility of the alcoholic. We wish first to ask the question: Is the alcoholic responsible for what he does? He acts mostly in an intoxicated condition or a semi-intoxicated condition, for alcohol remains in the system for forty-eight hours after it is taken. He is seldom completely sober, and if so is not normal. The question really is whether he is abnormal to such a degree as to be irresponsible. We do not refer to the dipsomaniac, whose very name shows him to be considered irresponsible; nor

¹ G. R. Wilson, *Drunkenness*, p. 33, says:—"Violence of a serious kind is rarely met with except during intoxication, or in some of the forms of alcoholic insanity; but impulsive promptings to violent acts are common with nearly all drunkards. Fits of passion are frequent, and trifling provocations evoke a wholly disproportionate expression of feeling."

do we refer to those in the early stages of drunkenness, for these would probably be considered by all as responsible; but we refer to the chronic drunkard. There is no doubt from what we have said, and the description given, that the chronic drunkard is in a diseased condition, for the brain and whole nervous system is so affected as not to function in a normal and proper manner. What has been said in this chapter shows that the alcoholic does not receive the moral impressions which he otherwise would if his mind were normal; neither is he able to judge the claims of family, friends, and society. The question still remains as to the extent of the irresponsibility.

Before we go further let us quote the conditions, as given by two different persons, under which one is responsible. First,¹ "Responsibility presupposes: (1) a justly binding authority; (2) knowledge in the agent of the just will of the authority; (3) power either to perform or abstain from this act. If any of these be absent, responsibility in the full sense no longer exists." Second,² "Responsibility presupposes: (1) one who has in possession his natural powers of mind; (2) one who is competent to choose his own course of conduct in relation to himself, society, and the law, to approve or disapprove, to follow or refuse to follow certain courses, the decision having been formed in the light of his own reason and free will." Now, most persons would agree that when an alcoholic is intoxicated he does not come under these conditions; that he is suffering from temporary insanity, and hence not responsible. This is in a large measure true, yet there is doubt about the total irresponsibility when intoxicated, providing he is responsible when sober.

The drunkard is like the hypnotized person who knows to a certain extent that he is playing a part, and while he has not command of his faculties in the

¹ M. Maher, *Psychology*, p. 403.

² H. P. Stearns, *The Drunkard and his Responsibility* (pamphlet).

same way as when sober, he is yet in much the same condition as far as his knowledge of right and wrong is concerned, and even in the performance of it. "The man who commits a murder in a state of drunken frenzy is responsible for his irresponsibility."¹ Yes, but is that all? All drunkards are equally irresponsible when intoxicated, and according to this statement all would be alike punishable. But when the person, afraid to commit a crime in his unintoxicated state, becomes intoxicated in order that he may do it, carrying out the plan which he has conceived in his sober moments, he seems to be responsible, not for his irresponsibility, but for his responsibility. This may be the exceptional case; but if it is possible to guide actions during intoxication into criminal, why not also into virtuous channels?

"Criminal action is to be regarded as but the expression of a long previous course of criminal thought, for which, in so far as he could otherwise have directed it, the individual may legitimately be held responsible—just as he is for actions committed in the state of intoxication, in which he has temporarily lost, by his own voluntary act, the power of self-control."² Our claim is that he is responsible for more than being intoxicated, this additional factor in his responsibility being measured by his responsibility when not intoxicated, for responsibility is a matter of degree.

The question then comes to us, How far is the alcoholic, if not intoxicated, responsible? If the description which has been given in the preceding pages of the alcoholic in an advanced stage is true, we cannot consider him responsible even if not under the influence of alcohol. With memory contracted so as not to remember late experiences and mature ideas, with will virtually gone, with his emotional nature confined to only the lower and animal emotions, his moral nature warped or destroyed, we cannot call him a responsible being; so when we make the statement

¹ W. B. Carpenter, *Mental Physiology*, p. 323.

² *Ibid.*, p. 245.

that his responsibility in the intoxicated state depends upon the amount of responsibility we posit for him in his sober moments, we do not put much of a burden upon him, for we consider him in his present state, whether drunk or (practically) sober, to be irresponsible for conduct. "Antoine Cros mentions the case of a patient, a young girl, suffering from congested liver and spleen, which, of course, altered the state of her blood, and thus for a time modified her constitution. Her moral character was greatly altered by it. She ceased to feel any affection for father or mother. . . . Her temper changed, became capricious and violent."¹ Would we hold this girl blameworthy for her lack of love to her parents, or responsible for her conduct, which was clearly the result of physical causes? Assuredly not; no more should we hold the alcoholic, who is diseased in every cell, responsible for his conduct. He is as irresponsible as any person whose mind is diseased; we would say irresponsible even as far as reform is concerned.

The further question comes to us regarding his responsibility, Is he responsible for his present condition? This is the chief question after all. "A man is diseased when drunk, but is he diseased when sober and just about to drink, knowing the effects of it, or is he vicious? The voluntary act of taking intoxicants sufficient to induce inebriety or intoxication is a vice for which the individual is morally responsible."² In the word "voluntary" is contained the whole question again. Does he voluntarily take it or does he not? Allow another quotation:—"Your remarks are just, they are indeed too true; but I can no longer resist temptation. If a bottle of brandy stood on one hand, and the pit of hell yawned at the other, and I were convinced that I would be pushed in as soon as I took one glass, I could not refrain. You are very kind: I ought to be very grateful for so many kind, good friends; but you may spare yourself the

¹ G. H. Lewes, *Physical Basis of Mind*, p. 327.

² G. R. Wilson, *Drunkennes*.

trouble of trying to reform me: the thing is out of the question."¹ We can well see that when a person has gotten to that stage he is not responsible for his drinking; we must look further back and ask, Why should a person drink?

We are emphasizing heredity less than was formerly done; perhaps we are swinging to the other extreme and minimizing its importance in disease. The difficulty has been rather in the matter of theory than in the domain of facts. There has been a desire, too plainly evident, to ignore the facts if they do not tend to substantiate the theory in which one is inclined to believe. In the case of the alcoholic, with those who believe in the old, naïve theory of heredity there has been no trouble; but the followers of Weismann have had some difficulty in reconciling the theory and the facts which seem so evident. Fortunately, in this case it is not a matter of controversy concerning the transmission of acquired characteristics, for explanations eliminating this discussion have been given, which not only accord better with the facts, but tend to solve the riddle in a more satisfactory manner.

While some investigators claim that the question is one of chronic disturbance of nutrition in the alcoholic parent or parents which manifests itself in the sexual nature, and especially in the production of offspring mentally and physically weakened,² the hypothesis of which Professor Forel is the principal exponent, is steadily gaining ground. The contention of the latter

¹ I. Ray, *Mental Hygiene*, p. 91.

² Notice this from A. R. Cushny, *Pharmacology and Therapeutics*, p. 147:—"Attempts have been made of late years to demonstrate that the effects of alcohol are hereditary, that the children of alcoholics supply a larger proportion of cases of insanity and crime than those of the rest of the population. The belief is widely entertained among biologists, however, that acquired characters such as alcoholism are not inherited directly, but can only affect the nutrition of the offspring. It would seem more probable, then, that the alcoholic excesses of the parent have no direct effect on the offspring except in their nutrition at birth, but that the mental defect which leads to alcoholic excess in the one generation is inherited and leads to crime or insanity in the next. The deleterious effect of the alcoholic habit in the parent on the nutrition of the offspring is a well-established fact."

is that in alcoholism we need not concern ourselves with the theories of heredity, for here we have a direct poisoning of the germ plasm by means of the alcohol circulating in the blood, and thus the delicate cells composing the plasm are prevented from developing into a stable organism. The blood and lymph which convey to the sexual organs the nourishment necessary for the development of the germ plasm carry also the poisoning properties of alcohol, and on account of the susceptible condition of the plasm during its growth it is retarded in its normal development. The strength of the solution of alcohol may—yes, must make a difference in the injurious effects on the plasm, and consequently on the prospective offspring. The healthy contribution of the other parent may tend to overcome the threatened degeneration; but if both parents are likewise affected, the injury is not only uncompensated, but it is multiplied.

Add to this the alcohol contributed in foetal life by the mother, and degeneration is almost inevitable.¹ The question between the direct poisoning of the germ at the time of conception and the progressive poisoning of the germ plasm during development is one between the moderate or occasional drinker and the chronic alcoholic. It seems likely that both classes

¹ In the Report of the Committee upon the Heredity of Inebriety, received by the Society for the Study of Inebriety in 1901, Clause VI. reads as follows:—"In particular there is no evidence that characters acquired by the parent through indulgence in drink are inherited by the children subsequently born. The Committee are aware that it is possible that the mental and physical states produced in the parent by indulgence in alcohol do affect the child in some way through inheritance; again, they admit as possible—though, strictly speaking, this is no question of the inheritance of an acquirement—that indulgence may so damage the parental tissues that the germ is ill-nourished, and the child is thus affected; yet again, they admit as possible that the alcohol circulating in the parents' blood may directly affect the germ, and in this manner affect the offspring, as by producing degeneracy. But these speculations have not been strongly supported by any evidence tendered to the Committee." Notice also N. S. Davis, "Summary of the Effects of Alcoholic Liquor on the Functions and Structure of the Human Body," etc., *Quarterly Journal of Inebriety*, vol. xxvi. p. 219:—"It (alcohol) has also been recently detected in the blood of a foetus, received through the placenta from the blood of the mother."

affect their offspring, but that the latter would be the most disastrous without doubt. On the other hand, some facts tend to show that alcohol in the system at the time of conception is not without evil effects. Modern science is substantiating Diogenes in his saying to the stupid boy:—"Young man, thy father must have been very drunk when thy mother conceived thee." Dr. Dom. Bezzola, in an address delivered before the Vienna Anti-alcoholic Congress, said:—"Having at hand within my own community, Graubünden, sixty-eight cases of imbecility of various grades, I undertook a preparatory investigation among these, and arrived at the astonishing result that one-half of their births fell upon days following forty weeks after periods of alcoholic plenty—New Years, the Carnival, and grape-gathering—that is to say, within an aggregate of fourteen weeks; while the remaining half was distributed rather evenly through the remaining thirty-eight weeks of the year." It was found also that the number of births was lower than the average during these fourteen weeks. A detailed study of imbecile school children throughout all Switzerland confirmed the result of this investigation.

This reference to imbecility shows that simple drinking of the parents prior to conception produces an unstable nervous organism in the children.¹ Physical deformities are less frequent results, but it is mental troubles with which we are concerned in our study. Why should the nervous system exhibit most frequent and serious defects? We could give the same reason for this in the germ and embryo as in the adult. The portion of the germ which shall develop

¹ See G. A. Reid, *Alcoholism*, Appendix G, p. 256:—"If it be argued that inebriates very frequently have offspring insane or epileptic, I must reply, so have non-inebriates. If it be argued that inebriates have a higher proportion of offspring so afflicted, I must retort that it is precisely from those who have a tendency to insanity or epilepsy that one would expect inebriety, and that, though this tendency might not find expression in the parent, and may result only in drunkenness, yet it is to it, and not to the parental inebriety, that the filial epilepsy or insanity is probably due."

into the nervous system is the latest product of evolution and most intricate in structure. It is therefore less stable, and consequently more easily deranged and injured. The nutritive functions may be perfect in the offspring, for they are long established and more firmly set in the line of development; the higher, delicately formed, comparatively lately evolved portions, with the lines of development unstable, first give way under the power of the alcoholic poison.

When heredity is spoken of in connection with alcoholism, it is generally understood to imply that a person has inherited an unstable nervous system, which, after he has begun to drink, causes such a craving for the effects of alcohol as to render it difficult, if not impossible, for the partaker to refrain. We do not mean that a person is born a drunkard—that is but a figure of speech; but he may become a drunkard on account of his heredity after voluntary indulgence. The altered condition of the nervous system of the children of alcoholics forms a predisposing cause of alcoholism, only awaiting the exciting cause to show itself in full force. It should be noticed, in distinction from this, we have some reported cases of true inherited alcoholism which develop during foetal life, at any period from conception to birth. In these cases we find the same effects in the children who never have drunk as might be expected in those whose systems have been ruined both physically and mentally by alcohol. Concerning this we quote the following:—

“The subjects of hereditary alcoholism have symptoms from birth. Their general constitution is feeble, they lack resistive power to infection. They succumb easily to gastroenteritis, bronchitis, meningitis, etc. Some writers think that in large commercial and industrial centres about fifty per cent. of the children die before the end of the third year, and convulsions is one of the most frequent causes. Parental alcoholism is the dominating cause of the enormous infantile mortality among the work-

ing classes of Russia, Belgium, and France. Those who survive the first few years of life generally show some marked defect—symptoms of digestive, respiratory, or nervous disorders, with consequent liability to some form of disease, such as tuberculosis or meningitis. In some cases of hereditary alcoholism, the more common characteristics of alcoholism may manifest themselves in a child, such as tremor, and increased mucous secretion. Later in life hysteria, neurasthenia, epilepsy, and chorea are very prevalent. In regard to epilepsy, Bournville has observed that in 163 families in which either the father or mother was addicted to alcohol, 244 children suffered from epilepsy; and Kovelawski has noted 100 epileptics in 60 families. Various forms of mental disease, such as imbecility, idiocy, feeble intellect, and memory are very common, and even some forms of gross cerebral disease, such as malformations, hydrocephalus, microcephalus, etc., are observed. Later, some of the more marked forms of mental disease, such as melancholia and mania, may be expected. The most common mental characteristics of such children are feeble memory, inability to learn, and a certain want of perception of the ordinary duties of life. . . . According to Morel, idiocy does not appear until about the third or fourth year.”¹

Whatever be our theories, the facts seem evident. There is no lack of medical experience to confirm the contention that the children of an alcoholic parent or parents are more liable to indulge in alcoholic excess than the offspring of temperate parents. Further, we have the testimony of some physicians and specialists to the fact that there is actually an acquired taste for alcohol in children which is accountable only on the supposition of heredity of some form or other. Notice the following statements:—“A strong intoxication impulse has been manifested at a very early age in some instances. Children of

¹ L. G. Robinovitch, “Infantile Alcoholism,” *Quarterly Journal of Inebriety*, vol. xxv. pp. 231f.

four, five, six, or seven have drunk eagerly and to drunkenness on the very first occasion when drink was given to them, while the other children with them have evinced no such eagerness."¹ "Children can directly inherit the tendency to drink; therefore it happens not infrequently that cases of genuine dipsomania occur at the early age of four or five years. Cohn, Maden, Moreau, and others have recorded cases of alcoholic delirium in children between the ages of five to eight years."² "Hereditary taint may be traced in a very large proportion of alcoholic cases—it is said in nearly a moiety. The children of drunkards are extremely susceptible to the influence of alcohol; a quantity which would not affect ordinary persons intoxicates them, and produces results not so readily seen in more normal persons. The crave for alcohol seems to be handed down to them, and they take to drink as a duck to water."³ The matter of environment must be also considered, for where there are inebriate parents the children undoubtedly will come in frequent or constant contact with alcoholic beverages when they are young. Making all allowance for this factor, the fact of heredity is still quite evident. Let us look at some statistics.

Dr. Crothers, chairman of a Committee for the Study of Heredity and Alcoholism, appointed by the Association for the Study and Cure of Inebriety, reported on 1,744 cases, 1,300 of which had come under his personal care and observation. Of the whole number 1,080 had a distinct history of heredity. The 1,080 were divided as follows:—430, about one-quarter of the whole number, were classed as direct heredities, where the drinking of parents or grandparents reappeared in the children; 224, more than one-eighth of the whole number, were classed as in-

¹ N. Kerr, "Alcoholism and Drug Habits," *Twentieth Century Practice of Medicine*, vol. iii. p. 128.

² T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 323.

³ H. D. Rolleston, "Alcoholism," *A System of Medicine*, Allbutt, vol. iii. p. 850.

direct heredities. "They usually were persons whose grandparents, one or two generations back, had been moderate or occasional excessive users of spirits. In many instances the father had a short drink period in early life and then became an abstainer, or both parents had drunk wine at meals for a certain period, or the mother had been given wine or spirits during pregnancy, lactation, or for some particular illness." 290, one-sixth the total number, were placed under the classification of psychopathic heredity, "in whom some defect of brain or nervous system seems to persist generation after generation." Forty-nine were grouped under epileptoid types of heredity. "These cases were marked by sudden, unexpected, and self-limited drink storms."

Dr. C. L. Dana, of New York, says, "Among 350 patients whom I questioned on the subject, I found that drinking habits existed in one or both parents in all but ten (97.5 per cent.). The father was usually the drinker, in eight cases both parents drank; in one case the mother only was an inebriate. The patients were largely of foreign birth and descent, however, and drinking was the natural habit, so that very great importance cannot be attached to this fact. In another series of 210 cases the percentage was much lower. Among the total, 25 per cent. gave a negative hereditary history. Among 30 periodical inebriates, in two-thirds there was a distinct history of heredity; in fourteen the father drank, in eight both parents drank."

Of 600 patients at Fort Hamilton, 265 had inebriate family history, and 38 were descended from families where there had been insanity. Of the cases treated in Dr. Stewart's private asylum, in 44 per cent. one of the parents or grandparents had taken alcohol to excess, and in a large number of the remainder there was a history of either epilepsy, insanity, or tuberculosis. Dr. Kerr found 50 per cent. of his cases had inebriate diathesis. W. Bevan Lewis examined 344 cases, of which 37 per cent. showed inebriate or

neurotic inheritance, and 27 per cent. insanity. At Dalrymple there were found 134 cases of inebriate inheritance, and 26 of insane. Out of one group of 2,905 cases treated in America and England, mentioned by Kerr, no fewer than 1,374 had a family history of previous inebriety.

If there is any allowance to be made in these statistics it must be in favour of the thesis that there is a relation between alcoholism and heredity, because it is so difficult to get the facts. The alcoholic not infrequently endeavours to protect his mother's good name and denies her alcoholism, while secret drinking or the simple presence of alcohol at the time of conception may be unknown. One thing to be noticed in the above statistics is the frequent assumption of atavism. It has been the grandparents or great-grandparents who have indulged to excess, hence the alcoholism in the offspring.¹ This would entail some theory of heredity, for the germ poisoning by alcohol would hardly account for this phenomenon.²

¹ Dr. Legrain's investigations on alcoholic inheritance are tabulated as follows:—In the first generation from inebriety the mental and physical degenerates were 77 per cent. of all. In the second generation 96 per cent. were defective. In the third generation not one escaped—all were idiots, insane, hysteric, or epileptic.

From the *Medical Press* (1903) we quote, "The opinion of experts on the subject goes to show that when alcoholism becomes hereditary the whole family is doomed, neuroses appearing in the second generation, epilepsy and other forms of mental instability in the third, actual imbecility and ultimate extinction in the fourth."

² Some are very outspoken in their opinions concerning the transmission of acquired characteristics, especially as far as alcoholism is concerned. Kerr, *Inebriety*, pp. 187f., gives the opinions of numerous specialists who uphold this view, and, pp. 194f., he cites cases of transmitted drink craze. Perhaps the following from T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 322, would help to reconcile the two opposed ideas:—"The majority of drinkers are disposed to drink by heredity. In 100 recent cases of alcoholic insanity admitted into Bethlehem, no less than 67 had a neurotic inheritance; 32 had a family history of alcoholism; in eight cases only was there a history of alcoholism without insanity in the parents. Alcoholism without insanity and other neuroses in the parents is more rarely followed by alcoholism in the offspring than when other neuroses in the parents are contingent factors. Alcoholism in the parents is, however, a very common factor in determining the occurrence of other neuroses in the offspring."

Dr. Sollier¹ presents the four following conclusions as the result of his study on heredity :—

“1. Between dipsomania, hereditary insanity, on the one hand, and alcoholism, called ‘acquired’ on the other hand, there exists an intermediate form of the propensity for alcoholic drink ; this intermediate form is alcoholism by heredity : it is certainly more frequent than dipsomania, and tends more and more to encroach upon the domain of ‘acquired’ alcoholism—*i.e.*, alcoholism by heredity may be found to have pre-existed in cases heretofore interpreted as simply acquired alcoholism.

“2. The heredity of alcoholism may be either by similars or dissimilars. The relative frequency of these forms is as three to four.

“3. Alcoholism by heredity belongs to the neuro-pathic family, and more specifically to its psychopathic branch.

“4. The causes which produce the outbreak of alcoholism in subjects having hereditary taint, and more particularly in the progeny of subjects who themselves have alcoholism, are merely accidental or apparent, and are far from having the influence which has been attributed to them. The only true cause is the heredity, which creates the predisposition, the impulse, and a condition of intellect and feeling in the subject which render him incapable of resistance.”

We can further see the abnormal condition of the offspring of alcoholics by noticing the great number of degenerates of different kinds to be found among them. A presiding judge of one of the Chicago courts, among other things relating to the use of alcoholic drinks, said : “Of all the boys in the reform school and the various reformatories about the city, 95 per cent. are the children of parents who died through drink or became criminals through the same cause. Of the insane and demented cases disposed of here in the court every Thursday a moderate estimate

¹ Paul Sollier, “The Influence of Heredity on Alcoholism,” *Wood's Medical and Surgical Monographs*, vol. vii. 1, pp. 49-173.

is that 90 per cent. are from the effects of alcohol. . . . The sand-baggers, murderers, and thugs generally to-day who are prosecuted in the police courts and criminal courts are sons of parents who fell victims to drink. . . . I know whereof I speak."

Demme found that the direct posterity of ten families of drunkards amounted to fifty-seven children; twenty-five died soon after birth; of the remainder, six were idiots, five dwarfs, five epileptics, one each had chorea, chronic hydrocephalus, hair lip, and club foot. Two of the epileptics became alcoholics. In ten normal families, which he examined for comparison, among sixty-one children, five died soon after birth; four suffered from curable nervous affections; two had congenital defects. 81.9 per cent. were sound in mind and body during childhood and youth, while in the alcoholic families the percentage was 17.5.

Professor Delman's famous study in hereditary inebriety naturally occurs to us. Ada Jurke, who died at the beginning of last century, at about sixty years of age, was a drunkard, a thief, and a vagabond. Seventy-five years later her progeny was found to consist of 834 persons of whom the history of 700 has been studied. Of this number there have been 106 illegitimate children, 144 mendicants, 64 sustained by charity, 181 prostitutes, and 76 criminals, among whom were 7 assassins. In seventy-five years this single family has cost in maintenance, expenses of imprisonment and interest, one and one-quarter million dollars.¹

Nothing is so deplorable in all investigation of the pernicious effects of alcohol, as the fact that the offspring must suffer so severely for the craving and indulgence of the parents.² And so frequently we

¹ Two cases corresponding more closely with those of ordinary experience can be seen by referring to the *Quarterly Journal of Inebriety*, vol. xxii. pp. 328f. and 485.

² The writer has read Dr. G. A. Reid's most interesting and dogmatic, yet far from convincing treatise, *Alcoholism*. Even were we prepared to accept Dr. Reid's thesis *in toto*, it would not in the least

find that the child is injured far more seriously than the parent on account of the latter's alcoholism.¹ Some time ago the liquor journals set before us a man of ninety-one years of age, a farmer, living out-of-doors and working moderately. He had drunk a pint of spirits daily for sixty years and was apparently hale and hearty, never having had any illness. The harmlessness of the continued use of pure whisky was thereby proven. An investigation brought out these facts: The man was of inferior intelligence, with a large physical frame, and inclined to follow very methodical habits of living. While the effects of his drinking were not prominent in his appearance, they were very evident in his children. Of three children by his first wife, two died in infancy; one became an epileptic and died at fifteen. Of four children by his second wife, one is feeble-minded, the second choreic, the third is dissolute and drinks, the fourth is erratic, passionate, and a wanderer. All are decidedly inferior both physically and mentally.

change our conclusions regarding the moral responsibility of the drunkard, for whether the alcoholic tendency is inborn or acquired in the parent, if transmitted to the child, the latter is equally irresponsible in both cases. For a discussion of Dr. Reid's principal points see W. F. Robertson, "Evolutionary Pathology of Chronic Alcoholism," *British Journal of Inebriety*, 1904.

¹ C. L. Dana, "Inebriety," *Quarterly Journal of Inebriety*, vol. xxiii. pp. 474f., says emphatically—"Alcohol undoubtedly produces degeneracy in the individual, and still greater degeneracy in the descendants." Notice also the following from H. J. Berkley, *Mental Diseases*, p. 492:—"Intemperance in pronounced degree on one side of the family usually results in mental feebleness of the children. When both parents are equally at fault, the progeny usually show well-defined brand-marks. It is a well-recognized fact that drunkenness at the moment of copulation is frequently responsible for the lowest form of congenital idiocy. In 1000 cases of idiocy in the Bicêtre, Bournville found a history of alcoholism in 620, or 62 per cent. of the whole number; on the part of the father in 471, on that of the mother alone in 84, and in both parents in 65 examples. In one-half of the remainder no family history of any kind was obtainable; but since parents naturally do not desire to attribute the mental defects in their children to their own sins, it is presumable that in a considerable portion of these 380 cases the existence of alcoholism in the ascendant was more than probable. In 51 cases, intoxication at the time of conception was ascertained with certainty."

Beside the degeneration in alcoholics' children already spoken of, the abnormality of genius is sometimes the result of alcoholic heredity. Among men of letters, Lord Byron and Poe are two prominent examples. From all departments of life examples could be given, which, as can readily be seen, show the degenerating effects as clearly as any other abnormality.¹

While we recognize that predisposition is assured in some cases, we should also recognize that by proper treatment, especially in the young, this predisposition can be checked or pointed in other directions. Some persons advocate the removal of the children of alcoholics from their homes, because of the detriment of adding the power of alcoholic environment to that of heredity. Unfortunately, alcohol does not limit the power of procreation until after the usual period for reproduction, and thoughtless reproduction of degenerates is promoted. We are as yet so fond of the shadow called liberty, that all kinds of degenerates marry and throw upon the public ever-increasing multiplication of their kind.

Fortunately for the good of the race, alcoholism is found most frequently among the men, because inebriety in the mother, on account of the forty weeks of foetal life over which her organism has uncontrollable influence, is much more disastrous. It has been said that "when the father has been a drunkard, it is rather the moral nature of the offspring which is altered; when the taint is on the mother's side, that the brain and nerves are particularly liable to suffer; the mother's influence is said

¹ "Children of alcoholic parents inherit nervous instability, if nothing else. Often they show great extremes of activity and prostration. While neurotics, they are often brilliant, lead in their classes and are prematurely developed. All such children show great extremes of energy and exhaustion, with faintness and debility. Their training should be very careful. No tea, coffee, meat broths, or alcohol should enter the diet. No attempt to treat every symptom of exhaustion with drugs or foods. They are very precarious in their nervous organization, and unless brought up in the most careful manner will become inebriates."—*Quarterly Journal of Inebriety*, vol. xxv. p. 267.

to be the more powerful of the two.”¹ Not only do we find that the alcoholic female has more influence over the offspring, but we are told that “in regard to heredity, there appears to be a greater tendency for the female children to be affected by insanity; they break down more rapidly, and from slighter causes than the males.”²

Dr. W. C. Sullivan has made some investigations concerning the children of female inebriates.³ His results show that maternal alcoholism has surprising effects upon the offspring. The women examined were mostly inmates of the Liverpool Prison, 120 of whom had produced 600 children. Of these, 265 (44.2 per cent.) lived over two years, and 335 (55.8 per cent.) died under two years, or were dead-born. In over 60 per cent. of the children dying in infancy, the assigned cause of death was “convulsions.” For comparison, the progeny of sober mothers was also examined. Drunken mothers (21 cases) gave birth to 125 children, of whom 69 (55.2 per cent.) died under two years. Sober mothers (28 cases) gave birth to 138 children, of whom 33 (23.9 per cent.) died under two years. In 80 of the cases, the number of children in each family reached or exceeded three. Classing these children in the order of their birth, we can see the progressive death rate in the alcoholic family. We reproduce this table:—

	Cases.	Dead and dead-born.	Dead-born.
First born... ..	80	33.7 per cent.	6.2 per cent.
Second born	80	50.0 ”	11.2 ”
Third born	80	52.6 ”	7.6 ”
Fourth and fifth born	111	65.7 ”	10.8 ”
Sixth to tenth born...	93	72.0 ”	17.2 ”

¹ H. D. Rolleston, “Alcoholism,” *A System of Medicine*, Allbutt, vol. iii. p. 850.

² T. B. Hyslop, “Alcoholic Insanity,” *A System of Medicine*, Allbutt, vol. ix. p. 323.

³ W. C. Sullivan, “The Children of Female Inebriates,” an article read at the January 1900 Meeting of the English Society for the Study of Inebriety.

This table shows the progressive degeneration of the alcoholic mother, which can only be brought about by the accumulative effects of continued indulgence. The nervous degeneracy in the surviving children was examined only on one point. Of the children in the series, 219 lived beyond infancy, and of these 4.1 per cent. became epileptics. Many of the others counted here as non-epileptic had not reached the age at which epilepsy most commonly appears, but the percentage here given is vastly in excess of its frequency in the general population. The facts brought out in the investigation leave no room to doubt the effect of alcoholism upon reproduction, and in these statistics the poisoning of the germ and the foetus seems to be the cause most readily assignable and acceptable, rather than heredity, regardless of what our theory of the latter may be. Many physicians are awakening to the extent of the danger of an alcoholic maternity, and the medical journals are sounding a note of warning. The danger is seen, not only in chronic alcoholism, but in the habit of alcoholic drinking as a panacea for every pain or ill of pregnancy.

Coupled with this, although we recognize that it is not a question of heredity, we have what has been called "Infantile acquired alcoholism." This is connected with the question of heredity, because it comes under the category of alcoholism for which the subject is not responsible, and for which he cannot be blamed. We refer to the alcohol acquired through nursing, or directly administered to infants for the supposed medicinal or soothing effect. Some physicians have reported cases of complete intoxication in nursing children through alcohol acquired in the milk, and further state that the children of alcoholic mothers are hardly sober for weeks. The following is descriptive of the acquisition of alcoholism in infants:—

"The most frequent source of acquired alcoholism is lactation. Alcohol is conveyed to the infant with

the milk in proportion to the amount taken. The researches of Klingemann, Roemann, and Nicloux have shown that alcohol passes into the milk, whatever be the quantity consumed. According to Vallin, it is common in Paris to give nursing women a litre or more of wine, often of the stronger and more generous kind. Not infrequently in addition an unlimited amount of beer is given. It is supposed that alcoholic beverages consumed by the nurse impart strength and vigour to the infant, whereas the opposite is the case. In several countries—Belgium, Russia, and parts of France—it is the custom to soothe the cries of infants by giving them a piece of sugar steeped in kirch, *eau-de-vie*, or gin, and tied up in a piece of rag which they can suck. Sometimes a piece of bread or biscuit, steeped in some form of alcohol, is given in the same manner. In some parts the mothers give the children a teaspoonful of ‘grog’ to put them to sleep. Wine is regarded as beneficial during dentition, and in some parts of Austria it is regarded as indispensable for teething children. The least indisposition—colds, colic, or headache—is regarded by some as calling for alcohol. . . . The symptoms of acquired infantile alcoholism differ from those of the adult in the greater intensity of the toxic effect, especially on the nervous system.”¹

After this discussion of heredity, we can well return to the question of responsibility, better prepared to answer it. If there were a definite reply to the query concerning heredity, we could still better place the responsibility. At least we must recognize one thing most clearly, and that is that the children of alcoholics are in a less favourable condition to resist any strain or any temptation. We

¹ L. R. Robinovitch, “Infantile Alcoholism,” *Quarterly Journal of Inebriety*, vol. xxv. pp. 232f. In regard to alcoholism acquired in infancy and later, G. H. McMichael, *Quarterly Journal of Inebriety*, vol. xxv. p. 48, says—“I am probably well within the mark in saying that for one man who is born with the alcoholic susceptibility, there are three who are educated to excessive drinking by their environment.”

can all admit that much. Some, though, would go to the other extreme and ask questions like the following, which imply the answer in themselves:—“Where lodges the responsibility for viciousness, profligacy, or crime in the grandchild of a drunkard? And who would hold that the offspring of an inebriate mother, saturated with alcohol before their birth, are in any way personally responsible for the nervous or moral diseases that come into the world with them and cling to them through life?”¹ Here not only alcoholism, but other defects and crimes are charged to alcoholism. There appears to be a pathological circle, the alcoholism begetting, if not its kind, then epilepsy, insanity, or some other nervous affliction. On the other hand, these nervous troubles in the parent not infrequently predispose the children to alcoholism.

Besides what one may acquire in the way of pre-disposition, certain diseases and injuries may change the nervous system in such a way as to make a person more liable to drink to excess if once started. Of the 600 at Fort Hamilton, 145 had had syphilis, while several had been the subjects of local venereal diseases, and 42 had had some chest disease. Head and other injuries may work in the same way. While alcoholics are found in all occupations, it is

¹ J. D. Quackenbos, *Hypnotism*, etc., p. 84. We also quote the following equally or more extreme views:—J. F. Lydson, “Toxemias and their Relations to Alcoholism, Narcotic Inebriety, and Auto-Intoxication,” *Quarterly Journal of Inebriety*, vol. xxv. pp. 255f., says—“The intolerance manifest concerning inebriety as a physical disease is an illustration of the intellectual reversion and modern Dead Sea atmosphere which obstructs every advance. The moral factor in inebriety bears no more relation to its causation than it does to typhoid fever. The moralist who claims that the inebriate wilfully took the first drink, hence is responsible, is as logical as the accusation would be of the typhoid fever patient who voluntarily drank water containing the germs of the disease. Admitting that in certain cases an insatiable craving for spirits is the result and not the cause of inebriety, the physician must accept the conditions as he finds them.” I. Ray, *Mental Hygiene*, pp. 91f., says—“We find it hard to hold a child accountable in any moral point of view for inherited tendency to drunkenness, as we should to blame him for inheriting gout or asthma.”

generally recognized that those who are closely confined indoors are more liable to become alcoholics, and that the effect of alcohol upon them is more serious. Probably there is no cause of alcoholism—it is exciting rather than predisposing—so potent as the desire to forget pain, sorrow, trouble, and distress with which the world is so filled. The writer has met only one person who liked the taste of alcohol. It is usually distasteful, but the exhilarating effect is what is sought. The business man is overworked and depressed, the labourer is fatigued and discouraged, the wanderer is cold and poor; none of them may have the nervous energy sufficient to overcome these feelings, so they seek relief outside. They can all forget their misery for a small sum, and be happy for a short time at least. These people cannot reach higher pleasures; they may have neither the means nor inclination for other kinds of enjoyment; this is the panacea for all woes.

It is the great struggle for existence which depresses so many, and those who are least fortunate in the struggle seek for one moment of forgetfulness, when pain and strain are pressing upon them. Alcohol is set before them as presenting the opportunity for relief, and their faith in it is unbounded. Women are often led to drink by neurasthenia, brought about by overwork and lack of nutrition. Dismenorrhœa is also a cause of indulgence, and social demands call for something to brace or paralyze. People who afterwards become alcoholics frequently have less freedom than others; their ideals are bounded by a very narrow horizon. Intoxication has been held up to them as the supreme joy. "The obviously criminal population is always largely made up of a class that, on account of discouraging environment, relatively great susceptibility to impulsive consideration, and a low degree of intelligence, has on the average a less degree of freedom."¹ This can well be said of the drinking class. On account of their circum-

¹ G. T. Ladd, *Philosophy of Conduct*, p. 182.

stances, they cannot do the things which they often wish to do. It is not only the lower classes of which this may be said, but many men of genius seem to crave strong excitement which it is possible to acquire by this means. They have that craving for intensity of consciousness which accompanies culture and high ideals.

The other great exciting cause of alcoholism is sociability.¹ People start to drink to be social, and half of the drinking starts in this way. In Dalrymple 147 out of 315 began drinking in this way; with Dr. Kerr 46 per cent. With the cases which the writer has examined 55 per cent. began drinking socially; and closely related to this cause, especially among business men, the drinking customs of business and trade form an important factor in exciting causes.² The environment of a man very largely makes his character. When a person is brought up where the custom is for every one to drink, the family around him drinking, his whole environment saturated with alcohol, is he to blame for his indulgences? Is he responsible if he goes too far? He desires to rise above his low plane of feeling, he wants an exaltation of his whole nature, he wants freedom of mental power, he is striving for an ideal. The only means he knows of realizing it is through alcohol; he drinks, he continues to drink, he becomes a slave to drink; is he responsible?

Some have gone so far as to say that the excessive strain of our twentieth-century civilization requires stimulants; and man, as the only animal which uses

¹ W. C. Sullivan, "Social Causes of Alcoholism," *Journal of Mental Science*, 1904.

² In the investigations made by Partridge, *American Journal of Psychology*, vol. xi. pp. 343f., he found the causes for intoxication as follows:—"The usual motives which lead to intoxication are (1) a desire for excitement, experience, and abandon: to increase companionship, to put off reserve in the presence of others. (A desire to heighten the social feeling.) (2) To kill pain, to calm moral distress, to overcome fatigue, a desire for temporary relief from poverty and monotony; to increase courage or overcome self-consciousness, to steady the nerves for work or unusual strain."

stimulants, has reached the high plane on which he stands by the use of the brain stimulant which puts him above the other animals. The races of men which use the most stimulants have developed far more, and have outstripped their abstemious brothers in the mental race. The use of alcohol is not only a necessity but a virtue, the highest man must be the most stimulated man, and he must also be the most responsible. But do we find it so? Is he not least responsible because of his indulgence?

Notwithstanding all that has been said about heredity, environment, and other causes, we believe that the person who drinks may be responsible,—responsible for every drink which he takes up to a certain period in his career, when he is unable to stop himself; then responsible for having gotten himself in that condition. For a certain time drinking is a vice, and later becomes a disorder. How long a drinker is vicious depends upon the case. It may be until he has finished his first glass, or it may be for years. We cannot class all alcoholics together and say they are all equally responsible, but we must consider the individual. Usually the fault is on the side of blaming the irresponsible, rather than of pitying the responsible, yet we do not wish to clear all alcoholics with a sweeping proclamation of their irresponsibility.¹

¹ In the *Report of the Committee upon the Heredity of Inebriety*, of the Society for the Study of Inebriety, we find the following:—"I. The genesis of inebriety in the individual depends on three essential factors, of which one is inborn and the others acquired. II. The inborn factor is a capacity for enjoying the sensations evoked by indulgence in alcohol. Without it men would not drink, for they would not enjoy drinking. III. The acquired factors are:—(a) A personal experience of the sensations evoked by alcohol. Without this acquired knowledge, this memory, no man would crave for the sensations in the sense the inebriate craves. (b) The increased delight in drink which continued indulgence in drink confers. It is an essential factor, for, in Europeans at any rate, a single experience of drink rarely gives rise to a craving for it."

G. A. Reid, *Alcoholism*, p. 82, says—"All men of course start life without any craving for alcohol, and, in so far, are equal; but the essential fact remains that they differ vastly with respect to the ease with which the craving may be awakened and the strength it may attain."

True, we are not so free as we once thought we were: our course is determined to a certain extent, and by our every choice we are determining it more. There is usually the time in the alcoholic's career when he could stop, when he could prevent the wreck, when he knew the way he was going, but continued. There is also the time when he comes to the point where he cannot stop, however much he may want to.

"No class of them have better sentiments, or feel more constantly the difference between the higher and the lower path in life than the hopeless failure, the sentimentalists, the drunkards, the schemers, the 'dead beats' whose life is one long contradiction between knowledge and action, and who with full command of theory, never get to holding their limp characters erect. No one eats of the fruit of the tree of knowledge as they do; as far as moral insight goes, in comparison with them, the orderly and prosperous philistines whom they scandalize are sucking babes. And yet their moral knowledge, always there grumbling and rumbling in the background—discerning, commenting, protesting, longing, half-resolving—never wholly resolves, never gets its voice out of the minor into the major key, or its speech out of the subjunctive into the imperative mood, never breaks the spell, never takes the helm into its hands."¹

As far as the alcoholic is concerned, he "never takes the helm into his hands" because he cannot, nor do we believe that he realizes nearly so well as his friends the difference between the higher and the lower paths of life. The same writer says—"How many excuses does the drunkard find when each new temptation comes! It is a new brand of liquor which the interests of intellectual culture in such matters oblige him to test; moreover, it is poured out, and it is a sin to waste it; or others are drinking and it would be churlishness to refuse; or it is but to enable him to sleep or just to get through this job of work; or it isn't drinking, it is because he feels cold; or it is

¹ W. James, *Psychology*, vol. ii. p. 547.

Christmas Day; or it is a means of stimulating him to make a more powerful resolution in favour of abstinence than any he has hitherto made; or it is just this once, and once doesn't count, etc., etc. *ad libitum*—it is, in fact, anything you like except *being a drunkard*. That is the conception which will not stay before the poor soul's attention. But if he once gets able to pick out that way of conceiving, from all the other possible ways of conceiving the various opportunities which occur, if through thick and thin he holds to it that this is being a drunkard and is nothing else, he is not likely to remain one long."¹

These two statements are contradictory, and neither one is wholly correct. He does not realize his true situation; and if he did, he has not power to overcome the habit of years, with his broken-down mental powers. We believe that the alcoholic is responsible in some measure for being in his condition, but probably not for staying in his state. We believe that every man ought to keep his body in good condition—he is responsible for that, for upon that depends his mental and moral condition. The alcoholic fails here in his duty in partaking of his first drink, and correspondingly as the amount of alcohol increases and the libations are more frequent.

It is not in our province here to discuss the moral import of total abstinence, prohibition, and other subjects which might be suggested in dealing with the morals of the alcoholic. These come under the head of theoretical, not psychological, ethics. We have tried to show the alcoholic's moral position, the facts of his moral life, and his responsibility for moral conduct. With this done, however imperfectly, we must not be drawn away by the theoretical considerations, however great the temptations.

We have seen very clearly, then, that the morals of the alcoholic decline as the mental states lose their integrity. All the moral qualities suffer, but so great is the alcoholic's disregard of the truth that

¹ W. James, *Psychology*, vol. ii. p. 565.

lying has become a recognized symptom of alcoholism. As a criminal he is not usually concerned in great crimes except as a tool, but commits all manner of lesser crimes. The question of the drunkard's responsibility depends on the fraction of responsibility when he is drunk, when comparatively sober but diseased, and when about to take a drink knowing the consequences. These problems largely hinge on the further question of heredity. Statistics seem to show that there is some transmitted characteristic which causes the child of a drunkard to be less able to control himself as far as his indulgence in alcoholic beverages is concerned. Very early in life through lactation and environment the alcoholic may be taught to drink. Notwithstanding these considerations, there must be posited some responsibility, and to that extent the drunkard must be held liable.

CHAPTER IX.

INSANITY.

Relation of insanity and alcoholism—Reciprocal—Alcohol as a direct cause undoubted—Statistics—America—Great Britain—The Continent—Different forms of alcoholic insanity—Chronic alcoholism—Case—Alcoholic somnambulism—Different names—Description—Change of personality—Intoxication a severing of consciousness—Further description—Cases—Alcoholic epilepsy—Alcoholic amnesia—Dipsomania—A periodic insanity—Description—May be one of a pathological series—Length of periods—Symptoms—Case—Onset very forceful—No desire for alcohol between attacks—Dipsomaniacs frequently men of great ability—Aborting an attack—Delirium tremens—Cause—Poison like that of bacterial origin—Diseased kidneys a factor—Alcohol an antidote—Symptoms—Hallucinations—Length of attack—Treatment by alcohol—Case—Pathological inebriety—Mania a potu—Alcoholic delusional insanity—Onset—Description—Egotistical—Case—Alcoholic paranoia—Very suspicious, especially of spouse—Various hallucinations—Religious delusions in unmarried—Case—Alcoholic paresis—Similarity to general paresis—Prognosis unfavourable—A factor in general paresis—Case.

THE whole of this work might well be devoted to this subject—the relation of insanity to alcoholism, for could the dreadful results of alcoholism be known as exhibited in the insane wards, it might have an inhibitory effect upon the drunkard, who is rushing headlong into the destruction which, if life is spared, so often causes a loss of the mind. At most, of course, we will endeavour to deal with the psychological aspects.

Contradictory ideas are current concerning the exact relationship between alcoholism and insanity, but in the last analysis all agree that the facts show

an intimate connection. Perhaps nothing shows how close this relationship is so much as the fact, as stated by Krafft Ebing, that all forms of insanity are found in intoxication. Starting with one form and continuing with the course of the intoxication, we see all the varieties of madness. The relation of cause and effect is not infrequently quite confusing. Sometimes insanity is charged to alcoholism, when the latter is but a symptom and not a cause. Allowing for all this uncertainty, we must admit the undoubted connection between the two, alcoholism being the cause in many instances.

Some neurologists make the statement that alcoholism is the greatest contributor to the insane hospitals; and although superintendents differ in opinions on the subject, the most of them agree in its being a most prolific cause. Insane reports vary in the percentage of cases caused by alcoholism, but however much the divergence, the figures are not in all cases absolute differences—only differences in the manner of viewing the cases. Heredity as a direct cause not infrequently means alcoholism as an indirect cause. It has been thought by some that alcohol causes insanity more frequently in the offspring of the person who drinks it, than in the drunkard himself; certainly we find a very large percentage of imbeciles and idiots have an alcoholic diathesis. Alcoholism and insanity seem to interact, for not only do alcoholic parents beget imbecile, epileptic, idiotic, and insanely disposed children, but children of persons whose minds have been deranged are so affected, as far as their nervous systems are concerned, that if they start drinking they are most liable to become alcoholics.

After considerable experience and thought, Dr. Crothers says that the study of the origin of alcoholism shows that it is itself evidence of more or less unsoundness of mind, being in a large proportion of cases only a sign of slow and insidious brain disease. He further believes that when crime is committed by inebriates, the probability of mental disease is very

strong.¹ This opinion of Dr. Crothers would lead us to the belief that alcoholism does not cause insanity, but is only a symptom of it. This is only one side of the question. It does express the facts of some cases, where drinking of alcohol and intoxication are but signs of the abnormality, but the other statements regarding the inverse relation are also true.

The number of insane persons, whose insanity can be directly traced through long continued stages of drinking and debauchery, and also the large number of persons in insane retreats whose parents have been alcoholics, add weight to the belief in this opposite relation. In some asylums a direct relation is clearly traceable between the amount of liquor consumed in the surrounding country and the number of persons committed to the retreat. We have these figures from the Glamorgan Asylum.² During the second half of the year 1871, the admission of male patients was only twenty-four, whereas it was forty-seven and seventy-three in the preceding and succeeding half years. During the first quarter of 1873 it was ten against twenty-one and eighteen in the preceding and succeeding quarters. There was no corresponding difference in the female admission. There was, however, a similar experience at the prison, the production of crime as well as of insanity having diminished in a striking manner. The exceptional periods corresponded exactly with two strikes in the coal and iron industries in which Glamorganshire is extensively engaged. The labourers, therefore, had no money to

¹ Notice the following from W. H. Welch, "The Pathological Effects of Alcohol," *Physiological Aspects of the Liquor Problem*, Billings, p. 369:—"These researches have shown that the relationship of alcohol to mental disorders and other disturbances of the nervous system is in many instances less simple and direct than was formerly and still often represented. A problem of fundamental importance as yet awaiting final solution, is the determination of the part to be assigned to the underlying inherited or acquired constitutional defects of the body, chiefly of the nervous system, in the causation and the pathology of the various disorders of the nervous system caused by or associated with alcoholic excess."

² H. Maudsley, *Responsibility in Mental Diseases*, p. 305.

spend in drinking and debauchery. Examples like this, of the effect of alcohol as an exciting cause, are not uncommon. There is recognized by all alienists an insanity caused by the too frequent and heavy indulgence in alcohol, and the lesions and changes in the brain recorded in the second chapter would lead us to conclude, *a priori*, that insanity must be the result. The description of the different faculties given in extreme cases, as dealt with in the preceding chapters, shows insanity plainly: a lack of memory and will, and a change in the emotions and morals, such as we have described, could result in nothing else.

Statistics gathered from both Europe and America, together with the opinions of some specialists, show that alcoholism must be recognized as a cause of insanity, although the exact percentage may differ in the opinions of the observers, and in the different institutions. We quote quite fully a number of these:—

America.—Dr. Howe, who some years ago made a careful examination, says that out of 300 idiots in Massachusetts 145 had drunken parents.

T. A. MacNicholl, of New York, reports the results of the examination of a number of children. There were 463 children of drinkers, and of these 76 per cent. suffered from neurosis or organic disease; of 231 children of abstainers, only 18 per cent. were thus afflicted.

Dr. C. E. Stanley says—“Of 996 cases of insanity admitted to the Connecticut Hospital for Insane for the years 1899 and 1900, 16 per cent. of the male admissions were due directly to alcohol.”

Dr. O. Copp, in 1901, referring to the investigations by the Bureau of Statistics of Labour in Massachusetts said—“Coming to the investigation of the cases of insanity, it was found that about 25 per cent. of the commitments of the insane were directly due to their (alcoholic beverages) use by the patient. I find in looking over the admissions to the institutions for

the last year that the assigned cause of insanity was intemperance in more than 15 per cent. of the cases, and that more than 10 per cent. of them were affected with alcoholic insanity."

In 1902, Dr. Stearns, of Hartford, said that 17 per cent. of the admissions to the asylum over which he presides as superintendent were caused by the abuse of alcohol. This corresponds closely to the past history of the institution.

In 1902 and 1903, at the Massachusetts State Asylum for Insane Criminals and Offspring, there were admitted 154 cases. Of these 62 per cent. were hard drinkers, 31 per cent. were moderate drinkers, only 7 per cent. being abstainers. 36 per cent. had intemperate fathers, and 14 per cent. intemperate mothers. What proportion of the cases were here as a direct result of alcohol, it was impossible to say. Dr. Drew, the medical director, continues, "Alcoholism in the parent always means examples of mental diseases and weak-mindedness in the children, provided the alcoholic tendency is not acquired somewhat late in life. An inebriate father is certainly a handicap, and an inebriate mother is a greater misfortune; but the offspring of an inebriate father and mother seems almost to be doomed from its birth."

Dr. W. H. Welch says—"It is important to know that the immoderate drinking of alcoholic liquor may be the first symptom of some disease which, when later recognized, is erroneously ascribed to alcohol as the cause. It is furthermore established that many of the mental and nervous disorders of alcoholism, while they are attributable to the toxic action of alcohol, are dependent in large measure upon an underlying psychopathic constitution, excessive indulgence in alcohol rarely producing certain of these disorders in persons of normal constitution. Inebriety in the parents or more remote ancestors ranks among the important causes of this inherited instability of the nervous centres. After making the necessarily large, but not precisely definable allowance for the

share of inherited or acquired organic or constitutional defects in the etiology of the nervous manifestations of alcoholism, there still remain cases enough in which alcoholic poisoning is the cause of serious disease of the brain, spinal cord and nerves in persons of previously normal constitution, so far as can be ascertained."

In the recent report of the Committee of Fifty, Dr. Billings has an article on the relation of drink to insanity. He reports on 5,145 cases of insanity, of whom 39.03 per cent. were total abstainers. "Of those cases reported from insane hospitals, the insanity was considered to be due to the influence of liquor in 1,239 cases, or 24.08 per cent." In commenting on these figures, he says—"It is certainly improbable that nearly one-quarter of the cases of insanity in this country are due to the use of alcoholic drinks, as might be inferred from these figures, and while in a given case of an excessive drinker who becomes insane the connection between cause and effect may be plausibly made out, it is necessary to take into careful consideration other inherited or acquired abnormalities or weaknesses of the nervous system."

Dr. A. W. Dunning says—"Alcohol is, next to heredity, the most common single cause of insanity."

Dr. Frederick Peterson says—"We may say of alcohol that it stands foremost (after heredity) as a single independent cause (eighteen to twenty per cent. in males)."

Dr. H. J. Berkley says—"I would emphasize the fact that alcohol and heredity are the principal factors we have to look to in searching for the etiology of mental disorders."

H. C. Burdett, speaking of Argentina in *Hospitals and Asylums of the World*, says—"Cases arising from intoxication form one-eighth of the inmates, and this class of cases is met with chiefly among day labourers, who form a large proportion of the patients."

Great Britain.—Dr. Clouston, who has observed the relation of alcoholism and insanity in Scotland for a number of years, reports that for the years 1874-88 an average of $15\frac{1}{2}$ per cent. were “alcoholic lunatics.” In the years 1889-98 the average was $21\frac{1}{2}$ per cent.; in 1899, $22\frac{1}{2}$ per cent.; in 1900-01, $24\frac{1}{2}$ per cent.; in 1902, 28 per cent. These averages were for the total admissions; if men alone were counted the average would be increased about one-quarter, making the admissions among men in 1902 about 35 per cent.

Dr. T. B. Hyslop says—“Out of 100 cases [of insanity] in which alcohol was an assigned factor of causation, in 11 only could it be said that alcohol was the sole cause. In all other cases other factors were at work: such as syphilis, sexual excesses, bodily diseases, money losses, domestic griefs and worries, injuries to the head, intra-cranial diseases, or other conditions which were either the causes of the habit, or at least as important factors as the alcohol itself in the causation of insanity.”

In 1900, Dr. R. Percy Smith, in an address at Charing Cross Hospital, said—“Next to heredity alcohol figures most largely in the causes of insanity given in the Commissioners’ tables, accounting for 22 per cent. of the male and 9.1 per cent. of the female cases. This refers to the effect of alcohol upon the individual alone, and takes no note of alcoholic inheritance as leading to the production of insanity, idiocy, alcoholism, epilepsy, or other neurosis in the offspring, though it is well known to act in this way.”

Dr. Wigglesworth, in the annual presidential address before the Medico-Psychological Association, in 1902, said—“Out of the 3,445 cases [of insanity] which form the basis of the foregoing analysis, a definite history of alcoholic excess unassociated with insanity, in one or both parents (I have excluded more remote relations) was found in 578 instances, a percentage on the whole number of 16.77. Separ-

ating the sexes, we find that the male patients show the higher figures, these amounting to 327, giving a percentage on the total number of males of 19.31, while the females (251 cases) give a percentage of 14.32. . . . These figures do not give so high a percentage of alcoholic excess in parents as has been published by some observers, and, in my opinion, they undoubtedly under-state the case as regards alcohol, for excessive indulgence in this way by the parents of patients is frequently denied when collateral evidence has proved it incontestably."

In 1902 Dr. Robert Jones, medical superintendent of Claybury Lunatic Asylum, London, published a paper in which were the following statistics:—"There are probably at the present time no less than 110,000 certified insane persons in England and Wales alone, of whom approximately about 50,000 are males and 60,000 females. If the Lunacy Commissioners' Blue Book for England and Wales be consulted, the proportionate percentage of instances in which alcohol has been assigned as the cause of insanity to the yearly average number admitted into asylums in the five years, 1895-1900 inclusive, is 21.8 for males and 9.5 for females (the proportion is much higher in Scotland); and after allowing for the deaths of those whose form of insanity is more immediately fatal than those caused by alcohol, there are, I believe, upon the lowest computation, remaining in the asylums at the present time no less than 10,900 males and 5,800 females who are mentally decrepit through the effects of alcohol. During the time that the London County Council's Asylum at Claybury has been opened, from 1893 to the end of 1901—a period of less than nine years—8,493 patients have been admitted, of whom 21.2 per cent. of the males and 12.6 of the females were definitely ascertained to owe their insanity to drink, a total of over 800 men and 594 women who were thus rendered incapable of productive work through their own acts. For the whole of London, during the period 1893-1901, 2,662 men and 1,677

women were received into asylums who owed their insanity to alcoholic intemperance."

Dr. Forbes Winslow, writing in the *London Daily News*, in 1903, says—"The issue of the fifty-seventh report of the Lunacy Commissioners contains appalling and sad news. From it we gather that 32 per cent. of lunacy at the present day is caused by drink. During the last five years the average admitted each year, the assignable cause being drink, is 3,143, by far the highest of all the physical causes. Of the total number of registered lunatics—*i.e.*, 113,964—about 36,465 are at the present moment detained as certified lunatics, whose condition has been so brought on by drink."

Dr. G. H. Savage, of Bethlehem Asylum, says—"In England the increase of insanity is generally considered to vary directly as the increase in the consumption of alcohol."

The Continent.—According to the *Journal of Mental Science*, the lunacy statistics of Paris for the years 1872-85 show a total of admissions due to alcohol as 5,063, being 28 per cent. of the men.

A. R. Cushny says—"In Prussia, 1886-88, 11 per cent. of the cases admitted to insane asylums were diagnosed as directly due to alcoholic excess, while in one of the Berlin asylums the enormous percentage of 47.4 of the admissions were found to be addicted to alcohol."

Kund Pontoppidan, in the *Dictionary of Psychological Medicine*, gives the statistics at that time (1892) for all Denmark as 10.2 per cent. of insanity caused by inebriety; for Copenhagen the percentage was 11.5.

Professor Hoppe, of Berlin, affirms that in 1899-1900 41 per cent. of the admissions to insane asylums in Prussia were chronic alcoholics or children of alcoholic parents.

Dr. Jules Mosel, directing physician of the State Asylum for the Insane, Mons, Belgium, in 1900, said—"In respect to the proportion of insanity caused by

alcohol, one cannot appeal to the statistics of Belgium, which in general do not merit much confidence. French tables mention the proportion of 38 per cent. with men and 12 per cent. with women. It is evident that this is under the truth, since many cases of alcoholism are not officially mentioned. . . . Not all these insane inebriates figure in statistics; but we encounter many of them in prisons, workhouses, etc."

Professor A. Forel, in 1901, says—"About three-quarters of the idiots and epileptics at Bicêtre descend from alcoholic parents. The careful statistics of the Swiss Confederation show that about one-third of the male inmates of insane asylums, one-third of the male suicides, and one-tenth of the men who die at twenty or more, at least in the larger towns of Switzerland, are due to the alcoholic drinking of the victim."¹

Professor Kraepelin, in 1902, said—"It is well known that in the asylums for the insane in the German Empire 10 per cent. of the patients have been committed on account of mental diseases due to alcohol. In some institutions the number is as high as 30 per cent., and even then these figures do not include numerous cases in which alcohol has been an exciting, and not the primary, cause of the trouble—in cases of mania, epilepsy, and paresis. In 1898, in the Heidelberg clinic, the alcoholics formed more than 13 per cent. of the total number of patients; in the men's ward alone the percentage being 25. When we remember that experience teaches that about one-third of the living children of alcoholic parents suffer from epilepsy, and that, according to Bournville, more than one-half of the idiotic children have alcoholic parents, it is readily seen that there is sufficient reason for the state to take up the consideration of the alcoholic question, even if so much misery was not caused in many other directions by this poison."

In dealing with insanity in its relation to alcohol,

¹ In reference to the imbeciles and idiots from alcoholic parents, see statistics given in preceding chapter, pp. 211ff.

we will endeavour to describe the different forms of mental disorder. In some of our divisions, probably most authorities on insanity would concur, but the patients included in other divisions are classed differently by some observers. Many separate classes are formed and the divisions are made from different standpoints by various authorities.

Chronic Alcoholism.—We need say but a few words concerning our first division, for most of this work is taken up with a description of chronic alcoholism, and an endeavour to explain the injury done by it. It is not until it has progressed to its final stages that it comes under the head of insanity. Some very nice distinctions in diagnosis have to be made by examiners in lunacy to determine when the alcoholic is a subject for the insane asylum according to the laws, and when not.¹ Many of the symptoms which have been given in the preceding pages would be sufficient for the commitment of an alcoholic as a lunatic. In addition to the physical symptoms with which the reader is already familiar, we might mention marked tremor, especially of lips, tongue, and hands; arteriosclerosis, liver and kidney diseases, peculiar sensations, headache, and dizziness. Chronic alcoholism, and other forms of alcoholic insanity, which have been continued for a number of years, frequently end in dementia. We append a case in illustration.²

H. J. is a young man thirty-six years of age. His maternal uncle died of "alcoholic excesses." He attended school until sixteen years old, but was rather backward in learning. His work as a mechanic, however, after leaving school, was steady and successful. He was always regarded as rather eccentric, reserved,

¹ See article by A. W. Dunning, "The Boundary Line between Chronic Alcoholism and Alcoholic Insanity," *Quarterly Journal of Inebriety*, vol. xxv. pp. 354f.

² The cases of chronic alcoholism, delirium tremens, delusional insanity, paranoia, and paresis are all obtained from the Connecticut Hospital for the Insane. Through the kindness of Dr. Defendorf the writer was allowed to examine some cases there, and the history was furnished from the records of the institution.

and egotistical. He began alcoholic excesses at an early age, taking mostly beer, but latterly beer and whisky. At twenty-two he lost his first position, where he had been employed for six years, because of drunkenness. He then worked irregularly with his uncle, on an average perhaps four days of the week, but he became so unstable that his father had to keep him under his constant surveillance, and so employed him at home as an assistant in his Turkish Bath establishment. Here he drank the alcohol used for massage, became a common loafer, and was frequently arrested for drunkenness. At thirty-four he had an attack of delirium tremens. Following this his excesses became more marked. He abused and assaulted his mother when she attempted to prevent him from drinking, cursed his father when he refused money for liquor, and even begged from patrons of the bath establishment. Finally he began stealing bath-towels, brushes, etc., which he pawned, and when intercepted in this by his parents became enraged, accused them of using their son like a beggar, and in his anger broke furniture about the house. At this time he was committed to the asylum. He gave evidence of markedly defective memory. After residence in the hospital for one month he was unable to tell how long within a month he had been in the institution, or dates of places of employment within six years. He belittled his drinking habits, was ready with a multitude of excuses for his irregularities in conduct, and failed to exhibit any feelings of shame. He was slovenly in his habits and somewhat careless in his personal appearance. He soiled his bedding and the walls of his room with tobacco, and was thoroughly indolent. Physically he presented a pronounced tremor of the tongue and hands, and his arteries, especially of the forehead, were tortuous and firm. A residence at the hospital of about two months did not lead to improvement, though he left assuring us that the disgrace of having been sent to an insane hospital had brought him to

his senses, and that he would never drink again. His return to the old environment soon brought about excesses even greater than before, with abuse and violence, and he was again committed to the asylum, six months later.

Alcoholic Somnambulism.—A rare state called by different names is found in alcoholism. It is little known and not recognized by the courts because of its infrequent appearance. It is called alcoholic trance, alcoholic hypnotism, alcoholic cerebral automatism, double personality of alcoholism, and alcoholic somnambulism. We have adopted the last name because it seems to be the most descriptive of the state. The attacks differ in length, and the principal characteristic, similar to all cases of so-called "double personality," is a complete lapse of memory of the time covered by the attack.¹ The distinguishing characteristics of a "double personality" are given by Binet² as memory and character. The organization of a "personality" can only be distinguished by these factors, and yet it is very like the normal life, for "if we regard consciousness and memory as the essential constituents of an ego, we may boldly say that every man conceals within himself the germs of a second personality."³

There is an abnormal condition during which the patient acts in an automatic manner and of which he can remember nothing when he awakes.⁴ The writer

¹ Notice the two following quotations:—"Occasionally the existence of a memory peculiar to these second states shows itself in a slightly different and more elementary form; the subject always recommences the same actions. Examples of similar psychological changes are known in dreams, intoxication by ether, hasheesh, alcohol, etc."—A. Binet, *Alterations of Personality*, p. 39. In chronic alcoholism, "besides all this, repeated acts and states have a tendency to leave behind them a memory which develops into automatic performances done practically without conscious intention."—N. Kerr, "Alcoholism and Drug Habits," *Twentieth Century Practice of Medicine*, vol. iii. p. 67.

² A. Binet, *Alterations of Personality*, p. 20.

³ M. Dessoir, *Das doppel Ich*, s. 6.

⁴ An interesting treatment on this subject may be found in an article by W. C. Sullivan, "Alcoholic Automatism," *Journal of Mental Science*, 1904.

believes in but one personality, so when terms are used in this discussion denoting "multiple personalities," they are to be understood to refer to abnormal states concerning which this is a common term.¹ Beside the ordinary amnesia concerning the drunken state, there is sometimes a connected series of memories. We are already familiar with the case of the Irish porter, spoken of in the chapter on Memory, who lost a parcel when he was intoxicated and was unable to remember, when he awoke, where he had left it; but on again becoming intoxicated he was able to remember the place, and went and got the parcel.² In addition to this serial memory, we know very well that the character is quite changed; the penurious, miserly person becomes the open-hearted spendthrift; the quiet, modest neighbour, when intoxicated, is the talkative, boisterous braggart; the kind and tender father is transformed into the cruel, quarrelling brute. We can hardly recognize him, the "person" is so changed. How many wives have repeated to the writer their experience in identical language—"He is so kind and good when he is 'himself,' but when he is intoxicated it is impossible to live with him!"—unconsciously stating a real change of "personality."

This is shown in another way. Not infrequently the drunken man assumes the character of some one individual, or of some class. He may be Napoleon, or simply a general, or perhaps a lawyer, or a clergy-

¹ For a discussion of double personality in which the writer expresses his views, see "Case of John Kinsel," *Psychological Review*, November 1903.

² This seems to be no uncommon experience. Notice the following quotations:—"What occurs during a paroxysm will be remembered in other paroxysms."—J. Cerwen, *Mental Disorders* (Pamphlet), 1875. "He may remember some things and forget others; and often past events are entirely forgotten until they are recalled to the memory by others."—F. Clum, *Inebriety*, p. 56. "The defects of memory in alcoholism claim special attention. . . . An observation verified by many authorities that a man may forget the things he has done when intoxicated, and only be able to recollect them when intoxication has again restored the conditions favourable for reproduction."—G. R. Wilson, *Drunkenness*, p. 35.

man, or some particular pugilist of wonderful prowess. Whatever character he represents himself to be he acts out very faithfully, without doubt believing himself to be the very character which he represents. This is no more wonderful than the experience of normal consciousness, the "dramatic sundering of the ego" of some actors during their performances, who afterwards say of their experience that they not only pretended to be, but really were the characters which they represented themselves to be, for the time. But they did not have the different states severed by memory to such a degree as the drunkard.

It is not the single intoxication with which we are dealing here, but rather the state of the chronic drunkard. Why should he assume this somnambulistic state? The continued severing of the consciousness by amnesia in the single intoxication tends inevitably to create a habit of mind and brain of such a character that the experience is divided, and the individual may spend a great part of his life in the second or abnormal state. We find not only that the alcoholism tends to produce a second personality, but conversely, the drinking habit is started and kept up when the person is abnormal so that it may be continued when he again reaches the normal state. It is interesting in this regard to notice what may be an indirect effect of alcoholism. In the case of Emile X——, given by Binet,¹ we observe that her father was a drunkard. The explanation of why this dis severance of consciousness comes to the alcoholic will be more fully dealt with when we speak of the reason why an alcoholic is easily hypnotised.

Let us turn our attention more particularly to a description of Alcoholic Somnambulism. It usually comes after a long debauch during which the patient has imbibed much alcohol. It is not ushered in by any particular symptoms, the beginning is usually

¹ A. Binet, *Alterations of Personality*, pp. 32f.

stated when a person comes to himself by saying, "The last I remember was——." Evidently the transition from the normal state is sudden and quiet, causing no notice from others, and being accompanied by no alarming symptoms. During the attack the subject does not appear drunk, although he may consume vast quantities of alcoholic liquors. He may seem perfectly normal, talk with friends, travel, transact business, and attend social functions without attracting any attention. If examined by a person who was well acquainted with him, and who was also familiar with hypnotic somnambulism, no doubt the same slight but characteristic changes might be present—as, *e.g.*, the fixed look, haggard and dim eyes, and immobility of countenance. Usually the state is betrayed by some extraordinary act, not infrequently murder or some other crime. There may be simply strange actions of a puerile nature, and an apparent loss of speech or hearing,¹ but most frequently crime is the result, or at least we hear most of cases of this kind.

A young man, after a few glasses of cider and a drink of gin, wandered aimlessly about and deliberately shot a man. When he recovered he was entirely unconscious of the occurrence, yet he did not appear drunk when the shooting took place. A merchant, a heavy wine-drinker, drank champagne at his club, and his mind became confused. He recovered two weeks later, having married in the meantime and visited several cities. He drank heavily all the time, his mind appeared clear, and nothing unusual was noticed in his manner and conversation; but no memory of the time was retained. Later, on another occasion, he came to himself on the ocean, having taken passage for Liverpool; the last he remembered was drinking with a friend in Boston. A travelling salesman recovered after a week of which he could remember nothing, during which he attended

¹ See case, A. McDonald, "Alcoholic Hypnotism," *Quarterly Journal of Inebriety*, vol. xxii. pp. 31f.

to his business and nothing unusual was noticed.¹ Lloyd Tuckey cites the following case²:—“Alcoholic intoxication is sometimes accompanied by distinct double personality, but this is rarely so well marked as in the case of a farmer referred to by Professor Ball. This man was a dipsomaniac, and frequently got drunk while attending the markets. In this state, however, he continued to transact business, and apparently with considerable judgment and ability. But on becoming sober he would be quite unconscious of what had taken place, and his business suffered severely in consequence. He hit upon the idea of keeping a note-book for use during his drunken state, and he found that by doing so he was able to preserve a written record of his operations, which supplied the hiatus in his memory.”

The resumé of several cases has been given in order that the general condition might be portrayed.³ No doubt defences of amnesia and ignorance are frequently made in the courts, when they are not justified by the facts, but this should not debar us from recognizing genuine cases of this nature. Some are inclined to think that when a man appears all right, and is able to transact business, etc., the plea of amnesia and consequent abnormality and irresponsibility is but a subterfuge; but we have many cases

¹ H. L. Staples, “Alcoholism,” *Quarterly Journal of Inebriety*, vol. xxii. pp. 417f.

² C. L. Tuckey, *Treatment by Hypnotism and Suggestion*, p. 89; see also G. R. Wilson, *Drunkennes*, p. 16.

³ Something slightly different from the cases presented here, is described by N. Kerr, *Twentieth Century Practice of Medicine*, p. 67, as follows:—“Double consciousness is a striking feature in some chronic alcoholics. So real does the double state feel that the patient can (when just awake) find himself, as it were, coming slowly back to himself from his other self, and he can sometimes remember what he was doing or thinking in that other condition. At other times he can remember only partially. There is a second form of double consciousness, where the subject can feel that he is two separate persons at the same time, and talks or sings to his other self just as the separate heads and upper halves of the ‘Two-headed Nightingale’ conversed with each other. . . . This double consciousness must not be confounded with the hallucinatory belief of the presence of another person when no one else is present.”

showing similar phenomena. Post-epileptic states may show the same characteristics, especially that of amnesia. Every one is familiar with the real somnambulist (sleep-walker); he accomplishes feats of strength and skill, solves problems, etc.; but of them he is absolutely unconscious when he awakes in the morning. Closely connected with this is the somnambulism of the hypnotic state, and there is reason to think that this alcoholic somnambulism and that of hypnotism are closely allied, on account of the suggestibility frequently found in this condition. The following case clearly illustrates this:—

“P. *æt.* 31. No fixed occupation. Mother died of a ‘fit’; said to have been demented some time before her death. A cousin on the maternal side idiotic; another committed suicide. A brother suffered from convulsions in childhood.

“Prisoner was always idle and unstable; lost several engagements through drunkenness; drinking for over ten years before the crime; was once convicted summarily for drunkenness. Had had rheumatic fever and syphilis, and suffered from mitral disease.

“Three days before the crime, prisoner took a room in a brothel, and went on a steady drinking bout with one of the girls of the house. On the day of the crime, in the afternoon, he went out with this girl; having had some drink in a tavern, they entered a cab, directing the driver to take them back to the brothel. On arriving there, P. got out of the cab, and told the driver that he had killed the girl, that she had asked him to do so. She was stabbed to the heart with a pen-knife. P. could give no further account of the affair: the woman told him to stab her, and he obeyed as one might in a dream.”¹

There is also “a case reported by Prosper Despine, where one of the four drunkards who were conversing together suggested the hanging of the most intoxicated of the party—a suggestion promptly

¹ W. C. Sullivan, “Alcoholic Homicide,” *Journal of Mental Science*, April 1900, p. 260.

carried out, with results which only failed of being fatal through the accident of outside intervention."¹

These attacks may last any length of time, from a few minutes to months,² and when the patient awakes, he may be familiar with the surroundings and think no time, or at most a night, has passed, but there is usually a very surprised expression when he comes to himself.

Alcoholic Epilepsy.—Besides aggravating the ordinary forms of epilepsy, alcoholic excess may give rise to epileptic attacks.³ This is seen in children of alcoholics or those who have unstable nervous systems.⁴ After several debauches the attacks most frequently appear. Berkley says,⁵ "As high as eight or ten per cent. of alcoholics have eventually epileptic seizures." This state is closely connected with the Alcoholic Somnambulism, as ordinary epilepsy is related to somnambulism; in fact, the somnambulist states may be but equivalents of epileptic seizures. It is also connected with delirium tremens, as is shown by the following from Wernicke:—⁶

"Of the complications [of delirium tremens] that with epilepsy needs to be especially mentioned. The epileptic seizures of the inebriate are a sign of alcoholic degeneration of the brain, like delirium tremens. According to the experiences in our clinic they generally occur thirty-six to forty-eight hours before the outbreak of the delirium, following an excess, and in case complete abstinence is effected, to be entirely wanting subsequently. At the clinic alcoholic epileptic seizures almost always occur only

¹ W. A. White, "Mental Dissociation in Alcoholic Amnesia," *Psycho-Pathology* (B Sidis), p. 110.

² H. J. Berkley, *Mental Diseases*, p. 278, says, "Instances in which this state persists for days or weeks are very rare."

³ W. P. Sprattling, *Epilepsy and its Treatment*.

⁴ See H. Clark, "Heredity and Crime in Epileptic Criminals," *Brain*, vol. ii. pp. 491f., for a discussion of the relation between alcoholism and epilepsy in criminals.

⁵ H. J. Berkley, *Mental Diseases*, p. 277.

⁶ C. Wernicke, "Some Notes on Delirium Tremens," *The Alienist and Neurologist*, 1903.

on the first days following admission. If we have, therefore, as it frequently happens, to constate the consequences of the epileptic seizure, bitten tongue, etc., on admission, we have the task, if possible, to effect total abstinence. Bonhoffer has referred to this almost uniform relation."

Alcoholic Amnesia.—Some writers¹ lay considerable emphasis upon one form of alcoholic mental disorder which manifests itself principally by an almost total lack of memory for recent events. Other investigators deal with this form under the rubric of Korssakow's Disease.² This usually accompanies polyneuritis, insomnia, loss of appetite, and defective nutrition. It begins suddenly with excitement, the patient being confused, disorientated, restless, and anxious, and having some hallucinations of sight. Only the events of early life are remembered; the events of the day, or even the previous minute, being forgotten. He asks the same questions and relates the same facts over and over again, and knows not whether he has had meals, taken a walk, or received a visitor directly after these things have taken place. He loses all account of time, and cannot tell whether an event occurred a week or a year ago, nor can he recall test words after a moment's conversation. Most patients recognize their trouble, and their strife to overcome it is often partially successful. While anxious at first, they may later become quarrelsome and irritable, especially when their inconsistencies are shown to them. Some show a marked indifference, but may improve gradually, and are much better after nine months or a year; but the defect of memory persists in most cases. Complete recovery is rare.³ This may be the only symptom of dementia present, or the attack may terminate in

¹ W. B. Lewis, *Mental Diseases*, pp. 348f.; H. J. Berkley, *Mental Diseases*, pp. 273f. See also Chapter on Memory.

² A. R. Defendorf, *Clinical Psychiatry*, p. 82; see also article by Dr. Turner, "Inebriety as a Prominent Cause of Korssakow's Disease," *Journal of Mental Science*, 1904.

³ For a case, see W. B. Lewis, *Mental Diseases*, p. 348.

apoplexy, epilepsy, hemiplegia, or simple brain wasting.¹ This is separate from, and must not be confused with, the Alcoholic Somnambulism.

Dipsomania.—Clearly to be classed as a form of insanity, and yet seldom found in an insane retreat, are cases of dipsomania. This is a recurrent monomania, which is expressed by an unconquerable thirst for alcohol, and most frequently exhibits itself at regular periods.² In the interim between the attacks alcohol is not desired, and is in some cases absolutely abhorred. Spitzka defines it as "a form of periodical insanity manifesting itself in a blind craving for stimulant and narcotic beverages." Cases of this kind are distinguished from chronic alcoholism by the fact that in the latter the desire for alcohol is always present in an intense form, and there is a total lack of shame concerning the drinking: the dipsomaniac knows his weakness and is ashamed of it, while recognizing that he is unable to prevent it. What is called pseudo-dipsomania is a condition when the patient is always ready to drink, and never has the abhorrence for drinking which the dipsomaniac manifests in his periods of abstinence. Circumstances or opportunity regulate the time of the pseudo-dipsomaniac's excesses.³

The dipsomaniacal attacks come suddenly, but are usually preceded by some premonitory symptoms; differing with the individual.⁴ When the storm bursts the dipsomaniac gives himself up to unrestrained indulgence, not infrequently accompanied by other vices; this is continued for periods of different lengths, and may terminate as suddenly as it began. The causes of dipsomania seem to be apparent in most cases, for the subjects are almost entirely nervous

¹ R. Lawson, "On the Symptomology of Alcoholic Brain Disorders," *Brain*, vol. i. pp. 191f.

² W. L. Howard, "The Confessions of a Dipsomaniac," *Arena*, 1904.

³ W. L. Howard, "The Pathological Impulse to Drink: Alcohol as a Secondary Factor in Dipsomania," *Medicine*, February and March 1898.

⁴ I. Ray, *Medical Jurisprudence*, p. 548.

degenerates, and the element of alcohol is more or less an accident, and is but one of the varying manifestations of a bad diathesis. The family histories are largely tinged with nervous disorders. Hysteria, epilepsy, migraine, and insanity are found in the immediate ancestry. Where dipsomania appears epilepsy is suspected; and some would go so far as to say that a dipsomaniacal attack is but the equivalent of an epileptic seizure. Improper physical and psychical conditions which tend to depress the nervous systems of those who are already unstable are liable to prove an exciting cause of dipsomania. Such experiences as overwork, shock, prolonged depression, excitement due to political strife, social worries, neurasthenia, and sexual excess frequently excite to indulgence.

Sometimes there is a pathological series of diseases of which dipsomania is one. Remondino¹ reports a case where the series consisted of migraine, dipsomania, and gouty rheumatism; and another case of dipsomania and hemorrhoids, the succeeding trouble taking the place of the preceding ones. In the case of John Kinsel the series consisted of *petite mal*, double personality, and dipsomania. Dipsomania and other manias are co-existent in some diseased minds. Kleptomania is the one most frequently associated with dipsomania, and in some cases of alcoholism there is developed a kleptomania which exhibits itself during every intoxication, and often takes systematic and peculiar forms, as when, *e.g.*, an alcoholic will steal only bibles or shoes. Sometimes these manias may be interchangeable; at one attack there will be manifested a dipsomania, and in place of this at the next attack may come other monomanias—*e.g.*, pyromania, kleptomania, or erotomania.

American climate and hurry are more favourable for the development of dipsomania than the milder climate and mode of life of Europe; not infrequently

¹ P. C. Remondino, "Periodical Dipsomania and Some of its Remote Causes," *Quarterly Journal of Inebriety*, vol. xxii. p. 9.

a change of residence or business will assist in a cure. Dr. March, of Albany, trephined a man who had been an inebriate since he received an injury to his head by a fall; after the operation the man felt no further need or desire for alcohol, living a total abstainer for the remainder of his life. Cases of this kind illustrate another cause of the disease, and are termed traumatic dipsomania. A great number of remote causes are mentioned by different authors—as, *e.g.*, sexual continence in celibates; so that it is impossible to mention all the causes; but we can safely say that the lesser and exciting causes owe their potency in inducing the disease to an unstable nervous system.

In some, the dipsomaniacal periods differ in length from two days to three or four years, and occur with astronomical exactness. It may be every fifty-two days, or every twenty-seven days and twelve hours, but whatever time has been observed can be counted on. In other cases there is not the regularity of the periods, but the storms are determined by exciting circumstances. In most cases we are ignorant of the causes which determine their length, but some patients show quite plainly that such events as the seasons of the year, the rhythm of nutrition, dietetic conditions, and in females menstruation determine the time of the attack.¹ With some patients the sober periods shorten, getting less and less each time, but in others the rhythmical period remains constant.

A great variety of symptoms are harbingers of the outbreak. While they vary largely in different persons, they are usually constant in the same person. Usually nervous depression, restlessness, irritability, insomnia, and abhorrence of existing conditions are among the symptoms, and many dipsomaniacs easily recognize when an attack is imminent. Some other symptoms gathered at random are parsimoniousness and fear of impoverishment, delusions of benevolence and consequent generosity, great activity and mania for work, inactivity and distaste for labour, insatiable

¹ H. Ellis, *Man and Woman*, p. 254.

appetite for food, distaste for anything to eat and loss of all appetite for food, sexual excess, hyperaesthesia to heat or cold, undue excitement over small matters, hysterical attacks, etc. During a period of total abstinence he may be haunted with the idea of drink; this is soon followed by a desire for drink, which may be strenuously combatted, but finally becomes irresistible.

One case might be quoted more fully. The subject was a physician of middle age and a bachelor, highly gifted mentally and morally, liberally educated, and, except for these attacks, in enjoyment of perfect health. "With him it was no accidental beginning—his spells never began by any drinking; alcohol was no factor in his disease. The psychological processes that brought the irresistible need for that oblivion and subsequent crisis that he found only in heavy drinking came on slowly and from some obscure cause, and when fully under the influence of the spell—a veritable mental aberration—he would begin his preparations for a long and vehement debauch with all the secrecy of a conspirator, and with the watchfulness, ingenuity, and irresistible impulses of a kleptomaniac. For days he would cautiously gather his stores of brandy, gin, and whisky, or whatever other alcoholic beverage he could procure, for the coming event, and secrete his bottles in the most likely places to escape immediate detection. His hunting-boots, hunting-case, gun-case, spaces in his bookcases in the rear of his books, the sleeves of his coat, spaces under or between his mattresses, and every conceivable hiding-place were well stowed with bottles of the best and strongest liquors before he would allow himself to touch a drop. When all was ready his spell of debauch would be inaugurated at nightfall. Being missed at his meals, and at his accustomed places by his friends, who always feared the cause of his disappearance, he would be found in his room in a glorious state of intoxication. He would walk rigidly with tensely rigid frame, hardly be able to articulate, and his eyes would

have a wild, fixed, and unnatural stare, and seem to be more or less protruding. It was really pitiful to see this intelligent and proud man now attempt to act the considerate and courtly gentleman that he always was in his moments of intervals of strict sobriety. The search for his bottles would then begin, but he always managed to profit by past experiences, and have some new source of supply from some obscure reserve store hidden away elsewhere, and from this and what few small bottles would escape detection he would finish his spell, an ending that always came when his stomach refused longer to hold any liquor. A week of hard retching, vomitings, stomach and head ache followed, with desires to commit suicide, with continuing spells of deep contrition and self-reproaches, and when able to again take some food and stand on his feet, he would depart for a couple of weeks' recuperation away from home, and be himself until the occurrence of a new attack."¹

These premonitory symptoms are common with other manias. It is during this time that the attack may be averted, but after the storm has burst it must run its course. The patient will pawn his clothes, steal, or do anything to obtain alcohol. Nothing but physical restraint will prevent excessive indulgence. As Dr. Skie said years ago, he will drink "shoe-blackening and turpentine, hair-wash or anything stimulating." He is able to imbibe an immense amount of liquor, and it requires much more to affect him than an ordinary drunkard.² In some cases the attack is self-limited, and at a certain time the craving ceases; but more often the debauch is limited only by the finances or the stomach. With money all gone, or experiencing inability to retain any alcohol, the patient, a physical and mental wreck for the time being, seeks to regain his former standing. During the attack criminal and depraved instincts are de-

¹ P. C. Remondino, "A Study of the Causes and Nature of Dipso-mania," *Quarterly Journal of Inebriety*, vol. xxiii. pp. 131f.

² H. J. Berkley, *Mental Diseases*, p. 422.

veloped in some cases, so that thefts, assaults, and other misdemeanours are committed, and indulgences of licentiousness and unprovoked jealousies which are directly opposed to the conduct and disposition of the individual in his normal state, cause him remorse when he recovers. The resistlessness of the attack is portrayed in a recent work of fiction,¹ where the hero says:—

“Why should I have these fearful, horrible outbreaks of nervous depression, ending in attacks of dipsomania? They will land me in the madhouse, prison, or grave, according to circumstances.

“‘Use your will power!’ Only the most ignorant could give such advice. Do you tell the epileptic to use his will power, Doctor? I surmise you have many a time left the trembling, disheartened dipsomaniac with the advice not to drink any more. Just what he was trying to do, Doctor; but he thought that you would help him carry out his fervent desires and also your advice. No, Doctor, the study of these cases is beyond you. . . . The time will arrive when scientists must recognize the nervous instability of certain individuals which takes the form of dipsomania, and be able to distinguish drunkenness, vice, and immoral habits from a nerve explosion which has wrecked numerous homes and destroyed many brilliant minds.”

When alcohol cannot be obtained during these attacks an abnormal condition is very noticeable. Among the physical changes are increased pulse rate, feverish skin, and parched throat; restlessness and fear of impending danger, changed temper, jealousy and chaotic mental states are common psychical symptoms. One case we quote to show the not unusual development of alcoholic symptoms when alcohol has not been taken. “During these periods [dipsomania], if denied alcohol, there would be complete loss of appetite and ability to sleep; his eyes would become bloodshot; his gait staggering; his conversation would be voluble, silly, and incoherent; and delusions would often be present. In short, he would at times present all the phenomena of

¹ W. L. Howard, *The Perverts*.

intoxication without having, to my certain knowledge, partaken of a single drop of alcohol."¹

In the interim between attacks, if the patient has not had much experience, he may think that he is completely cured, sign the pledge, and make all efforts to reform; at this time alcoholic beverages are usually repulsive. Sometimes, though, he recognizes his disease and looks forward with fear and aversion to the next outbreak, while his friends and family upbraid him for his past failures and plead with him for reform.

Dipsomaniacs are not infrequently persons of extraordinary mental ability.² The genius has one faculty developed at the expense of the others, and in so far is abnormal and subject to more abnormality. Whether he be physician, artist, musician, or literateur, he is living at a high nervous tension, his nervous energy is easily exhausted, and his reserve brain power is soon expended. No other class of partakers of alcohol is composed of such bright and intelligent men, or men who both by nature and education are better equipped morally. Frequently dipsomaniacs do not drink in company, but imbibe secretly; and a recluse is to be suspected, especially among women.³

When the first symptoms of the attack make their appearance, the outbreak can sometimes be aborted by the use of physical means, correcting and cleansing the digestive organs, or by psychological means through the use of hypnotism; usually, though, it takes its course. It will be some advance when dipsomania is clearly diagnosed, not only by physicians but by the courts, and it is recognized that during the paroxysms the individual is really insane and irresponsible for his acts. Magnan has made a

¹ L. W. Baker, "Dipsomania," *Quarterly Journal of Inebriety*, vol. xxiv. p. 189.

² See C. Lombroso, *The Man of Genius*, pp. 54f., for a list of famous alcoholics.

³ L. F. Winslow, *Mad Humanity*, p. 422.

distinction which is well taken: "A dipsomaniac is insane to drink, but a drunkard is insane after he is drunk."

In 350 cases of alcoholism studied by Dr. Dana at Bellevue Hospital, the most frequent form was dipsomania, and the next pseudo-dipsomania.

Delirium tremens.—While the onset of delirium tremens is sudden, it is the result of chronic alcoholism, and not of acute intoxication. The occasion of the attack may be either excessive indulgence or the sudden withdrawal of alcohol. The immediate cause is not known, but one theory which has gained favour and is supported by not a few facts is that the condition, which is recognized as the result of poison, is not brought about by the alcohol directly, but by some toxic substance which the alcohol generates, and of which the alcohol is an antidote. In a paper read at the Eighth International Congress, Vienna, 1901, Professor Jauregg sets forth this view. The facts cited to substantiate this are the necessity of a chronic alcoholic condition with previous continued excess, which shows that it is not a case of direct alcoholic poisoning; and further, this poison cannot be alcohol, for alcohol lessens its influence in delirium tremens and after a short abstinence, as in the morning when tremor and nausea are present. This poison has great similarity in its effects to those of bacterial origin, of some infectious diseases—as, *e.g.*, typhoid fever—for it frequently runs a course as these do, and an examination of the blood exhibits similar phenomena. Inflammation of the conjunctiva and irregularity of renal action carry the analogy still further.

A paper by Dr. Pritchard¹ confirms the kidney diagnosis and also the indirect poison theory, for his contention is that delirium tremens is usually connected with acute nephritis, and that the poison

¹ F. H. Pritchard, "Delirium Tremens in Moderate Consumers of Alcohol," *Quarterly Journal of Inebriety*, vol. xxii. pp. 480f.; see also H. J. Berkley, *Mental Diseases*, p. 259.

which causes delirium tremens is that of uremia. In other words he would affirm that alcohol affects the kidneys so that they are unable to excrete the poisonous materials, and when this peculiarly alcoholic matter enters the blood the result is delirium tremens. The seriousness of the attack depends on the condition of the kidneys. This theory could well be assimilated with that of Professor Jauregg, but does not explain the further contention of the latter that alcohol is an antidote to this poison. This part of the theory is maintained on account of the recognized effects of abstinence and the alleviation of the intensity of the attack when alcohol is given, while also prolonging it. That is, the poison no longer held in check by alcohol, spreads through the system and causes delirium; when alcohol is given the delirium is milder, but more poison is generated and the attack prolonged. For a time it was denied that abstinence occasioned delirium tremens, but it is being admitted more now; and hence this theory accords with facts as accepted by some investigators. Whether we accept this or not, we recognize that directly or indirectly alcohol is the cause of faulty metabolism, which in turn results in this mental and physical injury of which we are speaking.

The general symptoms of delirium tremens are quite constant. Among them are to be noticed tremulousness (limbs, lips, tongue, voice), depression, mental confusion, insomnia, symptoms of motor paresis, hallucinations, restless delirium, and delusions of fear; bleeding from nose and gums, and convulsions may also be present. The hallucinations and illusions are different with every case, but it is noted that the hallucinations are usually of a visual character, although they may be connected with any of the other senses. Erroneous perceptions give rise to illusions of all kinds of grotesque shapes and terrifying forms, and the hallucinations of creeping things which are so common always posit the creatures in motion. Peripheral disturbances lead the patient to

think that ants or bugs are crawling over him, or that his body is full of wounds.

He reacts to all his hallucinations, looks under the bed, in the cracks of the floor, into the closet, to follow the movement of the animals which he has recently seen and feared; or he runs to the window to watch the horse which he sees running away. To escape from the objects of hallucinations, he may at times do injury to his attendants, or his suspicions may be centred around the attendant, so that he is led to do injury to him from the standpoint of what he considers self-protection.¹ Small animals such as insects, snakes, toads, rats, and spiders are most frequently seen, but occasionally large and mythical animals, like dragons, are present in the hallucinations. The vision of snakes and worms has been accounted for by the distended blood-vessels of the eyes. Itching of the skin starts hallucinations of vermin, which are afterwards seen in the room, and the goose-flesh which sweeps cold and wave-like over portions of the body suggests snakes.² The delusions are restless and the patient is always on the move, so that it is classed as an "occupation mania"; thus if death comes it is from exhaustion on account of malnutrition, constant movement, and loss of sleep.

The longest case of delirium tremens of which we have read was one of fifty-one days, and the attacks vary from that to two days. Very seldom the patients can stand more than a few days' illness. The disease is generally self-limiting, either reaching a favourable or fatal termination in sixty to one hundred hours.³ If the hallucinations of hearing persist after the attack has subsided, doubts of complete mental restoration are greater.⁴

It will not be within our sphere to touch on the

¹ See pamphlet by C. E. Stanley, *Alcoholic Psychoses: Clinical Aspects and Differential Diagnosis*.

² M. de Manacéine, *Sleep*, pp. 289f.

³ H. D. Rolleston, "Alcoholism," *A System of Medicine*, Allbutt, vol. iii. p. 867.

⁴ H. Maudsley, *Pathology of Mind*, p. 485.

subject of treatment except in one particular, and that is whether it is best to continue the use of alcohol in lessening quantities or to entirely withdraw it and if necessary substitute other drugs. The latter is much more favoured by authorities to-day. It seems, in one way, to be a matter of choice; by using less and less alcohol so that it is entirely withdrawn at the end of four or five days, the attack is prolonged but lessened in intensity; by completely withdrawing alcohol the attack is made much shorter, but is more intense. In the case of fifty-one days referred to above, the first four weeks the physician gave from four to six ounces of whisky daily. Those who use alcohol in treatment, claim that it is cruelty not to do so; those who do not, maintain that they have better results and the extreme agony for a few hours has a salutary effect. In line with the last idea, one army surgeon, who was stationed at Fort Vancouver, which at that time had the largest ratio of admissions for drunkenness, adopted a plan which he found very successful. When an alcoholic called for him he immediately placed the patient upon the operating-table, introduced the stomach tube, pumped out the stomach, then washed it out, and after he had freed the stomach of all mucous and contents, he gave the patient a bowl of hot essence of capsicum, and allowed him to rest for a few hours. This plan was very prompt in relieving the man, and its deterrent influence on the drink habit was also excellent. In his report he concluded by saying that he never had occasion to administer this treatment to the same patient more than once. Perhaps the rapid, cruel treatment of delirium tremens may be the most humane after all.

We append the following typical case:—C. L. is a well-developed, well-nourished German, forty-one years of age. His father was a chronic alcoholic, and his half-sister was insane. As a young man he led a dissipated life. He has been addicted to the use of alcoholic beverages for the past fifteen years, and

during the past two years has frequently been intoxicated. His favourite beverages were gin and cider. He gradually became indolent and indifferent to the wants of the family, and is also said to have deteriorated in memory. While naturally suspicious, he gradually became unkind, quarrelsome, and jealous of his wife, accusing her of infidelity. Early in July 1902 he ran into the house quite out of breath and in much fear, saying, "Thank God, I have escaped from that devil that was after me." This apprehension, which was a "touch of the horrors," lasted but a few hours. One month later, after a period of a week or so of indisposition and gastric disturbance, some nausea, vomiting, anorexia, also muscular tremor and inco-ordination, he suddenly developed terrifying hallucinations of sight and hearing; he saw devils, eels, and rats passing him, shook worms from the ends of his fingers, thought his bed was on fire and tried to put it out, and saw his wife in intercourse with one of his fellow-workmen. He became extremely fearful, rushed about to escape the animals which were following him, and would leap out of bed in great terror. His consciousness was completely clouded. When at home he thought himself in a shop, and that those about him were shop-mates. His attention was completely absorbed in his numerous hallucinations, and he talked of being executed, asked if he was to be brought to Hartford for burial, and wept for his poor children who were to be orphans. Other delusions were that his wife was unfaithful, and that some of his children were by other men. His insomnia was extreme, and at first he could not be induced to eat. In the course of fifteen days, while still completely disoriented and suffering from many hallucinations which had lost much of their effect, he would shake the worms from his fingertips quite indifferently, and would sit for hours, apparently watching with interest the numerous creeping things about him. He became emotional only when speaking of his wife's behaviour. His

activity had disappeared, and he was quiet and tractable, but reticent and self-absorbed. His muscular tremor continued and his deep reflexes were much exaggerated. At the end of the third week his hallucinations began to disappear quite rapidly, and he became thoroughly conscious. Likewise all delusions and fear disappeared, and by the twenty-fifth day he had thoroughly recovered, except for some muscular tremor.

Pathological Inebriety.—Wernicke¹ differentiates pathological drunkenness from delirium tremens, the former being distinguished chiefly by a delirium of a few hours only, where delirium tremens lasts days. Heilbronner² has described this condition (“pathological inebriety,” he calls it) quite fully, and says that it seldom fails to be the initial appearance of those cases of delirium tremens which later show the typical humorous disposition. He cites some cases and gives symptoms which immediately suggest delirium tremens—as, *e.g.*, fear, loss of localization, and visual hallucinations. In many cases, he says that the whole course occupies a few minutes, particularly “with those in whom the excitation stage sets in during half-sleep.” Most cases end in deep sleep. This is called by some “a touch of the horrors,”³ and is an abortive form of delirium tremens.⁴

Mania a Potu.—Some authorities differentiate “mania a potu” from delirium tremens, but in most cases it seems hardly necessary to make the distinction. We do so here for the sake of completeness. It is called besides mania a potu, acute alcoholic mania, delirium ebriosum, oinomania,⁵ and both this and delirium tremens are called acute alcoholic delirium by different writers. The distinction is credited to

¹ C. Wernicke, *Grundriss der Psychiatrie*.

² K. Heilbronner, *Pathological Inebriety*, Lecture delivered before the Medical Society of Halle, Germany, January 1901.

³ A. R. Defendorf, *Clinical Psychiatry*, p. 121; I. Ray, *Medical Jurisprudence*, p. 548.

⁴ H. J. Berkley, *Mental Diseases*, p. 262.

⁵ W. R. Gowers, *Diseases of the Nervous System*, vol. ii. p. 581.

Magnan.¹ This form of disorder usually appears among those who have an inherited tendency to mental instability and excitement,² and most frequently among periodic or occasional drinkers.³ It may follow the indulgence in a very small amount of alcohol,⁴ or there may have been abstinence from alcohol for weeks prior to the attack, but the patient may have been nervous, had gastric disturbances and general *malaise* with irritability, and hideous dreams.⁵ There may have been some sudden shock to develop the mania, which frequently comes without warning. There is great excitement and the attack is exceedingly violent, but usually brief. Similar to delirium tremens, there are hallucinations and illusions of a variable fleeting nature, and while in delirium tremens motor symptoms are as prominent as the sensorial, the most notable feature of mania *a potu* is the prominence of sensorial disturbances. These may show themselves among other ways in amblyopia, dyschromatopia, and auditory, olfactory and gustatory disturbances.⁶ It also differs from delirium tremens by an absence of tremor and restlessness, and in the more marked and ungovernable fury.⁷ Kerr denies any hallucinations, but most other authorities cite them. The primary effects of medication are good, but one other characteristic of this disorder is the sudden and frequent relapses.⁸ These outbursts occur after intervals of apparent convalescence, and may come repeatedly without further indulgence in alcohol.

¹ V. Magnan, *On Alcoholism* (translated Greenfield).

² J. Stewart, "Alcoholism," *American System of Practical Medicine*, Loomis Thompson, vol. iii. p. 732.

³ A. Gustafson, *The Foundation of Death*, p. 146; T. S. Clouston, *Mental Diseases*, p. 317.

⁴ N. Kerr, "Alcoholism and Drug Habits," *Twentieth Century Practice of Medicine*, vol. iii. pp. 11f.

⁵ W. B. Lewis, *Text-book of Mental Diseases*, p. 338.

⁶ W. B. Lewis, *Ibid.*

⁷ J. Stewart, "Alcoholism," *American System of Practical Medicine*, Loomis Thompson, vol. iii. p. 732.

⁸ R. Lawson, "Alcoholic Brain Disorders," *Brain*, vol. i. p. 184.

Alcoholic Delusional Insanity.—This form of insanity develops as delirium tremens does. Why the apparently same conditions should develop in one person into delusional insanity, and in another into delirium tremens is a mystery; or why at one time a person should have one form of mental trouble and at another time the other, has not been explained.¹ The onset is sudden, but unlike delirium tremens, the consciousness is unclouded. Similar to dipsomaniacal attacks there may be premonitory symptoms such as irritability, headache, dizziness and insomnia. Sometimes for days after the first noises are heard the patient may attend to his regular work, but when the attack is further advanced it attracts the attention of his associates. Sleep is disturbed by strange sounds which suddenly awaken the patient. The sounds become more definite and finally are resolved into voices which are heard day and night; the voices become definite words, then phrases, and finally sentences, all of which refer to the patient and accuse him of crimes. He hears himself called all manner of derogatory names, and the voices predict for him an ignominious fate which he well deserves. He is compelled to listen to his death sentence by the court, or to plans for his assassination or legal execution. Neighbours shout or jeer at him, and all persons seen or thought of seek his life. Sometimes he accuses himself of crimes, and when any patient pretends to be a murderer it is almost a sure symptom of alcoholism.

These delusions of persecution are very characteristic symptoms. Occasionally there may be delusions of exaltation as well as of persecution, but usually they are of the latter character. Sometimes electricity appeals strongly to the imagination of these patients, and they have delusions concerning this.²

¹ See pamphlet by C. E. Stanley, *Alcoholic Psychosis: Clinical Aspects and Differential Diagnosis*.

² R. Lawson, "Alcoholic Brain Disorders," *Brain*, vol. i. p. 188; W. B. Lewis, *Text-book of Mental Diseases*, pp. 354f.

The writer remembers one patient who had a delusion that wires were under the floor and he was connected electrically with wax figures which his enemies were exhibiting in the town. These figures reproduced every movement of his, and were associated in the exhibition with the figures of noted criminals. He earnestly appealed for relief from this unbearable condition. Very seldom any except auditory hallucinations are present, but sometimes there may be some of sight. Sexual delusions are quite common, and much of the supposed injury done to the patient is connected with the sexual organs.¹ He is fearful of castration or other similar operations.

The patient is extremely egotistical and refers everything to himself. He sees in the look of a bystander scorn and reproach, or in the movement of an attendant some attempt to do him personal injury. He may thus become so much prejudiced against doctor or nurse that when he recovers he is unable to overcome it, and ever afterwards entertains a strong personal dislike. Persons watch him, condemn him, pursue him and seek to do him harm. His whole time is spent in an endeavour to elude his persecutors. He becomes suspicious and distrustful of every person, and of every movement. People, he thinks, are trying to rob him, and even the kindly intended acts are misinterpreted. He is fearful of consequences, and in his desperation may try to escape them by suicide or by killing the person who he thinks has injured him. His whole life is conducted according to his delusions. Accompanying these psychological symptoms are some physiological ones—as, *e.g.*, insomnia, tremor of hands and tongue, impaired appetite and loss of flesh. The reflexes are occasionally exaggerated.

Usually the patient recovers in a short time varying from a few weeks to a few months. The delusions may persist for a year, and in a few cases become chronic. This trouble is sometimes called alcoholic

¹ W. B. Lewis, *Text-book of Mental Diseases*, pp. 354f.

mania, but we are indebted to Professor Kraepelin for the designation which we use. A case is appended.

W. N. is a man forty-nine years of age, with negative family history, an Englishman, and for many years a stone-mason, but latterly a painter. He had been a moderate drinker (five glasses of beer daily) until a few months prior to the onset of his psychosis, when he began to drink some whisky in addition. At about this time he established himself in business, but did not meet with much success. This worried him, as well as the fact that he had recently passed urinary calculi. He left home to visit friends in a neighbouring city, and the first night drank about three glasses of beer and some whisky. He awoke at about two o'clock in the morning and heard some people in the next room saying that his wife was unfaithful and had had intercourse with her brother, later he heard his brother-in-law in the hallway attempting to shoot him. He went to the police for protection, became fearful and much agitated. The hallucinations of hearing became more prominent, his wife, other women, friends, and strangers were heard talking day and night. He believed his wife was having illicit intercourse with attendants in the building, and could hear her talking with them and cursing. He thought that he had been tricked into the hospital, and that the nurses had given him poison, etc. At the end of three weeks God was talking to him, announcing that his sentence had expired, his sins had been forgiven, etc. By this time his ideas of infidelity had disappeared. He gradually became less restless and agitated, and lost most of his former affect, spending his time playing games and reading papers. In the course of three months, while hallucinations still continued, he began to express delusions of an expansive nature, such as, that he had much money to lend, and had control of the buying for the institution, yet said that he must go to prison, and that injury was being done to him. His delusions were unsystematized and varied greatly

from day to day. Emotionally, he was greatly depressed, and upon slight provocation became very irritable. About the seventh month of the psychosis he began to develop various somatic delusions, such as, that he was being played on by the X rays, the apparatus of which was attached to his chest and ankles, and this prevented him from talking properly; he was teased by machines, and was being hammered by 10,000 hammers. Men got under his pillow at night, teased him, then went through his head. His consciousness remained unclouded and his memory unimpaired. His delusions, however, were more incoherently expressed. Emotionally he failed to show any reaction to his many delusions. The patient's condition remained unchanged after a duration of two years.

Alcoholic Paranoia.—This mental trouble is differentiated from true Paranoia by the symptoms of chronic alcoholism and by lack of system in the delusions. The onset is gradual, and starts with suspicions of infidelity in the spouse in married patients. On account of the frequent indulgence in alcohol, there is often an estrangement between husband and wife, and this presents a nucleus about which delusions of jealousy form.¹ Krafft-Ebing thinks that the failing of sexual powers may be a factor in inciting the delusions. As soon as these suspicions begin the patient thinks that the change in the attitude of his wife toward him (really due to his indulgences) is caused by her preference for other men; and he takes note of the most insignificant occurrence, which he interprets into proof of his wife's change of affections.

In the partially systematized delusions very strange circumstances are woven into the fabric; any act of kindness proffered by a neighbour, the addresses of a friend to the children, the presence of the postman at the door discharging his regular duties, the call of an agent or a pedlar, every word, glance, or action of persons passing on the street are positive proofs of

¹ A. R. Defendorf, *Clinical Psychiatry*, p. 129.

his wife's infidelity, and his insane jealousy is intolerable. Hallucinations of hearing, or delusions of actual noises, are interpreted as signs made by his wife's lover, or as whispered conversation between the two. Hallucinations of smell and taste¹ are the beginnings of delusions of poisoning, of which he accuses his wife or her lover. His hallucinations are not nearly so numerous as in cases of delusional insanity, and in some cases are entirely absent. Scandals are not infrequently circulated concerning the innocent wife, started by the mentally unbalanced husband, who tells his suspicions and gives his proofs, frequently displaying much emotion; but his reasoning concerning these things is weak and absurd. The patient will bemoan his misfortune, but will live peaceably with his wife, whom he thinks is unfaithful, and very seldom will he attempt acts of violence. He, in common with all alcoholics, is always on the defensive; and if he commits an act of violence, it is in self-defence as he supposes.

In other respects his actions are at variance with his delusions. In unmarried patients quite frequently religious delusions are present, regardless of the religious fervour of their former lives. These delusions are often connected with the priest. Others, who are unmarried, have their delusions centre about the supposed outrage or prostitution of sisters or other members of the family. In cases of Alcoholic Paranoia recovery is not probable. The course of the disease is progressive, and the delusions seldom disappear. If taken out of home surroundings and put in a place where it is impossible to obtain alcohol, the patient may improve temporarily, but a return home shows how slight the improvement has been. We append a case.

McG. is an Irishman, fifty years of age, whose family history is of no special importance, except that

¹ These hallucinations frequently come from disordered stomachs. See T. B. Hyslop, "Alcoholic Insanity," *A System of Medicine*, Allbutt, vol. ix. p. 327.

his brother suffered from chronic alcoholism. He was a man of limited education, and until thirty-nine was a steady, hard-working mechanic. He had always been a moderate drinker, mostly of beer. At this time he gave up his regular occupation and purchased a saloon. He then began to drink liquors, mostly whisky. Intemperance increased, and at the end of two years he developed an attack of delirium tremens, from which he fully recovered. In the course of three years it became evident that he was losing his business ability, he trusted irresponsible parties, and in another year was forced to assign. Drinking continued to excess, and the support of the family fell upon his wife, who was forced to take boarders. He himself was employed as a day labourer, earning only enough to supply himself with liquor. He became negligent of his family, careless of his own appearance, and surly and irritable. Delusions of jealousy gradually appeared, he accused his wife of consorting with her boarders, began to secrete himself in order to watch her behaviour, and followed her into the street. Once he thought that he had detected evidence of her concealment in a room with a boarder. The fact that his oldest boy was singularly red-headed was taken as evidence of earlier infidelity on her part, and a red-headed cousin of hers who had occasionally visited the family was designated as the father of this boy. He became abusive to his wife, often threatening and at times assaulting her. His memory became faulty, and he lost interest in work of any sort, and when not drinking haunted the house in search of his wife's supposed admirers. His intolerable conduct necessitated his commitment to the hospital at forty-eight. At this time he did not give evidence of hallucinations; his consciousness was clear, but his memory was impaired, especially for recent events, and his delusions of infidelity were fixed. He, however, was reticent in reference to them for several weeks. Emotionally, he was depressed by his confinement, and sad over his wife's misbehaviour. He

was orderly in conduct, presented a tidy appearance, and employed himself willingly in small ways, but seemed to have little energy save for reading the paper and talking with fellow-patients. There was a pronounced tremor of the hands and some muscular incoordination, otherwise he was physically in good condition. After a residence of three months the patient suddenly developed hallucinations of hearing, claiming that he heard his wife telephoning to the attendant to keep him confined in the hospital; she also telephoned to him. The buzzing of the telephone was going on all the time, and he would have it stopped. A few days later he accused the attendant of attempting to poison him, and developed great fear, asking to be allowed to sleep in a single room, as he had heard some one say that he was to be stabbed. This condition disappeared gradually, within one and a half months, since which time the patient has remained without change for two years, still maintaining his delusions of infidelity, but never mentioning them unless questioned. His conduct is orderly, and he is neat in personal appearance, is helpful in ward duties, but spends most of his time in reading newspapers. He frequently importunes for his release, but is never aggressive in this matter. Mental weakness is apparent also in his desire and willingness to return to his wife, and his poor memory for recent events.

Alcoholic Paresis.—This is called at times Alcoholic Pseudo-paresis, as the former type is frequently designated Alcoholic Pseudo-paranoia. Alcoholic paresis is frequently so like general paralysis of the insane that the diagnosis may remain in doubt for some time. In both diseases the onset is gradual with hallucinations and delusions of persecution and infidelity, progressive impairment of memory and judgment, expansive delusions, a sense of well-being and mental stupidity. Physically, both diseases are characterized by sensory disturbances, muscular tremor, exaggerated or absent tendon reflexes, dis-

turbances of speech, ataxia and occasional epileptiform attacks. The differentiation is made in the progress of the two diseases. Alcoholic paresis is not progressive. The course may be protracted, but in a few months or years the more marked symptoms disappear or remain stationary, usually leaving the patient in a condition of mild dementia with a few expansive or depressive delusions.¹

In general paresis the course progresses to a fatal termination; and here the patient is less active and forceful. If he has the same delusions as the alcoholic, they are less coherent and logical, and he is more indifferent to and less disturbed by them. Tremor is more general and muscular weakness more marked than in alcoholic paresis. The paretic sleeps better, has inequality of pupils with slowness of reaction, and the changes in reflexes are more marked. Moderate drinkers sometimes come gradually to this state, not recognizing any change, but a slow deterioration of the mental faculties is present.

The history of a case may begin with an attack of cerebritis, knees bend under him, he becomes degraded in habits and eats ravenously, is sullen, or constantly cheerful with exalted ideas. He may burst out in attacks of aggressive excitement, may mutilate himself, and after every exciting attack becomes more and more demented.² Alcoholic paresis shows itself as premature senility. Old age comes to the young and middle-aged man; insidiously it benumbs the faculties until man comes to have little more than a vegetable existence. All that made him a man has slowly been withdrawn, and the silly, demented wreck marks the place where once a man stood. It is the last step in the alcoholic's march, the last chapter of his life, to which

¹ A. R. Defendorf, *Clinical Psychiatry*, p. 132. W. L. Andriezen, "Newer Aspects of the Pathology of Insanity," *Brain*, vol. xvii. pp. 665 and 682.

² R. Lawson, "On Alcoholic Brain Disorders," *Brain*, vol. i. pp. 193f.

his previous experience, if life lasted, inevitably pointed.

Krafft-Ebing found the pathological conditions the same as in general paralysis, except for the absence of the granulations of the ventricles. Different from general paralysis, even after years' standing the patient may improve so as to return to his business and home. This is very infrequent. Beside this alcoholic paresis, it should be noted that, next to syphilis, alcohol is the most prominent factor in the production and development of general paralysis.¹ A case is appended.

D. L. is forty-three years of age, a day-labourer, married, and the father of six children. For three generations the family presents on one or the other side a history of extreme intemperance, epilepsy, or imbecility. His maternal grandfather was a drunkard, the mother an epileptic, father was intemperate, one sister is both intemperate and an epileptic, another sister embarked on various matrimonial adventures, one brother is a cider-drunkard, one half-brother is both intemperate and weak-minded. The patient has one son in a reform school, who is a dangerous person, threatening often to shoot, kill, and also burn buildings. The patient attended the district school until he was sixteen or seventeen, was a good farmer, was sociable, and an irregular attendant at church. He was violent, abusive, and intemperate in his language. His habits since that time have been intemperate. He never refuses any kind of liquor, but has been especially addicted to the use of cider. Last fall he drank continuously, often one half-gallon

¹ E. Goodall, "General Paralysis of the Insane," *A System of Medicine*, Allbutt, vol. viii. p. 673. While this is generally admitted, notice the following objection from T. B. Hyslop, "Alcohol in Relation to Mental Disorders," *Quarterly Journal of Inebriety*, vol. xxvi. p. 23:—"I do not believe alcohol alone is ever responsible for the disease we term general paralysis, any more than it is responsible for tabes. . . . When alcohol is said to be the sole factor, then even the most experienced of us hesitates to diagnose general paralysis, knowing as we do how almost invariably we are deceived."

a day. From this cause he developed epilepsy at an unknown time and of uncertain type, the patient having no recollection of the fact. He has for some time failed to contribute to the support of his family, his wife taking in washing for the maintenance of her children and husband. The onset of the alcoholic psychosis was sudden. He had done some work up to Friday before his admission, when he became suddenly delirious, imagined that he was driving horses, became vicious and aggressive, swore at and threatened his family, tore up his clothing and the bed-clothes, imagined that he was buying horses and sleighs, and called loudly for the assistance of his friends. He was especially noisy at night. During the following week it required two men to care for him during the day, and a relief force of two at night. His speech was not affected, but his gait was unsteady for two weeks. On admission he was emaciated from lack of nourishment for two weeks. His gait was shuffling, suggestive of weakness, as well as incoordination. He was almost completely disoriented, although he recognized that he was not at home. He frequently gathered up his things to return, said that he had been here a year, that his parents formerly occupied the building. He failed to recognize patients as such, did not distinguish doctors or attendants. At ten in the morning he called for his supper, said it was June, but gave the day of the week correctly. He said it was winter, snow came in August or October. He was contented or indifferent, but at times excitable and restless, had no insight, replied to questions with a fair degree of relevance and coherence. His memory was impaired for both recent and remote events. He was forty or forty-six years old, had rented numberless farms. The sole fact about which he was accurate was the amount of cider he habitually consumed per day. He was incessantly occupied in making various passes across his face, over his eyes and through the intervening space,

picking away imaginary threads which got across his eyes, obscuring his field of vision. He picked objects from his hair, pulled cobwebs from his clothing, and saw mosquitoes crawling everywhere. They were looking for him, they jumped and grew together, and continually bit him. For the first few nights he shouted and disturbed the entire ward. The pupillary reflexes were normal at this time. In about ten days the patient's condition had improved and the auditory hallucinations had disappeared. The restlessness and excitement had abated, he became orientated, consciousness was clear, but he showed a marked inability to figure, to remember or to comprehend errors. The relational element in his mental life had almost disappeared. He was forty-six years old, but might be fifty-three on his next birthday. He gave the names of the owners of seven farms he had rented and the time he had spent on each, but the total was a half more than his entire life. He could neither add nor multiply, knew his six children's names, but bungled hopelessly about their respective ages. He wore a fatuous smile, but was indifferent, took no part in ward life or work, and lounged about in slouching and expressionless apathy. His gait was shuffling and ataxic, there was a slight tremor of the tongue and hand, incoordination of the facial muscles and of those of the upper and lower extremities, he failed on the test words, his reading was slurring and often unintelligible, but the pupillary reflexes were normal. There was inequality of pupils, the left was irregular and notched. The patellar reflexes in two weeks' time were nearly abolished, a week after exaggerated, and in an equal length of time again abolished. Throughout his convalescence they have presented a gradual up and down condition, either markedly increased or nearly abolished. He has complained at intervals of belt-like pains extending from the navel, lasting for a week and disappearing from time to time. From the eighth to the tenth weeks he gradually and steadily improved, gaining in weight

with improved appetite, and becoming one of the most capable and willing of ward workers. At the end of this time his gait was nearly correct, there was some lingual tremor, the same tremor of the fingers, and his speech was very nearly normal. There was inequality of pupils, the right misshapen with notch in the edge, but the ocular reflexes were normal. The patellar reflexes were generally diminished, but at times active. The greatest improvement, however, was in the mental condition. The patient was keen, alert, memory good, reasoned well about his future, discussed his case intelligently and hopefully, and exhibited a marked improvement in the region of the emotional and moral faculties.

Our study of alcoholic insanity shows us that there is a reciprocal relation between alcoholism and insanity, one causing the other; the more serious result is frequently seen in the offspring than in the person who is afflicted with either. Insane parents often produce children who are not able to withstand the ravages of alcohol, and alcoholic parents produce imbecile, idiotic, nervous, and unstable offspring. Some of the types of insanity described in this chapter occur very frequently and are well known, others occur but seldom and are little known. Dip-somaniacs are quite numerous but are infrequently recognized, and are usually not regarded as insane. Men of this class, often of great ability, need special treatment and consideration. By eliminating alcoholic drinking from our social system, one of the most prolific, exciting, and predisposing causes of insanity would be eradicated.

CHAPTER X.

RELIGIOUS CONVERSION AS A CURE.

Alcoholism a sin—Inadequacy of drugs—Dr. Starr's opinion—Reformed drunkards in all churches—Recognized value of religious influence—Statistics—Difficulty of investigating the subject—Divine element—Nature of data—Reasons why religious conversion is so efficacious—A desire for reform—Associations are changed—An emotional substitute provided—Types of conversion—Definitions of conversion—Religion concerns the whole man—The process—The sense of sin—Escape from physical misery—Conversion while drunk—Desire for cure—Divided self or conviction—Self-surrender—Physical causes—Case of Jerry McAuley—The climax—Faith—The change—Feeling of newness—Selfishness changed to altruism—Revival of courage and hope—Self-confidence—Change sudden and permanent—Part played by the will—The divine element—The subconsciousness—Elements which determine the kind of conversion—Interaction of consciousness and subconsciousness—Hypnotism and conversion—Jesus and the Apostles—Conversion by divine power is consistent with the facts.

AT one time in its history, alcohol was looked upon as a great blessing, and an occasional intoxication was considered only an accident in the general progress of good. The drunkard was chided for an apparent indiscretion, or considered lacking in control. Since men have become better acquainted with the nature of alcohol, and have recognized the danger of its use as a beverage, the attitude toward the alcoholic has changed, and while the preacher may still call alcoholism a sin pure and simple, the men of science who have spent years in investigating the subject look upon it as a disease of body and mind, which may or may not have had a beginning in sinful indulgence.

No sooner had the intoxication habit reached serious proportions and the condition been considered extremely undesirable, than men began searching for a cure. Governments recognized the baneful influence of drunkenness, and made it a crime, punishable by fine and imprisonment, considering that the penalty would have a good influence upon the criminal. In a few—very few—cases it had the desired effect, but not infrequently the family of the drunkard suffered, while on account of his selfishness the motive for his reform was still wanting.

By some, alcoholism was considered a disease wholly physical, and inebriate asylums began to spring up all over this and other countries, treating the disease from this standpoint only. These were successful to some extent because they combined forced abstinence with the upbuilding of the body, partially repairing the degenerated tissues, thus ministering to the brain directly and indirectly to the mind, and allowing recuperation and thereby control. As a concomitant of this method of cure, one sees a great number of patent medicines and specifics advertised in every paper as sure cures for this disease which has so stubbornly resisted treatment, and we also notice not a few unskilled and "irregular" doctors who claim control over this disease.

One proof of the inadequacy of drugs and medicines as a cure was given in a recent meeting of the New York Academy of Medicine.¹ Here were gathered together a number of specialists, doctors of repute in this and other lands, who had had considerable experience with alcoholism, and among the suggested cures not a drug nor medicine was mentioned. There were only two cures spoken of, and both of these of a psychological rather than physiological nature. They were hypnotism and religious conversion. With hypnotism and other cures we will deal in the next chapter, but here we will turn our attention to re-

¹ Report of Meeting of the New York Academy of Medicine for March 7, 1901, *Medical Record*, vol. lix. pp. 431f.

ligious conversion as a cure. In the report of the meeting to which we have just referred, the opinion of one specialist is thus given:—

“RELIGIOUS INFLUENCE POTENT.—Dr. Starr (M. Allen) thought the physician or the family should be able to control these persons legally. A certain amount of moral suasion seemed to be of much more service than anything in the way of medical treatment. . . . He was of the opinion that any measure of a religious or of a social character that could be brought to bear on these individuals was well worthy of a trial, and he would confess that the only reformed drunkards of whom he had knowledge were those who had been saved, not through medical, but through religious influence.”

Perhaps few would like to go to the length of excluding all other cures, but certainly most persons would agree with Dr. Starr in positing religious conversion as the most effective of all cures. Who has not among his acquaintances some who have been cured of alcoholism by the power of religion in their lives? He is indeed poor in friends who has not at least one such. Every church in the land has upon its rolls men and women who have come into new life from a drunkard's home, and whose testimony is overpowering in favour of the cure. Most convincing is a visit to a mission in the slums of a city. No one could spend a half-hour at the Bowery, Water Street, or Doyer Street Mission, New York, without coming away thoroughly satisfied concerning the efficacy of the cure. The services consist of a constant repetition by different speakers of the power of religion in their lives resulting in the annihilation of the desire for drink, and the total abstinence from alcohol for periods differing in length from one month to a quarter of a century; and this from men who had previously been considered hopeless inebriates, and whose work causes them still to be placed in circumstances very unfavourable to abstinence. Hundreds of pastors could duplicate a testimony of this kind:—

“Before the meetings were ended nearly thirty reclaimed drunkards had been received into the Clarendon Street Church.

The general opinion was that these men would not stand even to the end of the year. Yet Gordon was able to say some time after in a Northfield address, 'Of those who have continued their residence with us, all have remained steadfast, as consistent, as devoted, and as useful members as we have, a demonstration that God can instantly change a man from the vilest and worst drunkard to one in the way of the highest saintship.'¹

Were it desirable, the Church could eclipse the patent medicine advertisers with the thousands of testimonials which might be produced by alcoholics cured by religious conversion. In speaking of cures, reference is not made to those whose abstinence dates from a month or a year previous, but to those who have been cured for decades. Says Professor James, "'The only radical remedy I know for dipsomania is religiomania,' is a saying I have heard quoted from some medical men."² The faith of one alcoholic specialist in religious influence was so strong that although not himself a religious man, he insisted on having prayers at his institution every morning, simply as a therapeutic measure.³

¹ Adoniram Judson Gordon, *A Biography by his Son, Ernest B. Gordon*, pp. 100f.

² *The Varieties of Religious Experience*, p. 269 note.

³ Most authorities in alcoholism concur in this opinion, and readily admit the value of religious conversion as a cure—as, e.g.:—

"Of the endless variety of motives which have been found to control the alcoholic habit, some primitive form of self-interest is the most common, and religion the most effective. . . . Were we not used to the phenomena of religious revivals, the force of reforming energy which they bring with them would strike us as little short of miraculous. I have myself known several cases, and any city missionary can tell of scores, in whom a newly-found religion uprooted a deeply-set habit of drunkenness, supplied strength of character instead of inveterate weakness, and gave lifelong interest to an existence which seemed incurably hopeless and barren."—G. R. Wilson, *Drunkenness*, p. 100.

Only one dissenting voice is heard in the chorus of praise, and that from no less an authority than the late Dr. Norman Kerr, of London. His faith is placed almost entirely in the physical cure, and his chief point of attack is the revival; but as most persons come into churches through revivals, according to Mr. Leuba—and certainly the vast majority of drunkards are converted in this way—in condemning the revival it is a condemnation of religious conversion as a cure. He speaks as follows:—

"In the inebriate cycle the abstaining term is as really a part of the

Some statistics have recently been obtained from the missions in New York City, among which were those of the Water Street Mission. This mission was started and formerly conducted by the celebrated Jerry McAuley, himself a reformed drunkard; and later superintended by Rev. S. H. Hadley, who was converted under the influence of Jerry McAuley. Mr. Hadley, in answering the inquiries of the writer, said that in the previous seventeen years during which he had been connected with the mission, about 1700 alcoholics had been converted there. Of these, 25 per cent. never relapsed; they were instantly cured. Of the remaining 75 per cent., 50 per cent. were finally reclaimed, and, as Mr. Hadley added, "Many of these make the best workers we have." The ages of the converts range from under twenty to over seventy, but the majority are between thirty

cycle as is the alcoholic explosion in a bout of prolonged intoxication. . . . Many pledge but few remain steadfast in temperance revivals."—*"Alcoholism and the Drug Habits," Twentieth Century Practice of Medicine*, vol. iii. p. 58.

"I have witnessed the rise and fall of temperance epidemic waves which appear at the time to have cured practically all the drunkards in the locality, by an instantaneous process, sometimes of religious conversion, sometimes of teetotal enthusiasm. A few individuals have consistently adhered to their nephalian or spiritual vows; but as months and years rolled by so did the number of the rescued dwindle away. All of these two last-named classes of remedial processes (hypnotism and conversion) have simply been illustrations of 'faith cures': in the case of fervid devotion, quite as striking as in the cures alleged to have been wrought by either undisclosed or open rapid medicinal preparations or processes. In mental contagion and suggestion will the key to the explanation of these remarkable, if mainly transitory, psychic phenomena be found."—*Inebriety*, p. 341.

In justice to Dr. Kerr a further quotation must be given.

"Conscience should be approached by the inculcation of the duties owed by the inebriate to his family and to the community, and the value of the hallowed and strength-giving power of true religion should be plainly laid down. 'Not by might nor by power, but by my Spirit, saith the Lord.' I have seen many a wasted waif, many a despairing drunkard, many a forlorn inebriate who has failed again and again when trusting in his own strength to resist the impulse to excess, succeed at last when invoking help from on High. Not spiritual hysteria, not theological dogma, but true and unsullied religion is a grand support to the feeble, fitful, and unstable will of the diseased inebriate. It is a strengthener of the volition as well as a purifier of the affections, a mental tonic as well as a moral alterative."—*Inebriety*, p. 372.

and forty years old. These figures are approximate only, but give a general idea of the work. With 62½ per cent. of the patients cured in an experience of over seventeen years with 1700 persons, the encouragement given to this kind of work is great. A record like this might be envied by any inebriate asylum, especially when it is considered that the class of men dealt with has been of the most hopeless kind. Mr. Hadley describes some of the worst cases in a book recently published by him.¹ The New York Christian Home for Intemperate Men, formerly situated in New York City, but now in Mount Vernon, N.Y., gives a similar encouraging report. Answering inquiries of the writer, the Rev. G. S. Avery, the resident manager, says that in the last twenty-seven years 7000 men have entered the institution, of whom 5000 have professed conversion. Of these 20 per cent. have never relapsed, and 40 per cent. have relapsed but have been afterwards reclaimed, making a total of 60 per cent. of cures, about the same proportion as Mr. Hadley reported.

In dealing with the subject of religious conversion, its very nature compels us to treat it incompletely. However much we may believe in the divine element in conversion and in the religious life generally, it must remain an unknown quantity, and can only be judged by the apparent effects upon the persons experiencing it. It will be the aim in this chapter to examine the effects of this influence upon the individual, the way in which these effects are produced, other contributing causes, and the combined effects of all influences; the divine element itself, however, must remain unanalyzed, undescribed, and unexplained.

The nature of our data causes us further difficulty; it is almost impossible to get accurate facts. People are honest and their intentions are good, but so few are able to read their experiences where introspection is required. This is a real difficulty in itself, and

¹ S. H. Hadley, *Down in Water Street*.

would be sufficiently serious if uncomplicated, but added to this is an equally insurmountable one. The religious experience of one, five, or ten years' standing is related as it should be according to orthodox standards, or according to the more striking experiences of others, rather than as it really was; and this, too, from persons desirous of stating the facts. The testimony of others, as related in meetings, acts in a suggestive way; and in a testimony meeting it will be found that all the experiences agree, with the exception of a very few details, and these are more and more eliminated as the speakers listen to each other week after week. In services held by different churches and denominations, it will be found that while the testimonies in one service are in harmony, they may be very different from the concurring testimonies of another service. Eliminating the element of similarity due to expectancy, we still have left a large factor due to subsequent agreement of an unconscious character.

At the outset three reasons may be posited why religious conversion proves to be such a potent factor in the cure of alcoholics. In the first place, and most important, it stimulates a real desire for reform. A wish to be cured is the *sine qua non*; it is impossible to succeed, and not worth a trial under any form of treatment, if this is lacking. Many institutions refuse to accept a patient unless this condition is fulfilled, for they recognize that failure is inevitable without the co-operation of the patient. Frequently the friends are deceived by a pseudo-desire on the part of the patient which may take either one of two forms. The alcoholic expresses a desire for the alleviation of the evil effects of drunkenness. In the morning he may express sorrow for having drunk so much on the day previous, because of the headache, nausea, or nervous tremor; but he does not regret it on account of the general injury to himself or because of the ethical wrong. He does not wish to alleviate the bad effects sufficiently to forego the pleasure that

comes to him by drowning his misery and living in a false optimistic world while under the influence of alcohol. The pleasure of the intoxication is greater to him than the pain of the effects. He wants to reform if reform will annihilate the pain and allow the same pleasure.

Again, he may even go so far as to be willing to forego both the pains and pleasures of intoxication if he can be cured without effort on his part or especially any inconvenience or pain in the process. In answer to the question, "Would you like to be cured?" he will invariably answer, "Yes," and truthfully. He is willing to be cured if he can assume a perfectly passive attitude in the matter, but as for his being active and undergoing the pains frequently attending total abstinence,¹ as well as giving up the exhilaration of intoxication, he absolutely declines. The desire to be cured must be real and strong to form the basis for any remedial effects.

Religious influence not only provides the cure, but furnishes the necessary pre-requisite for any cure in giving a desire for help. This may well be classed as a part of the process, but the part that is antecedent. In preaching and all religious teaching, motives for reform are prominent contents, and are very appropriate to this class of people. "Doubtless when there

¹ Total abstinence it must be. Many are willing to be partially cured—that is, to become moderate drinkers, but this is virtually impossible. No sooner does alcohol enter the system even in small quantities, than all the old craving is renewed, and it is not long before the alcoholic is in his old condition again. Cases of the change of drunkards to moderate drinkers are very rare. Notice this from Mr. Granger:

"It is to be borne in mind that the populations among whom the Christian religion first spread, were like the neighbouring Semitic nations which 'know no mean between asceticism and unrestrained self-indulgence.' And although the more northern nations are also, on the whole, more temperate, this is only partially true. It may be said of the working classes in England to-day that in great part 'they know no mean between asceticism and unrestrained self-indulgence' so far as intoxicants are concerned. The teetotal movement, therefore, is analogous in every way to the monastic system as an expedient in face of an incurably weak will."—*The Soul of a Christian*, p. 256.

has been waywardness, and one has grown habitually sinful, the most efficacious way of rescue is to picture the fate of continuance in sin, to throw the person back on himself, to lead him to see the blackness of sin as contrasted with the beauty of holiness, and make the break unavoidable, sharp, and final."¹

In times of remorse and sorrow after a debauch, when the system has refused to receive any more alcohol, the contrast of the alcoholic's misery with the happiness of others comes out vividly, and an ideal of life comes before him. This is strengthened by religious talks and the memory of former religious teaching; then comes a longing for something better. The distance between the ideal and the real is great, and there appear insurmountable barriers between the present misery and the happiness which might be; but the anticipation of better things grows, sometimes consciously, sometimes not, until there is a sudden forsaking of the lower life, and an embracing of the higher, and when the ideal becomes the real, what we call conversion takes place. This, then, is one reason why religious conversion is so efficacious, because it furnishes the pre-requisite necessary to any cure.

The second reason is, that after conversion the subjective and objective associations are changed, and are of a character to assist him in his new life. Many persons might be permanently cured if, after a short period of total abstinence, they were not thrown back among old associations. Objectively everything calls on the alcoholic to drink. He has a hearty invitation from old friends, who are so pleased to see him again that they must show their pleasure by inviting him to have a social glass; the saloon which he passes daily, whose doorway is worn by his tread, seems to hold open its doors to him; the waiter at his club or lunch-room places wine-glasses before him, and inquires if he will have his same old brand; every person and thing, his whole past life, seem to conspire in one pressing invitation for him to drink. Too fre-

¹ E. D. Starbuck, *The Psychology of Religion*, p. 88.

quently he is unable to resist, and what control he has spent so much in gaining is lost in the first glass.

With the new convert this is not so. He has an entirely new set of friends and acquaintances, who have proved their friendship for him, and with them he spends every spare moment; their words and lives are a constant source of encouragement and strength to him. The fact of his conversion has come to the ears of his old friends, and some honestly congratulate him on his change of life, and never after invite him to drink; others chafe him concerning his change, and even this may cause him to hold to his course more strongly. He has not time to think of, nor inclination to go to the saloon, for his leisure is spent either at church or some religious gathering, in an endeavour to assist some one else in the Christian life, or in some philanthropic work. All external associations have a tendency to assist rather than to hinder him. Add to this the power of subjective associations. His mind is no longer occupied with the thought of drink, but the events of the new experience fill his thoughts, and his work in and for the church leaves him no time to long for the "feshpots of Egypt." Associations objective and subjective are a constant assistance.

Another reason why religious conversion is so efficacious as a cure for alcoholism is, that it not only destroys the craving but it provides an emotional substitute. Says a social writer:

"The drink habit is in a very large degree the perversion of one of the most universal of human desires, the thirst for exhilaration, recreation, and joy; and to remove the only available means for satisfying this normal craving without providing adequate substitutes, is like blocking the channel where a stream does harm without observing how many new fields the same stream is likely to devastate."¹

While other cures may be deficient in the direction of this criticism, religious conversion is not, and the substitute is of such a character as to better supply

¹ F. G. Peabody, *Jesus Christ and the Social Question*, p. 349.

the need than alcohol itself. We cannot help recognizing the temporary exhilaration and realization of the ideal brought about by the accustomed dram of alcohol, the only means some know of realizing their ideals, even for a short time. We know that it is perfectly artificial, and yet for the moment it is real to the individual.¹

There is a similarity in the exhilaration due to intoxication and spiritual ecstasy. The Apostle recognized this when he warned the Ephesians² to be not drunk with wine, but to be filled with the Spirit, and he desired his readers to make the distinction. The pleasure due to alcohol is intense in its nature. This is true of the pleasures of all the so-called lower passions, because of their being confined to one kind of expression, which is always the same; and in addition to this the pleasure occupies but a small portion of the life. As far as intensity is concerned, religion or any other form of higher pleasure cannot, except under abnormal conditions, hope to vie with intoxication or lower pleasures. Wherein, then, does the religious life excel? Not in intensity, that is sure; but in extensity,³ this being true of the higher pleasures generally. There is no condition of life in which the religious pleasures cannot be realized, for religious

¹ Professor James expresses the same idea in his book, *The Varieties of Religious Experience*, p. 387:—

“The sway of alcohol over mankind is unquestionably due to its power to stimulate the mystical faculties of human nature, usually crushed to earth by the cold facts and dry criticisms of the sober hour. Sobriety diminishes, discriminates, and says no; drunkenness expands, unites, and says yes. It is in fact the great exciter of the Yes function of man. It brings its votary from the chill periphery of things to the radiant core. It makes him for a moment one with truth. Not through mere perversity do men run after it. To the poor and the unlettered it stands in the place of symphony concerts and of literature; and it is part of the deeper mystery and tragedy of life that whiffs and gleams of something that we immediately recognize as excellent should be vouchsafed to so many of us only in the fleeting earlier phases of what in its totality is so degrading a poison. The drunken consciousness is one bit of the mystic consciousness, and our total opinion of it must find its place in our opinion of that whole.”

² Ephesians, v. 18.

³ See G. R. Wilson, *Drunkennes*, p. III.

conversion embraces not one set of passions, but the WHOLE MAN. Body and soul respond, the variation of expression is endless, and all associations of the mind lead to the spiritual life. The idea of a religious faculty, or sense, has been abolished, and it should be recognized that there is no experience so comprehensive in its scope as that of religion. This removes a number of objections to religion and religious methods, some of which will be referred to further on. Here we see that the "expulsive power of a new affection"¹ has its virtue in the fact that even if deficient in intensity as compared with the lower passions, it ministers to the whole man, and thus exceeds any other pleasure in extensity.

One other reason why religious conversion stands at the head of the list of the cures of alcoholism might just be mentioned here, while the explanation will be taken up later in connection with another topic. Most conversions of alcoholics are of a sudden nature, because the mental condition of the alcoholic causes him to be particularly susceptible to the methods favourable to this variety of religious experience.

The types of conversions are many; in fact, every case is a type by itself. While the decision in all cases must be instantaneous, to say that conversion is an instantaneous change in all cases is to pervert the facts.² Two general classes may be clearly recognized, and these are divided according to the time element in the process, although the rapidity of the movement is only an index to many other factors

¹ See Thomas Chalmers's Sermon.

² Mr. Granger protests in the following perhaps too strong language:—"And yet, strangely enough, there is a widespread tendency to identify the universal manner by which the soul rises for the first time into the life of the spirit, with this the least spiritual manner of all. At such times man begins to draw nearer to the centre of things; to truth, peace, goodness. And although in some cases an overpowering external suggestion wrenches the soul from its old course into the new, it is comparatively rare for the motives to be so suddenly altered. Moreover, so far is instantaneous conversion from being the only true type of the approach to God, that it is the extreme type among several."—*The Soul of a Christian*, pp. 76f.

which differ in the two classes. As mentioned above, the great majority of the cures of alcoholics by religious conversion have been accomplished by the instantaneous or sudden method, and few, if any, cures are recorded among conversions of the more deliberate type. One can see how the various names of these classes would follow as a matter of course. For instance, Starbuck designates them as follows, and this quotation clearly shows where he would class the converted alcoholic:—

“*Two Types of Conversion.*—They may be characterized respectively as Escape from Sin and Spiritual Illumination. The first type, Escape from Sin, is more nearly akin to breaking a habit. It is characteristic of all the older persons studied, and of all, regardless of age, who have led wayward lives. It is connected with the feeling of sinfulness proper in which the mental state is negative, and attended by dejection and self-abnegation.”¹

Escape from sin would be necessarily sudden, while illumination would be a more gradual process. There being no gradual breaking of the alcoholic habit as a rule,² and generally only a short time of remorse and sorrow after a debauch that desire for reform is entertained by the alcoholic, if from his standpoint he is to

¹ E. D. Starbuck, *Psychology of Religion*, p. 85.

² W. James, *Psychology*, vol. i. pp. 122f., quotes from Bain's chapter on the “Moral Habits” two maxims for breaking an old habit, or acquiring a new one. We must launch ourselves with as strong and decided initiative as possible, and never suffer an exception to occur until the new habit is securely rooted in our lives. Professor James adds a third:—“Seize the very first possible opportunity to act on every resolution you make, and on every emotional prompting you may experience in the direction of the habits you aspire to gain.” Regarding the breaking of a habit, he further says—“The question of ‘tapering off,’ in abandoning such habits as drink and opium indulgence, comes in here, and is a question about which experts differ within certain limits, and in regard to what may be best for an individual case. In the main, however, all expert opinion would agree that abrupt acquisition of the new habit is the best way, if there be a real possibility of carrying it out. We must be careful not to give the will so stiff a task as to insure its defeat at the very outset; but, provided one can stand it, a sharp period of suffering, and then a free time, is the best thing to aim at, whether in giving up a habit like that of opium, or in simply changing one's hours of rising or of work. It is surprising how soon a desire will die of inanition if it be never fed.”

make a start, it must be a sudden one, and his condition brings it to a sudden culmination. While he continues drinking, it would be entirely unlikely that he could concentrate his mind on the subject and give it sufficient consideration to bring about a gradual or deliberate climax. The good resolutions of the sober or partially sober moments would be killed by the hours of debauch; and, speaking from his point of view, it seems very unlikely that it should last. There have been a few cases of the deliberate type met with, but the struggle has been more intense and the cure frequently not so permanent. It might be well to add in this connection that there are some cases of sudden cures of alcoholism that have been entirely separate from all religious influence; and although in the narrower sense of the term they cannot be classed as religious conversion, they have been equally effective and permanent. These are comparatively rare, and are of an automatic type not traceable to any apparent motive.

Conversion has been frequently referred to, and it seems that some definition of the term should be given. Conversion is not a complete experience in itself, but forms a part of a process of which the total religious experience is the whole. It should be noted, especially concerning conversion, that those parts which seem at first to be sudden and instantaneous are but the fructification of a longer or shorter development, more probably of a sub-conscious nature. This process of conversion is variously defined and explained, as can be seen from the following quotations:—

“Conversion is in its essence a change of intention.”¹

“The regenerate life is a changed life; . . . it is a change marked by the consciousness of the person's own needs, and that the Christ life can satisfy them.”²

“. . . At last the rationalistic fetters fall off, and the sup-

¹ F. Granger, *The Soul of a Christian*, p. 77.

² A. H. Daniels, “The New Life,” *American Journal of Psychology*, vol. vi. p. 102.

pressed hypnotic centres explode with immense satisfaction. This is the most important key to the psychology of 'conversion.'¹

"The essence of religion is a striving towards being, not toward knowing." In Christianity "the goal of religious life becomes regeneration, by which unification of motives—*i.e.*, union with God, when objectively considered—is achieved."²

"The explanation of sudden conversions is no doubt to be sought in some overpowering impression upon the mind that supplies a new and energetic motive to the will, thereby initiating a new line of conduct. . . . Such changes occasionally happen, but not without terrific struggles, which prove how hard it is to set up the volition of a day against the bent of years."³

"Conversion is suddenly forsaking the lower for the higher self. In terms of the neural basis of consciousness, it is the inhibition of lower channels of nervous discharge through the establishment of higher connections and identification of the ego with the new activities. In theological terminology it is Christ coming into the heart and the old life being blotted out—the human life being swallowed up in the life of God."⁴

"To be converted, to be regenerated, to receive grace, to experience religion, to gain an assurance, are so many phrases which denote the process, gradual or sudden, by which a self hitherto divided, and consciously wrong, inferior, and unhappy, becomes unified and consciously right, superior, and happy, in consequence of its firmer hold upon religious realities.

"Now, there may be great oscillations in the emotional interest, and the hot places may shift before one. . . . Then we have the wavering and divided self. . . . Or the focus of excitement and heat, the point of view from which the aim is taken, may come to lie permanently within a certain system; and then, if the change be a religious one, we call it conversion, especially if the change be by crisis or sudden."⁵

Many more quotations might be given to show the great difference in the definitions and explanations given by different men, or the same men at different times. It is not claimed that any one is wrong, for the variety of expression shows what was stated above, that religion applies to the whole man. The

¹ H. Ellis, *Man and Woman*, p. 292.

² J. H. Leuba, "A Study in the Psychology of Religious Phenomena," *American Journal of Psychology*, vol. vii. pp. 313 and 318.

³ A. Bain, *Emotions and Will*, p. 453.

⁴ E. D. Starbuck, *The Psychology of Religion*, pp. 156f.

⁵ W. James, *The Varieties of Religious Experience*, pp. 189 and 196.

definition of a religious conversion would depend upon the standpoint from which it was viewed, the faculty concerning which one was speaking at the time, the faculty thought to be chiefly concerned, the particular type of conversion with which the speaker was most familiar, or the interpretation of the facts by the individual.

It is because it does concern the whole man, and not one faculty, that there is such a diversity of definition and explanation. Further, some in their definitions might entirely eliminate the human element, and speak of it in theological rather than psychological terms as a divine act. So in order to get a correct definition of conversion we might take the substance of all definitions, and then probably it would not be too comprehensive. The idea of unity, so prominent with some, has this advantage: it comprehends the whole man; but complete unity seems to be rather the ideal-ripened experience than the common experience of converts.

A glance at the process in the case of alcoholics, and an examination of the elements involved, may help us to get a clearer view of conversion. One factor very common in cases of conversion of the abrupt type, is that of a profound sense of sin, from which the new life spontaneously shines forth as a natural reaction. The older form of the presentation of the Gospel was that of magnifying sin and the terrible results to the sinner. Salvation came as the rescue from sin rather than the door to the abundant life. Thus, Starbuck says, "Conversion is a process of struggling away from sin, rather than a striving towards righteousness."¹ Whether this is the direct result of the manner of presenting the Gospel, or something inherent in conversion itself, it is difficult to say; but it will be interesting to compare the conversions of the next twenty years when the opposite form of the Gospel is more especially presented, to see if this will not correspondingly change

¹ E. D. Starbuck, *Psychology of Religion*, p. 64.

the nature of conversion from a struggling away from sin to a striving towards righteousness.

Now, the alcoholic does not feel a sense of sin as such. Little he cares that he has broken laws, little he cares that he has injured family and friends, and disobeyed God; his whole life is selfish, and all that he cares about is the physical and mental suffering incident to his debauch, or his failure to obtain a fresh supply of alcohol. He may suffer even more from a sense of virtue than a sense of sin; sin itself does not bother him; it is the effect of sin or virtue, or both combined, giving him pain and wretchedness, that causes him suffering. Therefore, if the term "sin" means anything here, it is necessary to disagree with Starbuck when he says—"Perhaps the purest type of 'escape from sin' is the case of the conversion of a drunkard, such as is found in the autobiography of John B. Gough or H. H. Hadley, or other records of a similar nature."¹

What the alcoholic wants is escape from his physical suffering, and it is perfectly immaterial to him whether he goes into more sin or into righteousness to procure it. His moral nature is killed, he is not in a position to appreciate moral distinctions. His mouth is full of foolish excuses and lies to justify himself, and he demands from his friends pity for his condition, rather than blame for his wrong-doing. The drink is *necessary* to him, it is always one more and "I won't count this time," because it is necessary. He must do it for some reason or other, and what he **MUST** do he cannot be blamed for. In moments of remorse he admits certain blame, but this is not really felt; it is maudlin talk which is not infrequently successful in procuring him another drink to brace him up. It is also necessary to disagree with Leuba in making "the sense of sin" synonymous with "physical misery," for this is a misuse of the term, and seems rather to be an attempt to have the sense of sin present whether it really is or not;

¹ E. D. Starbuck, *Psychology of Religion*, p. 86.

but in the remainder of the following quotation he has analyzed the case well:—

“The sense of sin . . . is at times little more than a feeling of physical misery, the anguish of the sickened flesh. In such cases the expressions ‘regret’ and ‘desire for relief’ should properly take the place of ‘remorse’ and of ‘repentance,’ which designate experiences modified by specific intellectual considerations ignored by the persons we speak of. This primitive consciousness is especially noticeable in persons addicted to some gross vice. Drunkards, for instance, frequently show no sign of the sense of condemnation, although fully aware of their utter worthlessness. They feel shame at their degradation, but are not conscious of any responsibility towards God for breaking His laws. They do not exclaim, ‘Oh, my sins, my sins!’ but rather, ‘Oh, cursed wretch that I am!’ The ideas of punishment, of eternal death, or of damnation make no impression upon them; the realities of their daily life go beyond the pictorial power of imagination. What they want is deliverance—deliverance from the unbearable misery of life.”¹

Returning to Starbuck’s statement, that cases like those of Gough and Hadley present the purest cases of escape from sin, the writer is unable to find any overpowering sense of sin in either case. Gough is asked to sign the pledge, and immediately promises to on the morrow, and his “sense of sin” is so great, and his desire for “escape from sin” is so keen, that he immediately goes and gets another drink.² In a number of different accounts of Hadley’s conversion which have been accessible, there is no trace of a sense of sin as such. Deliverance is desired without doubt, but not deliverance from sin. As the innocent passenger in a railroad wreck desires relief from suffering, not because he has sinned, but because he is in great agony, so in regard to the drunkard, in the majority of cases at least, the terms used should be “sense of suffering,” and “escape from suffering,” and we should not gratuitously bring the term “sin” into the discussion just because we are dealing with a religious subject.

¹ J. H. Leuba, “A Study in the Psychology of Religious Phenomena,” *American Journal of Psychology*, vol. vii. p. 330.

² Strictly speaking, Gough’s case is not one of religious conversion.

The writer has sat for hours in the missions in New York, listening to the experiences of men who had been cured of drunkenness by religious conversion, many of whom said they were intoxicated at the time.¹ No doubt there is a tendency to exaggerate the condition of depravity at the time of conversion (unintentional, of course); but notwithstanding this, some cases which the writer investigated were found to be true, and there is no reason to think that the others were not equally correct. In answer to an inquiry of the writer, concerning the proportion of drunken men converted in the Water Street Mission, Mr. Hadley made the following statement:—"Decidedly more men are converted when drunk than sober, ninety per cent. at least. A large number have been soundly converted while in the throes of delirium tremens, and never wanted a drink afterwards." Mr. Avery says, "Sometimes men are converted when drunk, but not often." It is natural to suppose that not so many men come to the Christian Home for Intemperate Men in a drunken state as would be found in the Water Street Mission. Persons in this condition cannot have much sense of sin, or desire to escape from sin; but they do have a desire for relief, and this could well be connected with what was said in the first part of the chapter, concerning the desire for help being necessary in all cases of cure. The value of this desire in conversion should not be minimized, but objection is made to its being called by the name of escape from *sin*; and further, there is no doubt concerning the sense of sin in many cases of conversion, but very rarely in cases of conversion of alcoholics.

Whether from a sense of sin or a sense of suffering,

¹ Mr. Hadley's testimony was heard by the writer, much as follows:—"Men have been converted in delirium tremens. It knocks all theology higher than a kite! I don't understand it, but it is so. Take my own case, a big bloated drunkard, had fifty-three drinks the day before I was converted, most of them brandy cocktails, and before me I saw my Lord crucified; I was converted."—*Boston Herald*, February 6th, 895.

there comes the desire for cure, or perhaps the realization of the necessity for cure; it is followed by the struggle between the higher and lower selves: thus we have the condition known as the divided self. It is the endeavour of the individual to make this new ideal his own, contrary to his habit of life for years, with a knowledge of the suffering which it may entail, and with associations and companions all on the side of his former life. He has set before him this hope of release from slavery and suffering, and he must settle it for himself, he must answer the question, Is the change worth while? With most persons there are a number of sins or vices which come into consideration, all of course less violent than the alcoholic's, and there may be one of them standing out more prominently than the rest, but with the alcoholic his resistance is centred in this one sin.¹ All of his past associations are gathered around this; the associations of the ideal are entirely separated, and form a distinct system without any connecting links.

In this state, the struggle, misery, agony, and uncertainty common in some cases is felt, together with worry and anger, or despair and fear. The individual knows not where he will eventually settle, and some powers outside of him seem to be contending for possession of him. By some this condition is called conviction. This may last for days or weeks, or only for a moment; may appear with varying degrees of intensity, and is modified when the climax of the process of conversion takes place, although it is probably never eliminated from the Christian life. Professor Coe tells us when dealing with the religion of a mature mind that—

“Competition is going on for the mastery of life. You may call it, in theological terms, a struggle between Satan and the Spirit of God; or you may call it, in biological language, an effort to adjust ourselves to environment against unsocialized rem-

¹ It is at this stage that the alcoholic's disease appears to him sin.

nants of the ape and tiger nature. In any case the contest is a fact that each of us knows for himself, irrespective of catechism, and of all theories, whether biological or theological."¹

It is evident that the division of the self is never entirely healed, and unity afterwards accomplished in the process of conversion is only partial. In a sub-conscious way, if not otherwise, we would naturally expect that the associations of years would crop up occasionally.

In the conversion process, the natural consequent of the divided self is what has been termed self-surrender. The struggle has continued until the ego seems to be almost rent asunder; one or the other of the contesting factors must give way, and finally the old self, the lower desires, gives up the battle,² and sometimes instantaneously, sometimes gradually, the misery, worry, and despair are changed to happiness, trust, and confidence; the unsettled, divided self becomes stable and united. This is the turning point in the process. It sometimes seems to be immediately due to physical causes, at least quite largely. The struggle becomes so great, and therefore so wearying, that the brain refuses to respond, bringing about temporarily a state of apathy, and in exceptional cases, coma. It may be called a surrender of both sides, insomuch as neither one shows signs of activity; but when activity again takes place, or in cases of coma, when consciousness appears, the side of the good is dominant. Notice that this breakdown does not always take place, but it may, and more frequently does in cases of sudden conversion. The alcoholic with diseased brain, and

¹ G. A. Coe, *The Religion of a Mature Mind*, p. 114.

² "Ladame said that total abstinence societies did valuable work, . . . but when they succeeded, the patient was generally under the influence of religious ideas, proposed and received *au moment psychologique*, while he was in a condition of remorse and despair."—J. M. Bramwell, "On the Treatment of Dipsomania and Chronic Alcoholism by Hypnotic Suggestion," *Quarterly Journal of Inebriety*, vol. xxv. p. 130.

weakened mentality, is not able to stand much strain; but according to some answers from slum-workers, he does not seem to be more than ordinarily subject to such breakdowns. In Mr. Hadley's account of the conversion of Jerry McAuley, the following statement is given concerning the climax :—

“ There was a shock came into the room, something similar to a flash of lightning, which every one present felt and saw.

“ Jerry fell down on his side prone on the floor, with tears streaming from his eyes.

“ ‘ Oh, Jesus, You did come back; You did come back! Bless your dear name!’

“ Jerry's companions were so frightened by what they saw that they sprang from their knees, ran out of the house and fled down the street.”¹

In a letter received from Mr. Hadley he speaks as follows :—“ I have never seen a convert show such signs as you speak of (falling to the floor, becoming unconscious, or any abnormal phenomena) since I came here.”

From the physiological standpoint, the exhaustion is caused by the turning of the energy into new channels, and breaking up the associations with the old. If we could speak in so crass a way concerning processes of which we know little or nothing, we might say that the exhaustion is caused by the effort to connect the associations of this new cellular system, which is the basis of the ideal, with those which form the basis of the vital forces; or shall we say that it is exhausting to turn the total vital energy into new courses? The same process is experienced in the breaking of any habit, but in a limited degree, for while the habit may touch a small part of the mental life, religion embraces the whole of man.

What has been said regarding the physical is but an analogy drawn from the psychical, from the state of exhaustion and the evident endeavour to transfer the ego to the side of the forces of the good. With the help of additional motives, advanced either by

¹ S. H. Hadley, *Down in Water Street*, pp. 31f.

friends or by the self, consciously or not, the transfer is made, and when once made, the evil forces retreat. "Resist the devil and he will flee from you." With the weakening and expulsion of the evil forces, there comes that unity of the ideals, feelings, and volitions, in fact the whole of life, which is a characteristic feeling in the conversion process. Professor James speaks of the conversion climax as follows:—

"Let us hereafter, in speaking of the hot places in a man's consciousness, the group of ideas to which he devotes himself, and from which he works, call it the habitual centre of his personal energy. It makes a great difference to a man whether one set of his ideas, or another, be the centre of his energy; and it makes a great difference as regards any set of ideas which he may possess, whether they become central or remain peripheral in him. To say that a man is 'converted' means, in these terms, that religious ideas, previously peripheral in his consciousness, now take a central place, and that religious aims form the habitual centre of his energy. . . . Now, if you ask of psychology just how the excitement shifts in a man's mental system, and why aims that were peripheral become at a certain moment central, psychology has to reply that although she can give a general description of what happens, she is unable in a given case to account accurately for all the single forces at work, neither an outside observer nor the subject who undergoes the process can explain fully how particular experiences are able to change one's centre of energy so decisively, or why they so often have to bide their hour to do so."¹

The struggle and victory may be toward an end which is distinctly defined, or it may be very confused, but it is against the old and for the new very clearly; and what we call self-surrender of the old, may be as well named the acceptance of the new; it depends on the standpoint from which we view it. It may be further expressed or defined by saying that the desire and affection for the new life, or for God, or for Jesus are so overpowering as to drive out all baser motives or ideas. This self-surrender or religious victory is frequently shown first by a desire to proclaim the change which has been experienced, in what is called confession or testimony.

¹ W. James, *The Varieties of Religious Experience*, p. 196.

Logically following self-surrender is faith. This is a condition of mind shown by its attitude towards all truth consistent with its lately formed determination to accept the new life. This condition is one of receptivity toward the good. While logically these can be separated, in reality it is difficult, indeed impossible, to draw the line between them, for they are both factors of a process, and these factors are so interwoven as to be inseparable. Faith could be defined as the acceptance of certain elements of the Christian life, as a belief in salvation, as believing that *you* are saved ; but is not this the very point in self-surrender, accepting the new, believing in one's own salvation? If they do not coincide, the distinction might be made thus : self-surrender is the beginning of a process of which faith is the continuance. Both self-surrender and faith have a large affective element.

The change effected by this whole process is great, whether it has come gradually or suddenly, regardless of what mental element may seem to dominate, or what is the immediate antecedent of the change. Relieved of a great burden, as some express it, there is a feeling of peace and happiness in the unity achieved. Although psychologically the process of religious conversion does not stand alone, it is by far the most common of its class, and perhaps on account of this seems more closely related to normal processes. In every-day life we find mental experiences analogous to each factor of the conversion experience, and sometimes to the whole process. While there may be at times abnormal elements in conversion, it conforms more closely to the experiences of every-day life than one at first supposes ; and why not? Are we not being converted more or less every day? Do we not break old habits, and receive new revelations of truth that change us daily, making us different persons indeed to-day from what we were yesterday? Here again the difference should be emphasized—religious conversion in contradistinction from other experiences comprehends the whole mental life.

The result of conversion, or perhaps we could better say, the final part of the process, differs with different individuals. One experience which is very common is the feeling of newness, and properly so when we consider the change involved. The convert lives in a new world because he sees everything from a new point of view. Everything appears beautiful, and the world calls forth exclamations of admiration. The convert suddenly becomes an optimist of the most pronounced type; he wonders why he did not see the good in every person and thing before, and a smile is upon his face because he sees the beautiful significance of all things. This newness brings him joy and freedom, partially because he feels justified, as if his sins were forgiven, and he has come into harmony with God and the world. It is the joy and freedom of the prisoner released from his bonds. He may appear over joyful, ultra-confident, and super-optimistic, but he is sure that he is normal, and wonders why others fail to experience as much joy as he. He feels confident that it will never decrease, that he will always be equally happy.

The feelings, no doubt, fluctuate from time to time, and become much calmer, but the attitude towards the new life and the old remains constant. Religion thus acts in a double way on the feelings—it does arouse them but it also aids to calm them; they may become much excited, but there is also in religion the motives for control. Leuba compares the experience of newness to that felt by “the youth who has sung for the first time his love-tale to his lady and receives the assurance of requited love, the afflicted one who has walked through a dark passage and suddenly comes to the light,” and this is undoubtedly true; to reiterate, conversion is not unlike the experiences of every-day life. Mr. Leuba also suggests as an explanation of this phenomenon, changes in the physiological processes. He makes as a conjecture (and no one can do more than conjecture) the following:—

"We might rest content with the explanation that we have to do with an emotional delusion in which the affective state colours external sense-impressions. . . . But we can perhaps make another suggestion, in this wise: The conversion crisis may be supposed to have for physiological counterpart a redistribution of energy involving general modifications of the association paths; or an alteration of rhythms, changing the nervous regimen. It is natural enough to admit that to a psychic turmoil so intense as that of conversion, corresponds a no less considerable physiological commotion setting up a new arrangement of the motor mechanism."¹

We know the alcoholic to be the embodiment of selfishness; but when he is converted the broadening of his horizon is shown most plainly here, for he comes into close sympathy with the world outside. He is a part of a wider life for which he must work, and for which he feels a great attachment. He is capable of self-sacrifice which would astonish any one acquainted with him in his alcoholic days. This element may show itself in connection with the greater freedom of which we spoke above, and may really be a great factor in bringing it about. Coupled with this, and what may at first seem to be a contradictory principle, is an awakening of the self. The self-consciousness is magnified, and the convert feels his importance. This does not take the old form of trying to make every one and everything work together to satisfy his petty selfish desires, but he is important in the advancement of the world along the road of righteousness. No longer is he looked down upon, he is a man and he recognizes it. No more is he held in bondage, he is free from all men and from himself. He is master where he used to be servant, he is ruler where he was serf. One can easily see that the form of the awakening of the self does not minister to selfishness, but rather annihilates it.

In no way is the lack of selfishness so noticeable as in the changed attitude towards his family and friends, and this in turn is an assistance to him in his struggle

¹ J. H. Leuba, "A Study in the Psychology of Religious Phenomena," *American Journal of Psychology*, vol. vii.

against his enslaving habit. There is a reinforcement of all altruistic feelings and impulses, and his natural affections are stirred. The indifference which he formerly showed to the misery and grief of his family has vanished, and he recognizes the claims which the members have upon him. Another motive is hereby furnished for his abstinence and reform, and he becomes the natural husband and father, similar to his pre-alcoholic days. The other natural impulses are revived, such as his duty to the state as a citizen, and this is also an additional reason for his change of habits. All motives, however insignificant they may appear to the onlooker, are of great importance to the person who has to weigh the smallest action in the balance lest by association or suggestion it may lead him to the bondage which he has so recently escaped.

A characteristic of the new life, we might say a part also of the conversion process, is a revival of cheerfulness, courage, and hope. This is closely connected with the feeling of newness, and is especially helpful to the alcoholic. When free from alcohol, when approximately sober, the alcoholic is depressed and discouraged. He sees no future except a drunkard's life and a drunkard's grave—little use for him to strive and struggle, he could not conquer. He has tried and failed, and he decides not to try again, for there is nothing ahead of him except failure and degradation; his only pleasure is negative, he can drown his sorrow in drink. But at conversion he is filled with joy and hope, for he is free and the future is bright and promising. No longer he trudges along with head downcast and heart heavy, no longer he fears the future, he is encouraged and therefore brave. The coward of yesterday is the hero of to-day, he fears neither men nor demons, he is strong in his newly found love and friendship and unshaken in his determination and hope. This is an important element in the change which comes to him, enabling him to battle against the habit which he has feared and striven against in vain.

This encouragement and hope give the alcoholic confidence in himself, and this from a suggestive standpoint is half the battle. He knows now that he can accomplish what before he thought impossible, and going forth with this confidence he is greatly helped. It is a matter in which others can do nothing, it depends upon him, and the expectancy with which he starts out is the harbinger of the result. This confidence which he has in himself is largely due to the expectation of help from God, which help according to his testimony is duly provided. He expects to be guided in a way that shall lead him away from temptation, and to be given strength to overcome the strongest desire for alcohol. To say that this is suggestion is probably true; but to say that it is suggestion only, is doing violence to the united testimony of thousands whose evidence is as valuable as any in the land.

One of the chief consequences of conversion, and what undoubtedly seems the most miraculous one, is the complete annulling of the lower temptations, and in the particular case of the alcoholic, the appetite for alcohol which for years was irresistible. The fact is marvellous but none the less true, as may be shown by references to many cases.¹ We might expect a

¹ Notice the following quotations from cases which we take at random:—

“I have had no desire to use them [stimulants] since.”

“I experienced a complete change of conduct; I left off the old habits of drink and profanity without effort.”

“From that hour drink has had no terrors for me; I never touch it, I never want it.”

“From that moment till now I have never wanted a drink of whisky.”

“On Monday he had no desire to drink, and since that night (thirteen years) no liquor has ever entered his mouth. Since that day he has not had to surmount strong temptations.”

“I found that all my taste and longing for that accursed stuff was gone; . . . for ten or eleven years (after that) I was in the wilderness with its ups and downs. My appetite for liquor never came back.”

“The thing I do know is, that so far as the appetite for liquor, tobacco, and other forms of vicious indulgence is concerned, it was taken completely away, and has never returned to this minute, not even a suggestion or longing in the slightest degree.”

Not all cases of cures of alcoholism can bear this testimony. The

condition where the man would be strengthened, so that when the appetite was strongest, and the craving had returned, he would by a great effort be able to withstand it; but in so many cases it is not this way, the appetite is gone without a trace.

In the description of conversion the feelings and intellect have been referred to, but the will has seemed to play no part. Lest the facts should be misrepresented, let us devote a little space to the discussion of the will in conversion, for it is an important factor. Conversion shows very plainly what a great effect a mental crisis has upon an almost totally destroyed will. The will is necessary, and the alcoholic must work as well as pray. As Mr. Stanley says, "Thus man, by appealing to the rain-god, instead of using scientific means to promote rainfall or to supply lack of irrigation, has hindered his development for centuries."¹ So the alcoholic must put forth some effort, however small, to help himself if he wishes external aid. Here again we

case of Mr. Gough is one in point. It is well known that a short time after he first stopped drinking, he gave way and became intoxicated. The account which he gives shows that, although the disease theory of alcoholism was not current at the time, his appears to be a typical case. He speaks of much pain in his head where he was wounded by a spade when a boy. He was restless and acted and talked strangely. "But I was in so nervous a state, that to remain still for five minutes together was a thing utterly impossible." A physician could easily discover a traumatic or constitutional cause for his dipsomania. We do not know of his ever falling again, but Dr. W. C. Welch, of New Haven, told the writer of the call of his father, also a physician, to attend Mr. Gough when at the height of his popularity as a lecturer. Mr. Gough felt so badly that he wished to cancel his engagement for the evening. Dr. Welch dissuaded him, and invited him to his home to dinner. Mr. Gough protested, saying that he could not eat a thing, but finally consented to accept, and by dint of a good dinner and pleasant companionship, he was able to fill his engagement that evening. The doctor never told Mr. Gough, and it was doubtful if he ever suspected it, but the trouble was diagnosed as alcoholism—*i. e.*, the nervous craving of the system for the sensation produced by alcohol. Some have said that the alcoholic is never cured, that he is in danger of falling to the day of his death, for the system never forgets. This is rather strongly put, but it shows the great power which must come into a man's life to rid him of this craving.

¹ H. M. Stanley, "The Psychology of Religion," *Psychological Review*, vol. v. p. 254.

have a seeming paradox: if self-surrender means anything at all, it certainly means the giving up of the personal will. The convert then has no voice in the matter, he is led, he does not lead. He seems to sink will and all into a more comprehensive mind which bears him resistlessly along.

It will be remembered that we had the same apparent paradox in regard to the self, and there he came to himself, in the process, and felt his importance and self-consciousness. Probably before this in the process, and it may be as the cause of this, we have the awakening of the will, awakening as though from a long sleep, the sleep of years, and thoroughly refreshed, it takes its rightful position and begins to assume control. (Of course it is understood that by the will is meant the *self* as willing.) The effort of the will in the direction of the good is felt by all the other mental faculties, and gives direction to the turn which the whole self is to take; and consciously, as well as sub-consciously, its work is valuable, and shows in every part of the process. Ribot evidently does not give the will much credit in the process, for he looks upon it very much like a fixed idea, or an irresistible impulse.¹ This seems a little extreme, and although

¹ "We may ask whether the most sudden changes are, in truth, as much so as they seem, if they have not their antecedent condition in the life of the individual in question, and are not the accelerated result of a sub-conscious process. Whatever we may think, the psychological mechanism of conversion is very similar to that of irresistible impulses. In its complete evolution it passes through three stages: (1) The conception of an opposite aim or ideal; this may happen to any one without lasting, or leading to action; this state will produce no effect if it merely passes through the mind. (2) This conception must become a fixed idea, with the permanence, the predominance, the over-mastering possession which are peculiarities of such ideas. (3) The action takes place because already included in the fixed idea, and because the fixed idea is a belief, and all beliefs presuppose something existing or about to exist. In short, there is no result until the idea becomes an impulse. In the case where the individual is, so to speak, struck by lightning, the impetuous movement of the passion springs up suddenly and triumphs immediately. This is yet another point of resemblance to the irresistible impulses which pass into action, sometimes after a period of struggle, sometimes in a sudden ecstasy. . . . There is in any case this

they are undoubtedly allied phenomena in some respects, there is more conscious purpose and definite will displayed in conversion than in the fixed idea, and in the general process there seems a well-defined line of demarcation. Pfleiderer gives the place of the will in conversion as follows:—

“Proceeding to ask how the consciousness of redemption is arrived at, we are struck at the outset by a remarkable statement which recurs regularly in the history of religion in connection with such tendencies—viz., that instruction and theoretical reflection do not of themselves suffice to produce religious faith, but that it rests on processes of feeling that reach down to the depths of the soul, and point to its mysterious nature and origin. Such practical truths as have power to determine the life and the ideals of life are of this nature—can never be known theoretically only; there may be knowledge about them, even a notional apprehension of their meaning, but they are not known in the full sense of knowledge, so long as they are not experienced as a living power in the heart. This experience may not always be equally profound and clear; but the full decisive experience comes about only when the *will* lays hold itself of the truth by the power of which it feels itself laid hold of, appropriates it, recognizes it, takes it up into the heart as the ruling power and dearest possession of life—in short where the saving truth is appropriated in living *faith*. But how can the will come to appropriate a truth which requires of it the abnegation of its own natural and personal desires? The will is not able to take upon itself the pain so long as the activity of its natural desires is productive entirely or predominantly of pleasure. But this is not permanently the case; for this the divine wisdom and justice in the natural and moral world-order has sufficiently provided. . . . Gone is the painful sense of sin, for the cause of it, the dis-union of self-will with the divine will has been removed.”¹

The New Testament is not a text-book on psychology, but it is one on religion, and it is worth noticing that it lays considerable emphasis on the

difference, that the new character—*i.e.*, new ways of feeling, thinking, and acting—is lasting. This could not be if in both stages, incubation and eruption, a profound change had not taken place in the individual constitution. Conversions do not create a new tendency, but they show that the greatest antitheses are latent in us, and that one may replace the other, not by an act of will, which is always precarious, but by a radical transformation of our sensibility.”—*The Psychology of the Emotions*, pp. 412f.

¹ O. Pfleiderer, *Philosophy of Religion*, vol. iv. pp. 126 and 128.

work of the will in the process of conversion. The will is a factor, and an important factor, both in the passive and active, the positive and negative work required of it.

Early in this chapter it was said that little could be definitely stated concerning the divine element in conversion, since by its nature it could not be scientifically analyzed. But because we cannot analyze it, it does not follow that it is unreasonable to believe it. We can do no better at this point than to present two brief quotations from Professor James:—

“To plead the organic causation of the religious state of mind, then, in refutation of its claims to possess superior spiritual value, is quite illogical and arbitrary, unless one have already worked out in advance some psycho-physical theory connecting spiritual values in general with determinate sorts of physiological change. Otherwise none of our thoughts and feelings, not even our scientific doctrines, not even our *dis*-beliefs, could retain any value as revelation of the truth, for every one of them without exception flows from the state of their possessor's body at the time.”

“Psychology and religion are both in perfect harmony up to this point, since both admit that there are forces seemingly outside of the conscious individual that bring redemption to his life. Nevertheless, psychology, defining these forces as ‘sub-conscious,’ and speaking of their effect as due to ‘incubation’ or ‘cerebration,’ implies that they do not transcend the individual's personality; and herein she diverges from Christian theology, which insists that they are direct supernatural operations of the deity.”¹

The mistake is frequently made of holding that, if we have explained the way in which the mind operates in conversion, we have thereby eliminated the supernatural—or rather we should say, the divine element. As well might we say when we have described a law of nature, we have proved therefore that nature requires no power to operate the elements which conform to this law, simply because we know how it is operated; or that when we know how the machine works, it therefore needs no power to

¹ W. James, *The Varieties of Religious Experience*, pp. 14 and 211.

operate it. Pfleiderer from the standpoint of philosophy speaks very decidedly as follows:—

“This wonderful change is not arbitrarily brought about by man himself, but experienced as a thing that has happened to him; it appears to him as the operation of a higher power, as the gift of undeserved divine favour of *grace*. And is this not in truth the case? Careful thought, in fact, can do nothing but confirm what the believer holds as a truth requiring no proof.”¹

Mr. Everett defines religion as, “A feeling toward a supernatural presence manifesting itself in truth, goodness, and beauty.”² This makes religion a purely psychological matter, but his subject leads him to do so. If, however, there is a feeling toward a supernatural presence on our part, is it unnatural or unreasonable that that presence should respond to our gropings? The testimony of the individual experiencing the conversion, even admitting that it is not the best, ought to be worth as much, probably more, than the opinion of a person entirely unacquainted with religion.³ There is in so many

¹ O. Pfleiderer, *The Philosophy of Religion*, vol. iv. p. 128.

² C. C. Everett, *The Psychological Elements of Religious Faith*, p. 208.

³ Notice this quotation from Boris Sidis, *Psychology of Suggestion*, pp. 359f. :—

“Well may President Jordan, of Stanford University, exclaim, ‘Whisky, cocaine, and alcohol bring temporary insanity, and so does revival of religion—one of those religious revivals in which men lose their reason and self-control. This is simply a form of drunkenness no more worthy of respect than the drunkenness that lies in the gutter.’ Professor Jordan was attacked on all sides by the small fry of the pulpits; but Professor Jordan was, in fact, too mild in his expression. Religious revivalism is a social bane, it is far more dangerous to the life of society than drunkenness. As a sot, man falls below the brute; as a revivalist, he sinks lower than the sot.”

A gentleman quite familiar with Mr. Sidis, about the time this book was published, told the writer that he accompanied Mr. Sidis to church service one Sunday evening, and Mr. Sidis confided to him the information that he was going to a religious service for the first time in fourteen years; hence the dogmatism of his whole treatment of religion, of which this is a sample. Some revival methods should not be upheld—far from it. Professor Jordan was quite right in the distinction which he draws: what else is insanity but losing the reason and self-control? But to class revival methods all together, and to condemn them as Mr. Sidis did, shows a total ignorance of the subject.

cases a feeling of power from without, a testimony of experience directly opposed to the psychological theory, as we may call it; recognizing the objection which was made at the beginning, of so many persons being unable to read aright their psychical experiences, yet there is no testimony to the contrary, and the experience of those who witness concerning it is more valuable than the ideas of those who simply theorize about it.

As the last topic in this chapter, the part played by the subconscious¹ will be discussed, and therein the relation of this religious experience to hypnotism and suggestion. There seems to be not the least doubt that the subconscious is an important factor in the process of religious conversion. To say this is only to state a fact which again confirms one of the main contentions of this chapter—viz., that religious conversion deals with the whole man; but to say that conversion has to deal with the subconscious only is to misrepresent the facts. With like stimuli it is known that persons react differently on account of the difference in the operation of their mental processes—in their temperament, as we say. Persons who have sudden conversions have them rather than the gradual ones, not because it just happens that way, but because they are so constituted that the religious influences react in that way. If we know the person psychologically we can prophesy quite correctly the type of his conversion, whether it be sudden or gradual, quiet or excited; this is simply saying that of conversion we may know scientific facts which admit of classification. The divine element is not eliminated because we can do this; this has no bearing on the subject, for

¹ To understand what the writer comprehends by the term "the subconscious," the reader is referred to an article of his in the *Psychological Review*, September and November 1903, on "The Case of John Kinsel." From a religious point of view it can best be comprehended by using it as a synonym for the biblical terms "nature" and "heart"—e.g., Prov. xxiii. 7, "For as he thinketh in his heart so is he"; Eph. ii. 3, "Were by nature children of wrath."

whether the power which causes conversion is autonomous or divine, it conforms to one type when it passes through one variety of mould. It is rather an argument for the divine element that it is orderly.

Professor Coe, who has made the most exhaustive examination of this subject of which the writer knows,¹ gives three sets of factors favourable to the attainment of a striking, and therefore of a sudden, religious transformation. They are as follows:—A certain temperament, expectation, and a tendency to automatism and passive suggestibility. Given these three known quantities, the unknown, the type of conversion, can be predicted. In the cases which were thoroughly examined, those who experienced a great transformation, almost without exception, expected the change. Of these 70 per cent. were of such a temperament that sensibility predominated, 12 per cent. had intellect in the ascendancy, and 18 per cent. will. Further, of these, 82 per cent. were of sanguine or melancholic temperament. We therefore see from these investigations that the temperament favourable to sudden or striking conversions is sanguine or melancholic, with sensibility predominating. The majority of these had exhibited some automatic phenomena—as, *e.g.*, hallucinations, and these correspond almost exactly with the “passives” in hypnotic experiments. Of course the number of cases examined was small, and necessarily so, on account of the thoroughness of the examination; and although there were too few to warrant us in making too sweeping a generalization, they correspond so closely with what we should naturally expect, that they must have considerable weight.

We can now see why—apart from the fact that if the alcoholic is to be cured, the break with his controlling habit must necessarily be sharp and abrupt—his conversion is a sudden one. We know that his intellect and will are so impaired that he is largely a

¹ G. A. Coe, *The Spiritual Life*, pp. 109-150.

creature of his feelings, and can be classed primarily among those with sensibility predominating. In temperament, so far as one can be arbitrarily classified as belonging to any one temperament, the alcoholic is melancholic. We know alcoholics to be "passives," for as a class they are more easily hypnotized than the average, and on account of their disease are subject to automatisms, being victims of hallucinations and vivid dreams. This gives all the elements that Professor Coe demands for a sudden and striking conversion, except the expectation. This must be left to the investigation of the individual case; but it would seem that if the alcoholic's hope is an escape from suffering, if he knows anything of the necessity of a sudden break with the habit—and most of them do recognize this—and if he comes under mission-preaching, which is the style usually most effective with him, he must therefore expect this sudden and striking change. If this is so, we furnish Professor Coe with another illustration of his classification.

With the convert who has come into life in a sudden and abrupt way, the subconscious element in the process is undoubtedly large. This is shown by the comparative scarcity or absence of the intellectual and volitional element *at the time of the climax*, and the inability of the convert to give his reasons for the change, the very little self-direction at the time, and the abruptness of the decision with few or no motives. The conscious and the subconscious interact, and in no case of conversion, however deliberate, is the subconscious element eliminated any more than the conscious element is absent in sudden conversion, but the proportion of the two varies. What shows itself as a sudden development in consciousness is undoubtedly the result of a subconscious development which suddenly ripens and thrusts itself into consciousness, apparently ready-made; but of what this process, this development, in the subconscious area is, and

of its cause, we are entirely ignorant, and our guesses will depend upon our point of view. Now, it is plain that if God operates in the human mind in conversion—that is, if there is such a thing as a divine element in conversion—it must be largely through the subconscious, and especially is this true in cases of sudden conversion. This being so, we must recognize a similarity between these cases and hypnotism, whether we wish to or not; in fact, some persons in relating their conversion experiences necessarily couple with them an hypnotic element—as, *e.g.*, “It seems to me now hypnotic.”¹

There has been a great objection to the recognition of this relation among some religious people; not because they were in a position to confute the statement, but because they considered it detrimental to Christianity, on account of the ill repute of hypnotism. On the other hand, because some persons, not particularly jealous for the good name of Christianity, have seen a relation between conversion and hypnotism, they have identified the two. The position that appeals to the writer is the mean; he recognizes both the similarity and the difference. True, we recognize the almost total similarity in some revivals where methods are employed which a trained hypnotist might well eschew; but it is unfair to class all conversions as revival conversions, or all revival conversions as of this objectionable stamp. Even admitting the hypnotic and suggestive element in most alcoholic conversions, for undoubtedly it is there, it is not the use of it but the abuse of it that is objectionable. The same thing can be said of many other forces that at times are abused. For instance, there is a certain authority which religion can justly claim on account of its nature; the use of this is justifiable, but oh! what abuses have been wrought in its name. Mr. Granger says concerning hypnotism and conversion:—

¹ E. D. Starbuck, *Psychology of Religion*, p. 51.

“We are now prepared to take up a topic referred to before—conversion by hypnotic suggestion. The reader will perhaps remember that in other kinds of conversion there was a more or less prolonged period of preparation for the change, as the soul came to harmony of intellectual judgment, or to peace after stress. As against these modes, instantaneous conversion seems explicable by saying that the mind is occupied by a suggestion when it is in a suggestible state—when, that is, it is subject to neurasthenia. It is fortunate, of course, that the same nervous weakness which lays a man open to control by passing impulses should now and then subject him to a good impulse; but this weakness is not a normal state, and there is something inexpressibly repulsive in the idea that the religious life should necessarily begin in this way. Jesus did not so view conversion.”¹

The writer does not feel the same repulsion concerning the matter which Mr. Granger apparently does. If, as some would have it, the hypnotic or suggestive element were eliminated, religion would lose thereby. We do not recognize the part that the sub-conscious plays in our every-day life, or we would see to eliminate this would be to confine religion necessarily to a lesser part of man's nature, instead of its holding its present important position of affecting the whole man, conscious and sub-conscious. If this is a weakness, as Mr. Granger says, it is a weakness that he shares with the rest of mankind, for no one is free from it; and however much it may be deprecated, its importance in the mental processes is profound.

If it is true, as was said above, when God works in man He works through the sub-conscious, these sub-conscious factors should be lauded rather than deprecated. Further, the wisdom of having these sub-conscious factors so prominent in conversion is apparent, because of the greater stability of the change thereby. Were it simply in the mental and not deeply rooted in the physical, the passing change of circumstances would bring about a corresponding change in the desires, and what promised to become a permanent change, would be temporary only. Here

¹ F. Granger, *The Soul of a Christian*, p. 117.

is to be found the distinction between the purely hypnotic, pseudo-conversion, and the real conversion. When the subject awakes he wonders what it all meant, and laughs at the thought of the part he played in the revival; or else it may last for a week or a month and then fade away. But the true conversion takes a permanent hold of the whole man. With cases like the alcoholic's the fact that the conversion has roots in the physical is doubly fortunate, insomuch that the disease to be cured has its hold in the same part of our being, and here we have perhaps a further reason why conversion has been so successful as a cure.

Nor can the writer agree with Mr. Granger that Jesus did not recognize and use the subconscious element in conversion. "The wind bloweth where it listeth, and thou hearest the voice thereof, but canst not tell whence it cometh, and whither it goeth: so is every one that is born of the Spirit"¹—canst not tell whence it cometh because it enters through the subconscious. It is certain that most of the conversions of Jesus were instantaneous, and most of his cures were of the same kind. To say that both of these were of divine origin *par excellence*, does not explain how they worked in the human mind; or contrariwise, to say that they were of subconscious character does not detract in the least from their divine significance. The same can be said of the apostles who followed Jesus. Peter, who knew well the methods of Jesus, gives us one of the best examples of healing of a suggestive or hypnotic character which we have anywhere.² Peter *fastens his eyes on* a lame man, and demands that the man look at him and his companion (Peter being the spokesman, the man not being able to look at both at once, must have looked at him). Here is the first condition of hypnotic suggestion—fixation of attention, and it is aided by that most powerful ally, the fixation of the eyes. We are told that the man gave heed unto them.

¹ John, iii. 8.

² Acts, iii. 1-10.

Peter begins to speak, and ends by commanding abruptly, "Walk." Following up this verbal suggestion with a dramatic one, he takes the man by the right hand and lifts him up. Could any trained hypnotist have done it better? Yet, this does not explain the power at the back of it. Giving the suggestive treatment all its due, we have yet to explain how the congenitally lame, grown to manhood, could be cured, for this exceeds all feats of suggestive treatment known to science; and even supposing that we have some functional disease which easily yields to hypnotic treatment, the divine element is none the more eliminated. Paul's work at Paphos was evidently of a similar character.¹ This is sufficient to show that the disciples, and Jesus also, did not deny the employment of the subconscious elements, and methods which might be considered of a partially hypnotic character, so much as some of his followers to-day. They used them, not abused them.

"Now the altruism which is thus seen to be the gist of all mental healing, is the very essence of Christianity. Religion has in it all there is in mental therapeutics, and has it in its best form. It teaches temperance in the broadest sense, high ideals and dependence upon the highest alone. This preserves those who know it, by practice as well as by precept, from most of the ills that make up the list of those curable by mental methods; but further, it teaches a wise submission to the inevitable, a freedom from care and worry, and a spirit of hopefulness, and these are the exact conditions aimed at by all mental practices. Living up to these ideals will do everything for us that can be done."²

The cure of the drunkard in conversion is one peculiar to itself, but which contains elements found in hypnotic and allied practices, and it necessarily must if it embraces the whole man in its scope. The

¹ Acts, xiii. 4-12.

² H. H. Goddard, "The Effects of Mind on Body as Evidenced by Faith Cures," *American Journal of Psychology*, vol. x. p. 501.

manner of the conversion we can partially describe and explain, but the power at the back of it remains a mystery. Those who claim it is divine, have much both of a philosophical and theological nature to warrant them in their contention, and from a psychological standpoint it is admissible.

Conversion is not alone of religious experiences to use the subconscious, for it is employed in such experiences as inspiration and revelation.

In religious conversion, then, we have the most efficacious cure of alcoholism. This is scientifically established. The reasons for this are that, apart from the divine element, there is instilled a desire for reform, and a change of associations and an emotional substitute are provided. Different from other cures, religion is concerned with the whole man, and thus is capable of reaching a deep-seated trouble. The escape from physical misery is a powerful motive, greater than that of escape from sin or future punishment. When self-surrender places the charge of the self in the power of the best impulses, the subconsciousness works a wonderful change in the entire system, and frequently there is never a desire for another drink. The divine element, although inexplicable, is clearly established and cannot be explained away.

CHAPTER XI.

HYPNOTISM AND OTHER CURES.

Cure—Physical treatment—Defining the disease—Difference between the disease and its results—Sanitation—Surgery—The taste for alcohol—Specifics—Secret cures—Dr. Thacher's method—Any help welcome—Hopeless cases—Influence of friends—Hypnotism—Success attending the treatment—Hypnotism a help only—Results by different operators—Conditions necessary for treatment—An actively willing subject—Two cases—Alcoholics easily hypnotized—Persons difficult to hypnotize when intoxicated—Success of the writer—Physical conditions of hypnosis—The blood supply a factor in the solution—Local anemia—Chemical theory of sleep—Method used by the writer for inducing hypnosis—Suggestions given—Auto-suggestion—In hypnotism, reform is easier than debasement—Voluntary action in hypnosis—Three cases by the writer—Case of John Kinsel.

THERE is considerable difference of opinion concerning the definition of the term "cure" when applied to alcoholism. Some go so far as to say that there is no such thing as a cure—that is, that the alcoholic never returns to a normal condition where he is able to partake of a glass of alcoholic liquor without danger of the recurrence of the impulse to excessive use.¹ This is undoubtedly so, but it may also be true that the nervous system of the patient was such that, prior to his first glass, this same condition was present to a less degree, and this may partially account for his alcoholism. This claim of no cure, however, is an extreme view.

Those who believe in physical rather than mental treatment, object to the use of this term in cases

¹ Dr. Branthwaite, "Report of the Government Inspector of Inebriate Asylums of England," *Quarterly Journal of Inebriety*, vol. xxv. p. 169.

where the drink impulse is annihilated, but no further treatment has been given. They claim that the drink impulse is only a symptom, and to eradicate the symptom is not to cure the disease. It seems as though here the disease theory is being exaggerated so that the term "cure" can only be pertinent in cases where certain remedies have been used. For example, it is asserted that such methods as religion, temperance pledges and hypnotism do not cure, they simply remove the symptom--the drink craze or impulse. The writer believes in the disease theory of alcohol as surely as its most ardent devotee, but in all that he has read on the subject he has been unable to find any other symptom of the disease than this; in fact, as far as he can understand, this is the whole disease, and when this is eliminated the disease as such is cured.

There is in many cases a certain condition of the nervous system due to heredity, traumatism, or a variety of causes,¹ which is favourable to the development of the disease, but this is the case in all diseases. A person must be in a certain bodily state before even a cold can be contracted, but this bodily state is not the cold. Notwithstanding all that has been said concerning the disease of inebriety or alcoholism, and the drink craze or impulse as only a symptom, no one has been bold enough to assert that a person had alcoholism who had never drunk alcohol, or experienced this impulse. On the other hand, it is claimed that the disease continues after the symptom, the drink impulse, is removed. "The cessation of the drink impulse is not the cure; it is only a halt and remission in the progress of the disease, which will return or appear in some other states of degeneration

¹ L. D. Mason, "Inebriety a Disease," *Quarterly Journal of Inebriety*, vol. xxv. p. 217, says—"Even those of good heredity and personal history may succumb to some of these exciting causes, but are not as liable to as those with a bad heredity. As exciting causes we may mention sunstroke, syphilis, blows on the head, concussion, fracture with depression, wasting or exhausting diseases, mental shock, etc. Tape-worm has been mentioned as a reflex cause."

and disease.”¹ Here is a confusion; there are some mental diseases of which the drink impulse is only a symptom, but these diseases are not or should not be called inebriety, or alcoholism; if we are speaking of the latter the above quotation, in the opinion of the writer, is over-stated.

The ravages of alcoholism upon the nervous system are fully recognized, this can be seen from Chapter II.; but the results of the disease are not the disease. If deafness or blindness results from a case of fever, twenty years after the fever disappears shall we say that the patient still has the disease because he continues to be blind or deaf? No one would say that a person is completely normal the instant the drink impulse is removed; the degeneration of body and mind is clearly seen, and the need of recuperation is very apparent. Nothing that can be done to restore the diseased tissues to their normal condition should be neglected; yet, let us distinguish between the disease and the results of the disease, and let us recognize that the disease can be cured while the results may never all be remedied. In fact, this is the case, for the results of alcoholism are never wholly repaired.

Because the dire effects of alcoholic excess are recognized, the benefits of the physical treatment are apparent. The patient needs medical treatment, as other organs beside those of the nervous system are diseased, the stomach and liver being most likely to suffer. The nourishment for which the nerve cells have so long been in need can only be furnished when these organs are restored to their normal function. The assistance of baths, massage, electricity, rest, outdoor recreation, and a few drugs have proved of great benefit in eliminating the effects of the disease, after the disease itself has been cured.

Sometimes it has been found that local irritation, especially of the rectum, pelvis, or sexual organs, has produced a profound nervous depression which in

¹ *Quarterly Journal of Inebriety*, vol. xxv. p. 299.

persons predisposed to alcoholism causes excess.¹ The value of surgery in these cases has been fully proved, as complete recovery from inebriety has followed the operations. Any treatment which is found remedial in allaying nervous irritation or depression will be beneficial in the treatment of alcoholism. As the endeavour to relieve mental or physical pain frequently causes alcoholic excess, other remedies for pain are recommended.²

It is rarely if ever necessary to try to rid the patient of his liking for the taste of alcohol, for this the alcoholic seldom has. The writer has met only one man who affirmed that he liked the taste of alcohol. Sometimes alcoholic beverages are absolutely distasteful, but the effect on the nervous system is what is desired. However great the nervous craving may be, it seldom lasts longer than ten days after the indulgence is discontinued, and never more than twenty days. Of course, under certain conditions it may return again, and this is what it is necessary to prevent in trying to cure alcoholism. On account of the short duration of the craving, except in cases which are very severe or where there is no desire for reform, it is not necessary to keep the alcoholic under restraint for a great length of time, but it is frequently

¹ H. A. Rodebaugh, "The Value of Surgery in Certain Cases of Inebriety," *Quarterly Journal of Inebriety*, vol. xxv. p. 118, says—"The conditions most frequently observed in the study of over two thousand cases (of inebriety) were found to be: first, in the order of frequency, rectal disease, hemorrhoids, fistulas, inflamed pockets, irritable prepuce, and ulcer and fistula of the anus; second, in the male, a long, tight prepuce, a short frenum, a contracted meatus, urethral stricture, inflamed or enlarged prostate, and inflammation of the vesicula seminales, either simple or specific; in the female, urethral caruncle, an adherent hood of the clitoris, which may be too short or too redundant, either condition favouring retention of the smegma, and thus increasing the local irritation, and finally, cicatricial tissue, adhesions, neoplasms, and displacements of the sexual organs within the pelvis."

² In the same article, *ibid.*, p. 117, Dr. Rodebaugh says—"In 1828 Dr. Kane, of Tennessee, asserted that in order to cure inebriety it was necessary to break up the associations in the mind of the patient between his suffering, real and imaginary, and the relief obtained by alcohol and other narcotics."

advisable for the first few days; this largely depends on the amount of co-operation given by the patient. Restraint alone is not sufficient for a cure, but it may be a necessary prerequisite. Many institutions depend mostly upon moral influence, social environment, and a few tonics administered to assist in building up the body during the period of rest.

In a few cases the drink impulse stops suddenly without any apparent cause; it seems to just die out. Some patients, after they have been treated by every method and all has been done to cure them without avail, suddenly recover.¹ This is often concomitant with some bodily change which reacts on the nervous system, such as the climacteric change in women between the ages of forty and fifty, but more frequently not even remote causes like this can be posited.

Apart from the suggestive influence which they may have, the numerous specifics advertised for the cure of alcoholism are largely valueless. Besides some tonic, most of them contain a drug which produces the same stimulating feeling as that of alcohol, and may be even more harmful. As long as this is taken alcohol is not needed, but as soon as this is discontinued the patient again resorts to his former indulgence. As in some cases of morphinism, the remedy is simply opium in another form, and thus does away with the customary portion of the morphine. These specifics are largely substitutes, not remedies.

There have lately appeared some "cures" of a secret character, administered by selected physicians or at certain institutions, which have had some success in curing alcohol and drug addictions; chief among these is the Keeley Cure.² It has been supposed that the cure was of a suggestive character,

¹ T. D. Crothers, "Alcoholism and Inebriety," *System of Practical Therapeutics*, Hare, vol. iii. p. 486.

² The Leyfield and Hagey Cures, like the Keeley, undertake patients in special homes only.

and the physician in charge of one of the Keeley institutes admitted this to the writer. The cure is, of course, secret, and only a surmise can be made regarding it. The following quotation may give a more accurate account of the supposed treatment:—

“The lawyer frankly gave the details of his experience to all inquirers, and to many who did not inquire. When he first arrived at the institute, Keeley asked him if he had in his satchel any whisky or brandy. The answer was, ‘I have both.’ ‘Give them to me,’ responded the doctor. ‘I wish you to keep on drinking as usual, but I will empty your bottles and fill them with a pure article.’ The bottles were filled and refilled by Keeley as fast as emptied.

“The craving for drink disappeared in a short time, but the orders of the doctor to keep on drinking were strictly followed, notwithstanding that nausea which attended every swallow became so severe that the very thought of the accustomed intoxicant excited it. The patients who, after a longer or shorter period, were dismissed from the institute were exhorted to continue taking a certain liquid tonic which Keeley furnished, to avoid visiting saloons, and to abstain entirely from even tasting an intoxicating beverage. Keeley forewarned them that a return to their drinking habits within a week would be fatal, and that if the resumption did not take place till after a month’s abstinence their condition would be worse than before the treatment commenced. Not a few heeded the admonition, and their reformation has continued with scarcely a lapse up to the present time. . . .

“That a double chloride of gold—if there be such an aurous salt—was the sole or chief drug employed by Keeley or his disciples to produce certain conditions is open to very grave suspicions. Why did he demand that the lawyer should surrender the whisky and brandy in his possession and drink a pure article which he claimed to possess? The attorney might have told him, but curiously enough he did not, that his own whisky and brandy were the best which money could buy in the market. But the shrewd Keeley knew that neither these nor their combination with the gold chloride would remove the crave nor produce the desirable nausea—‘a sensation,’ as Hayden calls it, ‘akin to sea sickness.’ He must add to the pure substitute increasing quantities of apimorphine or some other nauseant which would cause an abhorrence delightfully overwhelming. That the frequent hypodermic use of strychnine with some other tonic—auriferous or not—kept up the strength of the patients during their three weeks’ treatment at the institute is highly probable. That the disgust at the very thought of whisky was not permanent is evident from the fact

that when one of the reformed alcoholics ventured into a saloon and tasted an intoxicating liquor not the slightest nausea ensued, and the lost crave soon returned."¹

"Dr. Thacher (in 1826) mentions several methods which have been employed successfully to overcome the love of strong drink. One of these seems to have anticipated the Keeley cure. He says, 'I once tempted a negro man who was habitually fond of ardent spirits to drink some rum, which I had placed in his way, and into which I had put a few grains of tartar emetic. The tartar sickened and puked him to such a degree that he supposed himself to be poisoned. I was much gratified by observing that he could not bear the sight nor smell of spirits for two years afterwards.'"²

If this account of the cure is correct, and the conclusions well drawn, and there seems no reason to doubt either, the cure is a suggestive one, and in so far is related to hypnotic treatment. The suggestion that the whisky will nauseate the alcoholic is frequently well received, and proves effective. This is a rather heroic method of receiving suggestions, but if it is successful in curing the alcoholic it is probably worth while. If we receive this as an adequate account of Dr. Keeley's methods, it is amusing to read his arraignment of hypnotism and suggestion;³ but this is necessary for the protection of his business. Personally, the writer accepts the Keeley Cure as he does other cures. He has known cases of complete recovery of long standing where this method has been used, and although there are more pleasant ways of getting suggestions, the cure is the main point.

The efficacy of any method, or of combined methods, commends them, for the disease has reached such serious proportions that we cannot afford to reject or discourage any method of cure because it is not our cure, but cheerfully receive all the assistance regardless of the source. It has not

¹ "Specifics for Inebriety," *Quarterly Journal of Inebriety*, vol. xxiv. pp. 327f.

² H. D. Didama, "Alcohol as a Predisposing and Exciting Cause of Disease and Crime," *Quarterly Journal of Inebriety*, vol. xxiv. p. 311.

³ L. E. Keeley, *The Non-heredity of Inebriety*, pp. 291f.

been directly within the province of this book to discuss the physical cures; we are concerned with those only which we may call mental, hence the inadequate treatment of the former. The testimony concerning the efficacy of physical remedies is convincing. The best results should come from a combination of moral, mental, and physical treatment.

There are undoubtedly some cases which are comparatively hopeless, and no treatment can help them. Dr. Crothers speaks of one class very pertinently as follows:—"Another class of cases come under medical care that are still more difficult to treat. They are generally young men, sons of wealthy parents, and men who from bad mental surroundings, bad company, ignorance, and neglect are periodic or continuous drinkers."¹ Further, some cases are almost hopeless on account of the attitude of parents and friends. The kindest wife and most indulgent parents are very much in the way of numerous cures, and prove to be, instead of the best friends, the worst enemies the alcoholic has. As Palmer so well says:—

"It is often said of an inebriate, in a tone of wonder and reproach, that he has so good a wife, one who loved and indulged him. The universality of good wives to intemperate husbands suggests an inquiry into the connection they may bear and the influence they may exercise, however innocently, in the downfall of their husbands. . . .

"A good woman is not necessarily a good wife. On the contrary, she may be, without meaning it, and in spite of her conscious efforts to be otherwise, a very bad wife to her husband, and that in spite of her gentleness, docility, piety, and excessive love of him; and it is possible that he might not be in the position he occupies to-day if, instead of possessing these qualities, she had developed stronger or even more selfish traits of character. The continued exercise of the spirit of unselfishness on the wife's part has helped in no small degree to restrain the husband from denying himself in a hundred ways; and all innocently, but not less fatally, has fanned the flames of self-indulgence until his power of resistance, insidiously encroached

¹ T. D. Crothers, "Alcoholism and Inebriety," *System of Practical Therapeutics*, Hare, vol. iii. p. 486.

upon by loving hands, has finally succumbed to her persistency, and his great preservative against any strong temptation to which he may be constitutionally inclined has become so weakened, that he is unable to cope with the strong desire for drink when it manifests itself."¹

The subject of hypnotism and its relation to alcoholism is one which has for the past few years attracted considerable attention on account of its value in this disease, which has proved so difficult for treatment by the medical profession. In a meeting of the New York Academy of Medicine, referred to in the last chapter,² among all the experienced and prominent physicians present, there was no one who had any kind of medicine to suggest as a cure; on the contrary, two other forms of cure were recommended. One of these—conversion—we have already discussed; the other—hypnotism—we will take up now. In the account of the meeting one address is reported as follows:—"As to the treatment of inebriates, the speaker [Dr. S. A. Knopf] said that he approved of moral suasion, arguments, and hypnotic suggestion."³

Knowing the terrible ravages of alcoholism, and hearing this testimony from men some of whom witness in alcoholic wards thousands of cases a year, if hypnotism holds out a hope which medicine does not, it is not strange that attention has been attracted to hypnotism in these cases. In Europe many successful cases are reported by eminent and trustworthy men. Voisin, Tuckey, Ladame, Forel, Eeden, Neilson, von Renterghem, Widmer, Corval, Wetterstrand, Schrenck-Notzing, Bernheim, and others have reported many cures of all kinds of alcoholic diseases and vices. We have also good reports from Mason, Quackenbos, and others in this country. The experience of the writer confirms this, for in the cases

¹ C. F. Palmer, *Inebriety; its Source, Prevention, and Cure*, pp. 42f.

² See pp. 278f.

³ Report of Meeting of the New York Academy of Medicine for March 7, 1901, *Medical Record*, vol. lix. p. 422.

of dipsomania and chronic alcoholism which he has treated 80 per cent. have been helped; and if the time of abstinence were long enough to warrant the statement, it could also be said that many of these had been complete cures. The subjects treated have been almost without exception those who had tried other methods without avail. They wished to be treated by hypnotism, not because they had much faith in the remedial value of this method, but because it was the last resort. They might be classed as "hopeless cases."

It might be stated in this connection that hypnotism is not the grand panacea which some persons suppose. It will not cure regardless of circumstances—it is not a super-mundane prohibitive. The experience of the writer with hundreds of persons who were sufferers, directly or indirectly, from alcoholism shows the current, mistaken ideas on the subject by the most intelligent people. A lady may call and desire her husband treated without his knowledge or presence. Men come of their own volition and wish to be compelled to stop drinking. They intend that it shall be a battle royal, their appetite on one side, the "power" of the writer on the other; their part will be that of spectators of the fray. They hope that the "power" will win, providing it does not cause them any inconvenience. Or another may be willing to come once, submit to the "force," and leave the house entirely cured. He expects a habit which has been continued for twenty to fifty years to be cured in from ten to fifteen minutes.

Hypnotism is only a help to the patient. In very few, if any, cases can the patient be forced to renounce alcohol; cases to be quoted later will show this. A person must wish to be cured to get the best, and most frequently any, result. This is the almost universal testimony of all persons who have had any experience with alcoholics, regardless of the method of treatment. Nothing that the patient or his friends can do to help should be despised, for all

means possible should be used; but, as Forel says, hypnotism enables the drunkard to take the first step towards reformation and cure, and this is most frequently the difficult part of the process.

What seems the greatest drawback to the cure of alcoholism by hypnotism, and all other cures except that by religious conversion, is the fact that the patient is surrounded by the same environment after he has been treated. Even the strongest form of suggestion of a hypnotic nature, when given for a few minutes daily or weekly, can hardly hope to compete with the legion of suggestions which the environment inevitably gives. Here is one way in which religious conversion excels hypnotism as a method of treatment; it gives a new environment, different companions, a place to spend a portion at least of the spare time, and a new train of thoughts. The life changed in other respects must inevitably carry with it a change in respect to environment also.

Notwithstanding the great disadvantage under which hypnotism works, the number and character of the cures by this method are really marvellous.¹ Quotations like the following are testimony to the efficacy of this method of treatment:—

“I have treated during the last twelve years nearly 200 cases of chronic alcoholism, and have found hypnotic suggestion has proved completely curative in about a third of these. This is a good result, considering that in no case was the patient confined

¹ As in the case of cure by conversion, we have the principal objections from the late Dr. Kerr. Notice the following from “Alcoholism and Drug Habits,” *Twentieth Century Practice of Medicine*, vol. iii. p. 56:—“Hypnotic suggestion has been highly spoken of by some in quieting and preventing the drink impulse, crave, or craze, but the writer has seen so many alcoholics with whom this process has failed that, apart from the many objections which have been fairly urged against it, he cannot recommend hypnotism.” The discussion following this quotation shows that Dr. Kerr’s experience as an operator in hypnotism was very unfortunate, for he evidently did not understand the subject. If his opinion is taken from his own cases, we can well understand his pessimism. See also, by same author, *Inebriety*, pp. 336f.

in a retreat, or kept away from his home or business longer than a month. . . . In nearly all cases I have seen partial or temporary success, and in many instances where there was relapse cure would, I think, have resulted had circumstances been more favourable."¹

"Since I came to London, about ten years ago, I have treated 76 cases of dipsomania and chronic alcoholism by means of hypnotic suggestion. . . .

"(A) *Recoveries*.—Twenty-eight cases recovered; by this I mean that the patients ceased drinking during treatment, and that, as far as I have been able to learn, they have remained total abstainers up to the present date, or to that of the last report received. Although the earliest of these cases has now passed nearly ten years without relapse, I should not describe the patient as cured, for it is possible the disease might return. One of my patients relapsed after eight years' total abstinence. Of the above 28 cases, 17 were males and 11 females. The average age was 40. Average number of hypnotic treatments, 30. Average length of time since recovery, 3 years. All the patients in this as well as in the two other groups belonged to the educated classes.

"(B) *Cases improved*.—These numbered 36; 26 males and 10 females. Average age, 39. Average number of hypnotic treatments, 32. Average length of time since treatment, $3\frac{1}{8}$ years. The results obtained in this class varied widely. The best case abstained for eight years, then relapsed, but has now again abstained for six months. In a considerable proportion of the remainder the improvement has been marked and valuable. Several of the patients who formerly led lives of drunkenness are now engaged in useful work, and only drink at rare intervals.

"(C) *Failures*.—These numbered 12; 10 males and 2 females. Average age, 43. Average number of hypnotic treatments, 20. In the majority of the above cases it was impossible to get patients to cease drinking during treatment, which in six out of twelve was very short. In more than one instance, however, although the treatment was prolonged and carried out under favourable circumstances, no benefit was obtained."²

The conditions necessary for cures are two in number: first, a willing subject, and second, a subject susceptible to hypnotic suggestions. By the first condition is not meant a passively willing subject, but an actively willing subject—one who is

¹ C. L. Tuckey, *Treatment by Hypnotism and Suggestion*, pp. 208f.

² J. M. Bramwell, "On the Treatment of Dipsomania and Chronic Alcoholism by Hypnotic Suggestion," *Quarterly Journal of Inebriety*, vol. xxv. pp. 122f.

desirous of being cured, and who will do all that he can to further the cure. Two cases by way of example may be cited:—

D. F., a brass-worker, aged thirty-nine. Parents both abstainers; knew nothing of grandparents. He began drinking at the age of twenty-three, and after one year of moderate drinking began to drink heavily, and continued to do so until he entered New Haven as a tramp. Not having anywhere to sleep, he applied to Calvary Industrial Home, and was there given assistance. He was brought to the writer for treatment after being without alcohol for eight days. He proved to be an excellent subject, and went into a deep sleep in four minutes, after watching one other subject who was hypnotized. Appropriate suggestions were given regarding alcohol and also tobacco, the latter being freely used by the patient. A post-hypnotic suggestion was given to the effect that he would give his pipe and tobacco to the superintendent of the Home; the suggestion was carried out as directed.

It should be taken into consideration that although the patient did not object to coming for treatment, yet he consented largely on account of the solicitations of the superintendent, with whom it was desirable for all the inmates of the Home to be on good terms. From this time, August 6th, until November 13th, he was hypnotized twenty-nine times, and during that time did not touch alcohol or tobacco, although he had ample opportunity to obtain both. One of the suggestions given most frequently was that alcohol in any form would nauseate him.

Not long after his treatment was stopped, he went to a neighbouring town where he had lived for some years, during which time he had had most of his drinking experience. Here he met a number of his boon companions, whom he had not seen for some time, and the only way for them to show him their joy in his return was to treat him to beer. He drank some and became violently sick, vomiting in an

alarming manner. This, however, did not prevent his taking more. The more he drank, the more sick he became, until he was taken home and the physician summoned. He was in bed four days, not able to retain either food or drink until, as he told the writer, he thought he was going to die. He did not repeat the experiment for some time, but finally, after several unsuccessful attempts, he was able to drink again. He had no craving for alcohol, but simply wished to be sociable when invited to drink. He learned in the same way as a boy learns to smoke, smoking and vomiting, but being determined to learn he overcomes the nausea, and by continued attempts he is able to indulge freely.

Another case, somewhat similar, shows the same phenomenon. T. H., twenty-nine years of age, a labourer, both parents living and healthy, neither of whom had drunk. He began drinking when fourteen years of age, and for the last ten years had been drinking to excess. He drank any kind of alcoholic liquor, but preferred whisky. He went on a spree as often as he had money, and stopped drinking only when he could not get anything more to drink. At the solicitation of Mr. Butterfield, Superintendent of Calvary Industrial Home, he consented to be treated, and Mr. Butterfield brought him to the writer first on August 10th.

He was a good subject, going into a deep sleep in fourteen minutes the first attempt. He was hypnotized eighteen times before October 6th. Both alcohol and tobacco were renounced during this time, and for a few succeeding weeks. He then went to work in a hotel where he was surrounded by alcohol all the time, and started to drink again. He met with the same success as the former patient. He became very sick and vomited severely. Again and again he tried, until he finally succeeded in getting drunk enough to be arrested and committed to prison on the charge of drunkenness and disorderly conduct.

These seem to be test cases regarding the necessity of a desire for a cure, for both men were good subjects—they performed post-hypnotic feats according to the suggestions given during hypnosis, and received suggestions which produced negative hallucinations as well as positive ones, both hypnotically and post-hypnotically. The hypnosis was followed by complete amnesia. There was no craving for drink at any time after the first treatment, and even after they started to drink. Had either of them had a desire to stop drinking, nothing would have been easier; it was far easier to stop than to begin again. Notwithstanding the terrible vomiting and nausea, while they were yet sober and able to appreciate the full effect, they persevered until they were able to drink, and from there it was an easy stage to the old condition of continued drunkenness. If any one is determined to drink, he will do so regardless of the means used to prevent him, providing he can get access to alcohol in any way. This, then, is laid down as a principle: in order to be able to effect a permanent cure, the subject must be actively willing—he must want to be cured enough to help himself.¹

The other requisite stated was that he must be hypnotizable. “There is a number of persons, both temperate and intemperate, who are refractory to hypnotism, and it is still a moot question whether the inebriate is more or less susceptible to its influence on account of his alcoholism. Alcohol, no doubt, lessens self-control and makes men weak-minded, and so some have thought that inebriates

¹ J. M. Bramwell, “Hypnotism: A Reply to Recent Critics,” *Brain*, vol. xxii. p. 154, seems in the following quotation to present an exception to this conclusion:—“Dipsomania—Forel claims to have obtained excellent and durable results in this disease, and there are few, if any, of those engaged in hypnotic work who are unable to report similar successes. Ladame draws especial attention to three cases treated by Forel. All had had attacks of delirium tremens, and were inmates of his asylum. They were extremely difficult to manage, and expressed a determination to resume drinking as soon as they were liberated; but, despite this, complete recovery followed hypnotic treatment.”

must be more easy to hypnotize; but this may not be so, because it is not a general fact, so far as I know, that the weak-minded are the most easy to hypnotize, nor that women are more easy to succeed with than men."¹ Fortunately, we do not have to depend upon *a priori* reasoning to determine whether the alcoholic is more easily hypnotized—we have the facts of experience to resort to. "Alcoholized persons are generally good subjects for treatment, but I have never succeeded in hypnotizing a person for the first time, in a state of intoxication. It is necessary to wait until the first effect of the stimulant has passed off."² "Drunkards are fortunately easy to hypnotize."³ "He (Wiamesky) has found that these patients (alcoholics) are easily hypnotized."⁴ Besides these statements, many others speak in the same way, and the experience of the writer is very decided in substantiating the statement that alcoholics are easier to hypnotize than persons generally. Only one dissenting voice has been noticed—"Unfortunately, chronic alcoholism renders its victim very hard to hypnotize."⁵

We know not how it happened that Mr. Myers has had this experience, for it seems to the writer to lead undoubtedly to a mistaken conclusion. It is necessary, of course, to distinguish, as Mr. Tuckey does, between the intoxicated person and the chronic alcoholic. It is generally admitted that intoxicated persons are difficult to hypnotize, but quite as generally, with this one exception, that alcoholics are good subjects. There is one further statement which the writer has not been able to verify, but

¹ J. M. Bramwell, "Dipsomania and its Treatment by Suggestion," *Quarterly Journal of Inebriety*, vol. xxii. p. 293.

² C. L. Tuckey, *Treatment by Hypnotism and Suggestion*, p. 174.

³ O. G. Wetterstrand, *Hypnotism and its Application to Practical Medicine*, p. 57.

⁴ *Quarterly Journal of Inebriety*, vol. xxiv. p. 354.

⁵ F. W. H. Myers, "Human Personality in the Light of Hypnotic Suggestion," *Proceedings of the Society of Psychical Research*, vol. iv. p. 17.

which would seem very true—viz., “I have noticed in more than one case that the best time to make an attempt (to hypnotize) is very shortly after a bout of drunkenness, and that the patient is less easily hypnotized the longer he is kept sober.”¹ This may be true for two reasons: not only because he is organically in a more favourable condition for hypnosis, but because at this time he has a period of remorse and is much ashamed of his conduct. He submits readily to any suggestion, is willing and may be anxious to be cured. Thus he fulfils the conditions for hypnosis better.

Two psychological questions arise here: first, why should it be difficult to hypnotize a person who is in a state of intoxication? and second, why should an alcoholic be easily hypnotized? The answers to both of these questions will be determined by our ideas of the nature of hypnotism, both psychically and physically. Before trying to answer these questions, two cases with which the writer has had experience will be given. These cases are interesting because of the success attending the efforts of the writer when such an experienced operator as Mr. Tuckey has failed. Reference is made to two cases of persons who were hypnotized while in a state of intoxication, although Mr. Tuckey distinctly states twice in his book, one quotation of which is given above, that he has never been able to hypnotize a person who was intoxicated at the time, if he had not previously been hypnotized.

The reader is already acquainted with the first case, as he appears in the experiments recorded in the chapter on “Will,” and there his records can be consulted. The subject, Thomas Duck, was known as “Jim the Penman,” because he went from house to house selling pens, and in the days when his hand was more steady he earned considerable money by writing names on visiting-cards, for he

¹ J. G. Dill, “Dipsomania and Hypnotism,” *Proceedings of the Society for Psychical Research*, vol. xi. p. 21.

was an excellent penman. The writer met him on Sunday evening, March 25th, 1900, at the Yale Mission. He looked very badly, and was partially intoxicated. He said that he had been on a spree for three weeks, and for the previous two nights "I've had 'em," referring to delirium tremens. The writer was on his guard concerning the trustworthiness and truthfulness of alcoholics in general, and mission-frequenters in particular, but his appearance testified to the truth of his statements, and they were partially confirmed by others. Arrangements were made to meet next day at a designated place, but he was warned to be sure to come sober.

As soon as he appeared on the following day his intoxication was noticeable, and on his being accused of not being sober, he finally admitted having taken eight drinks of whisky. This was probably an under-statement, and it was then only half-past one o'clock in the afternoon. He said he had "had 'em" again the night previous, and had to take a drink or two to brace up; and further, as election was coming on, the ward politicians were all treating, and he was a voter. The writer had difficulty in getting him to make the experiments; once he disarranged and disconnected the apparatus so by his violent movements that the experiments had to be repeated.

He was taken to the office of Dr. W. G. Anderson, where he was examined. His heart was very irregular, his pulse at 112, and he was exceedingly nervous. He was placed in an easy-chair, and told to look at a bright blue marble. He did so, and after considerable twitching of the muscles all over his body, he slept. He was not very suggestible, and principally on account of his nervous condition he awoke easily. He was allowed to sleep for fifteen minutes, some post-hypnotic suggestions were given to him, and he was awakened. His heart was then quite regular and his pulse registered 80, a decrease of 32 beats. He said that he felt much better. He

was then allowed to go, but the post-hypnotic suggestions were not carried out.

The other case was that of a man of twenty-eight years of age, a labourer. His father, who had been a heavy drinker, was dead. He had eight brothers, all of whom drank. He began drinking when thirteen years old, and had been drinking ever since, with the exception of three years when he was converted and joined the church. He drank mostly whisky and absinthe. He had just started on a spree and had been drinking all the morning. A friend found him and took him riding around town for a while, trying to get him sober and to keep him from drinking. When he came to the house of the writer he was in great distress because of his intense desire for drink. He was seated comfortably, and went into a sound sleep in three minutes.

It was suggested to him that he would feel hungry instead of thirsty, and that on awaking there would be no desire for drink. It was also suggested that he would not drink any more. After he was awakened he was asked how he felt, to which he replied, "I feel much better." "Do you feel like having a drink?" "No, but I feel awful hungry. I haven't had anything to eat to-day." He was then supplied with some food, which he ate with apparent relish, and went away. That afternoon he succeeded in continuing his spree so that he was completely intoxicated by evening, and drank until through some misdemeanour committed during intoxication he is now serving a term in prison.

These cases are interesting for two reasons: they show that occasionally a person can be hypnotized when intoxicated; and further, they show that the suggestions given under such conditions are of little or no value. With these two exceptions, the writer has had no better success than Mr. Tuckey, one glass of beer frequently interfering with the attempt so that the person was not the least affected. The instructions invariably given by the writer are as

follows:—"Come without having taken either alcohol or coffee," for the inhibitory effect of either is recognized.

We must now return to the answer of the two questions which was deferred in order to give these two cases. The answer, as was said, would depend upon our idea of the nature of hypnosis. Most answers which have been given are descriptive rather than explanatory. Supposing that the quite popular theory of Mr. Myers is accepted, and hypnosis is considered a dis severance of consciousness, the consciousness giving place to the subconscious, the question naturally arises—Why does the mind so function? It may be said again that it is a dis severance of consciousness, and that memory is the factor which makes the trouble; but again the question—Why does memory behave thus? We may dally with the word "suggestion" until we make suggestion its own progenitor, but the question still comes—Why does suggestion cause these phenomena? Giving the phenomena another name does not help us in the explanation.

Let us consider the common analogy of natural sleep. The conditions both psychically and physically are very similar. We can find a very common example of hypnotism in natural sleep, in the mother and the child. The mother goes to sleep *en rapport* with the child. The most severe thunderstorm does not affect her in the least, through the slamming of doors and the trampling of feet she sleeps deeply and serenely. But let the baby breathe hard, or make the least sound, and she is awake instantly. Or if the child is in her arms she draws it to her, to a limited extent she tends it, and never injures it in any way. She is conscious as the hypnotized person is conscious of certain things, although both will probably forget them when they awake.

Certain drugs which induce sleep will also induce hypnosis—as, *e.g.*, chloroform, passa flora, etc.; and the conditions favourable for sleep are also favour-

able for hypnotism. Further, one can frequently be changed into the other. Physically it seems as though there is a great similarity, and to the physical we go for an explanation of the phenomenon of hypnotism, at least in part. The phase of the physical which throws on hypnotism the most light—at least according to the judgment of the writer—is the blood supply. It is not contended that hypnotism is going to be fully explained by the change in the encephalic circulation, but it is believed that this change in the circulation can help to clear up the difficulty. We know that the change of blood supply is very necessary in normal sleep, and this suggests the explanation.

Wundt suggests the blood supply as a factor in the phenomena,¹ also Sully,² Carpenter, Tuke, and Lehmann agree that this is the solution of the riddle. Not unlikely some of these investigators claim too much for this one factor, failing to recognize its limitations and difficulties. Heidenhain at first accepted this explanation, but later rejected it for the following reasons³:—1. Hypnotism appeared in spite of the inhalation of nitrite of amyl, which causes hyperæmia. 2. There are no changes in the vessels in the back of the eyes during hypnosis. 3. Salvioli and Bouchut found cerebral hyperæmia during hypnosis.

These reasons are sufficient to cause us to reject the theory of total anemia of the brain—if any one claimed that—but hardly sufficient to reject the theory of partial anemia. No doubt some portions of the brain are in a condition of hyperæmia, while other portions are anemic. The supply of blood being less than the ordinary, if what remains is taken to one portion of the brain, the other parts have less—so much less as to force the anemic parts into a

¹ W. Wundt, *Outlines of Psychology* (trans. Judd), pp. 274f.

² J. Sully, *The Human Mind*, vol. ii. p. 316.

³ J. M. Bramwell, "What is Hypnotism?" *Proceedings of the Society of Psychological Research*, vol. xii. p. 213.

condition of inactivity. In hypnotism "the condition of the encephalic circulation may now be considered analogous to that of the atmosphere with a low baromic pressure; it is mobile and disposed to storms. If attracted in one direction it is determined strongly. Then the very momentum with which the blood surges in that special direction reacts on and strengthens function. If it be toward an ideational centre, some particular idea may so monopolize the consciousness that the judging faculty is almost as completely in abeyance as in ordinary dreaming."¹

This would partially at least explain the dis-severance of consciousness, and if the theory of the subconscious is accepted, this would be an important element in its explanation also. Further, it would tend to explain the amnesia which most frequently follows hypnotism. It is on this basis that an attempt will be made to show why the chronic alcoholic is easily hypnotized, and the intoxicated person difficult to hypnotize. It was shown, when dealing with the physiological part of the discussion, that on account of the growth of the arteries, the normal amount of blood does not reach the brain. This would keep it in an anemic condition, and thus make it favourable to hypnosis. On the other hand, intoxication causes an increased circulation, and, sending more blood to the brain, would cause a hyperæmia. This would be unfavourable to hypnosis, and therefore make the intoxicated person difficult to hypnotize. This is only one factor, but an important factor. Even accepting James's theory that the change in the circulation is the result, not the cause, of the altered activity of the nervous matter, it would make little difference in the relation of alcoholism to hypnotism; if the effect were easily obtained there would be less trouble in furnishing the cause—in fact, the effect would suggest the cause.

Those who hold to the chemical theory of sleep

¹ J. Cappie, "Some Points in the Physiology of Attention, Belief, and Will," *Brain*, vol. ix. pp. 203f.

could also apply it to hypnotism, and could assist us in our explanation. There is nothing to prevent the two theories, that of change in the circulation, and that of change in the chemical constitution of the blood, going side by side. In alcoholism the subject has, as we know, the quality as well as the quantity changed, so that this would be favourable to hypnotism, if hypnotism and sleep are allied conditions. The increased circulation of intoxication would tend to the purification of the blood by removing waste products, and thereby prevent hypnosis. In certain emotional states, when the circulation is very active, both hypnosis and sleep are impossible.

As was said when dealing with the subject of alterations of personality, the alcoholic has the consciousness dissevered so frequently and so much of his time, that when disseverance comes in another way—*e.g.*, when hypnotism is suggested, it is readily induced on account of his habit. There is considerable resemblance between the drunkard and the hypnotic. They will both personify some character, both are suggestible, both are hyperæsthetic, and a small thing may be exaggerated by both. They are both lower states of being, and both are easily deluded. The resemblance is so great that some opponents of hypnotism have termed it “teetotal intoxication.” There is this noticeable difference, however: in intoxication we have the nervous system involved in the inverse order of its evolution, but in the lighter grades of hypnotism we do not find that the higher psychical functions are so much affected as those of motion and sensation.¹ With all the agreement between the two states, it is not strange that a person used to one could easily acquire the other.²

The method used by the writer to induce hypnosis

¹ We have the following from A. Moll, *Hypnotism*, p. 225:—“Intoxication by . . . alcohol is often compared to hypnosis on account of the delusions of sense which occur.”

² C. L. Tuckey, *Treatment by Hypnotism and Suggestion*, p. 247.

is not different enough from those of other operators to require more than passing notice. Every operator has some special factors in his methods, of which he must also have a variety. Seating the subject comfortably in a chair, the attention is directed to some object which is bright and causes a slight strain on the eyes. Usually there is used a piece of apparatus, similar to that employed by some European operators, which has been improved by the writer. A piece of tin or zinc covered with velvet fits over the forehead, to which is fastened at one end a piece of elastic, to the other a hook. At the other end of the elastic are several eyes, so that the elastic can be shortened or lengthened, according to the size of the head. The zinc is thus kept in place by the elastic. In the middle of the zinc is placed vertically a square socket, into which fits a short piece of brass which is joined to the end of a piece of fuse wire, on the other end of which is a nickel ball. This wire can be bent into any position, and the ball adjusted, so as to be of the most use in tiring the eyes. The piece of brass can be removed from the socket, so that the apparatus is in two pieces, and thus more easily carried in the pocket.

After this apparatus is in place, the subject is told to look at the ball, which will soon make him sleepy, and in the manner so familiar to all he soon goes to sleep. Methods are varied with different subjects, and frequently no apparatus is used. The suggestions are of three different classes—destructive, constructive, and physiological. The destructive suggestions are to the effect that he must not drink any more, that alcoholic drinks are harmful to him, that he does not care for either the taste or effects of liquor, and that he has given up drinking altogether. Drinking is ruining his family, his health, and his business, and he must not continue it. He must keep away from the persons who drink liquor, and the places where it is kept. As alcohol is a poison, any one offering it to him is his enemy and is doing

him injury. These, and any other suggestions which will destroy his desire for alcohol, may be used, many of which must be invented for the particular case.

If the house is left empty, it may become so filled as to leave the last state of the man worse than the first. We must therefore make constructive suggestions, of which the following are examples:—He is very much engrossed with his family and business, he has developed a great fondness for reading or attending church, he likes to associate with persons who do not drink, he attends the baseball games or rides in the park. He is now happy and cheerful, and has attained control over himself. He is no longer the slave but the master, his ideals are higher now, he wants to set a good example, and help every one to do right. He is confident in his power to continue in the way he has started, etc. Any suggestion which will assist him to construct a new line of thought and a new environment, so as to prevent his thinking about drinking, by doing something else, should be used.

The physiological suggestions are very important: the suggestion of nausea if any alcohol is drunk, and that the taste of all alcoholic drinks will be like wormwood or castor-oil, or anything that is known to be obnoxious to the subject. A suggestion of paralysis of the arm if the patient tries to convey a glass of liquor to his mouth, or an inability to swallow liquor, may be helpful. Auxiliary suggestions to improve the general health are also beneficial, such as those regarding digestion, appetite, action of the bowels, immunity from headache, or any other ailment which hypnotism can aid. All three classes of suggestions should be continued for a few weeks regularly, so as to help the patient to get accustomed to the new surroundings. If there is a craving, as in the case of the regular drinker, suggestions regarding this should be given, but at most this lasts not more than ten days in a severe form.

After regular treatment has been stopped, occasional treatments are no doubt beneficial.

In addition to the suggestions given by the operator, it has been found advantageous to have the patient give himself suggestions. Mason and Quackenbos have both used auto-suggestion in their cases with considerable success.¹ The patient should give himself suggestions similar to those given by the operator, just as he is going to sleep at night, and in this way much the same result will follow as in hypnotism. If it is correct that hypnotism is closely allied to natural sleep, we can well see the benefit of such a course. This is generally used as an auxiliary to hypnotism, but in cases where hypnotism is not practical, it has proved effective at times. The writer has tried auto-suggestion on himself in minor difficulties, with considerable success. Tuke made the unpleasant operation of having a tooth extracted almost painless by mentally repeating, "How delightful!" and Liebeault cured himself of facial neuralgia by auto-suggestion. This is the principle of Christian science and other faith cures.

It is one characteristic of hypnotism, which is very valuable in cases of the nature of alcoholism, that it is so much easier to reform persons and lead them to do good, than it is to debase them and lead them to do evil. "It is so much easier to restore moral rectitude to a somnambulist who has fallen therefrom, than to pervert the integrity of character of a woman of high moral standing."² One reason for this is that the hypnotized person is never devoid of will. "Hypnotic actions are always voluntary actions in the wider sense of the word."³ Mr. Gurney reports a case which clearly shows this.

¹ See R. O. Mason, *Hypnotism and Suggestion in Therapeutics, Education, and Reform*, p. 182; and J. D. Quackenbos, *Hypnotism in Mental and Moral Culture*, pp. 33f.

² J. Delboeuf, "On Criminal Suggestion," *Monist*, vol. ii. p. 363, quoting Dr. Charpignon.

³ W. Wundt, *Human and Animal Psychology* (trans. Creighton and Titchener), p. 339.

“I was recently experimenting with a youth who had formerly been a telegraph-boy, and who had taken a strong dislike to the *métier*. When hypnotized, he was at the mercy of any suggestion or command except one: nothing would induce him to carry a telegram. . . . The refusal was unaffected by considerations which would certainly have reversed it in his normal state—*e.g.*, when he was told that the matter was one of life and death, and that he should have twenty pounds for the job.”¹ The will that remains in hypnosis, being directed in the best ways, receives an environment from suggestion and is strengthened; the patient is thus enabled to overcome the force of habit and external suggestion.

Dr. A. Forel gives a case which was of such long standing and so unpromising, and yet resulted so successfully, that an epitome of it will be given. The man, who was confirmed in alcoholism, was brought to him. He was seventy years old, having spent nine years in an asylum, and had twice tried to commit suicide. Whenever he had opportunity he would drink to madness while in the asylum, was a great care, always making trouble for himself and inciting the other inmates to acts of violence and rebellion. After Dr. Forel had hypnotized him a few times, he seemed like another person. He became quiet and tractable, he gave up his allowance of wine, and to crown all, united with the temperance society which he had hitherto opposed and condemned.

Three cases of the writer's experience will close the chapter. The first one is the case of longest standing which the writer has treated, the second is the case of alcoholism of longest standing which the writer has stopped, and the third is a case which has value in itself worthy of recitation.

Mr. X., thirty-six years old, father and mother both drank, the former very hard. Patient started drinking when twelve years of age, and when twenty-four

¹ E. Gurney, “The Problems of Hypnotism,” *Proceedings of the Society for Psychological Research*, vol. ii. p. 287.

drank very heavily. Drank beer mostly, but usually finished the day on whisky. Drank regularly every day. About one year and a half before applying for treatment he had taken the "Keeley Cure," and remained sober afterwards for four months. At the time of coming for treatment he was drinking about two quarts of beer and whisky every day, taking about an equal number of drinks of each. Every inducement was offered on the one hand, and threats of various kinds were made on the other hand to compel him to stop drinking, but they were powerless to help him.

Early in September 1900 he came to the writer in the evening partially intoxicated. He became a little drowsy, and his eyes were closed by the writer. Appropriate suggestions were made, and he went away. He was hypnotized every day for two weeks, then every other day for about the same length of time. At no time did he get beyond a light sleep, and most of the time it was little more than drowsiness. At the ninth day all craving and taste for liquor was gone, and from the first day he did not taste a drop of any kind of alcoholic liquors. He had twenty treatments in all. He seems hardly to have been more deeply hypnotized than Mrs. C. in the case quoted by Bramwell,¹ but the effect was all that could be desired.

Mr. K., aged fifty-nine. Father and mother both drank, and all his father's relatives drank. Mr. K.'s children drink also. His father kept a tavern, and the patient started drinking when ten years old, and has been drinking ever since, with the exception of five years beginning twenty years ago. He drinks whisky. Here is a case of forty-nine years standing. The first time he came he went into a deep sleep, and after that all desire was gone. After the second visit he went into saloons while about his business, but had not the least desire for alcohol in any form.

¹ "Dipsomania and its Treatment by Suggestion," *Quarterly Journal of Inebriety*, vol. xxii. p. 288.

This was three years ago, and when last heard of he was abstemious. Many other cases equally successful could be given, but these will suffice as examples to show the value of hypnotism to alcoholism.

The following case is one of special interest and value from a psychological point of view. A very meagre outline of the case will be given, except in so far as it deals directly with dipsomania.

John Kinsel¹ was born on a farm in Central New England in 1873. The family history as far as alcoholism is concerned is as follows:—Maternal grandfather, great-grandfather, and great-uncles all drank heavily, but neither his mother nor any of her brothers or sisters drank. All the Kinsels (his father's family) drank, and do yet; only two, however, drink to excess—viz., John's uncle and cousin. Mr. Kinsel, the father, makes about twelve barrels of cider every fall, and uses it regularly. Towards spring it gets pretty "hard." He drinks about eight or ten glasses per day, but he was never intoxicated in his life. In the summer, at haying time, cider brandy augments the stock of cider. His drinking is like that of the New England farmer of fifty or one hundred years ago.

John drank cider at home when a boy, but was never intoxicated except once. When seven years of age, his mother being away, he climbed up in the pantry, took from the shelf some cider brandy and drank enough to intoxicate him. He never drank anything but cider and this cider brandy until he was fourteen, when he had a glass of beer. When twenty-one years old, being in the sophomore class in college, he drank on one occasion beer and wine, and on another occasion claret lemonade. On the former of these occasions he became "happy." The following summer he drank cider at home.

During his sophomore year he developed a "double personality." He would pass into an abnormal state,

¹ See *Psychological Review*, September and November 1903, for full report of this case.

during which he would remember all of his normal state and all previous experiences in the abnormal state—*i.e.*, in the abnormal state he would remember all his life; but when he returned to the normal state again the abnormal state would be a blank to him. While in these abnormal states his character was much changed, showing itself in no way more prominently than in his appetite for alcoholic drinks.

In his junior year he only drank when in these abnormal states. He drank mostly beer, very little of which would intoxicate him. In the summer vacation, between his junior and senior years, he drank nothing, not even the cider at home. In the senior year the abnormal states became more frequent and lasted longer. During this year he drank a great deal, but only in the abnormal states, except that sometimes he would come out of the abnormal state into the normal, partially intoxicated; then he would continue drinking in the normal state. Never was the drinking initiated in the normal state. He smoked much when normal, and nearly constantly when abnormal.

During the summer vacation following graduation he drank twice, both times during his abnormal state, and both times he was very much intoxicated. In the autumn following his graduation he entered a divinity school and there drank some when abnormal, not sufficient to get intoxicated, but enough to smell it after he came to himself. After leaving the divinity school in January of the following year, he drank cider somewhat while normal, as well as during the abnormal state, and this is the first of a desire to drink when normal. This desire was gratified by cider. He also smoked very heavily during this time. In April of that year, 1898, he went fishing with some men who had wine and whisky, and here we have his first voluntary intoxication.

He drank cider all that summer and autumn, but not to intoxication, and continued very light or no drinking during the following winter, spring, and

summer. The following autumn, 1899, he drank considerable cider, becoming once intoxicated, and also became intoxicated on beer. The next winter he became "happy" several times on cider, drank cider all the spring and summer, and in the early fall developed a true dipsomania with monthly periods, which continued all the fall and winter, the last one being on March 19th, 1901.

On March 20th he came to the writer for treatment. He had had two drinks that morning, but as he had previously been hypnotized and was an excellent subject, no difficulty was experienced in inducing hypnosis. He slept deeply, and appropriate suggestions were given. He came again the following day, and on April 16th, 17th, and 18th, the last three being just previous to the time for his next outbreak. He went away, and the next day the craving appeared on time, contrary to suggestion. He went to a saloon and procured a glass of beer, went to another and got another glass. He went into a third saloon, purchased and drank a third glass of beer, when he began to know (he expressed it, "Hear, feel, or remember, I can't tell which; it seemed like all three") what had been suggested to him.

The following day he sent a letter to the writer containing the exact words of the suggestions given to him, showing that they all came back to him. As soon as he began to hear, "apparently away off in the distance," the words of the suggestions to him, he became very sick and vomited violently. He was sick the whole day and could not take anything more to drink, nor did he want it. He disliked alcohol in any form. On June 2nd, again he came and was hypnotized. From that time until November, for six months, he did not touch any kind of intoxicating liquors, but then he got a quart of whisky and became intoxicated. For three years he had no desire for alcohol, and where the smell of liquor used to engender a great desire for drink, it later had no effect—or if any, it was distasteful.

When examining him in the hypnotic condition after this, he said that the reason he drank when he was in the abnormal state was that it seemed all right for him to do so; he had none of the scruples which were ever present in the normal state. When these monthly dipsomaniacal spells would come on the identical feeling reappeared, so he went and drank because it seemed the right thing for him to do. In the case of Louis V., Mr. Myers says,¹ "Though he had before the attack [of double personality] been a total abstainer, he now not only drank his own wine, but stole the wine of other patients." This shows a common tendency in the abnormal states of these two persons. Thus, the double personality and alcoholism interact: not only does alcoholism cause the phenomenon of double personality, as shown in a previous chapter,² but the double personality causes alcoholism or dipsomania, as shown by the case cited here. Perhaps it might be a better statement to say that they are both expressions of a common disorder. This case also shows the value of hypnotism in dipsomania. Something else very interesting and well worthy of notice is the reappearance of the suggestions. Usually the alcoholic becomes sick, and if the hypnosis has been deep enough to cause amnesia, he does not know why he is sick; but although in this case there was complete amnesia after hypnosis, the exact words of the suggestions were sent to the writer by the subject, being remembered during the sickness and afterwards.

The physical treatment given by some sanatoria has proved very beneficial to a great number of alcoholics. Rest, a little medication, and even surgery have helped in restoring almost hopeless inebriates. Any method which is beneficial is welcome. Hypnotism, as a promising field, has been much used during the

¹ F. W. H. Myers, "Multiplex Personality," *Proceedings of the Society for Psychological Research*, vol. iv. p. 497.

² See pp. 243ff.

past half-century with considerable success; but it is only a help and not a prohibitive. The two conditions of success in this form of treatment are active co-operation on the part of the subject, and a hypnotizable person with which to deal. The alcoholic is usually easily hypnotized, on account of the frequent disseverance of consciousness when drunk, and the condition of the blood. Various methods of hypnotizing are used and suggestions given, all tending to destroy the old conditions and implant new associations.

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