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REPORT

OF

THE COMMITTEE

ON THE

RELATIONS OF ALCOHOL TO MEDICINE.

BY

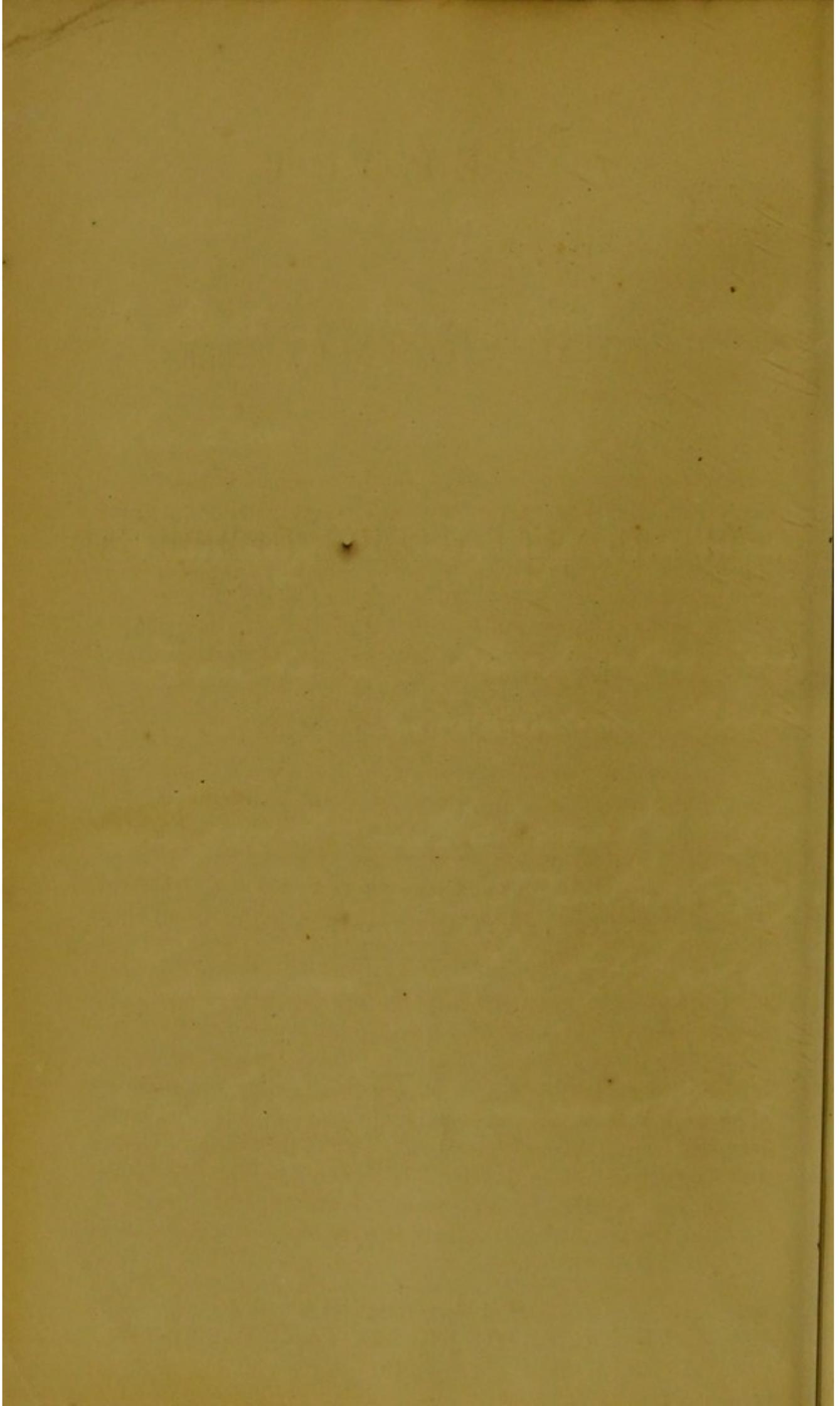
JOHN BELL, M.D.,

CHAIRMAN.

EXTRACTED FROM THE
TRANSACTIONS OF THE AMERICAN MEDICAL ASSOCIATION.



^c
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R E P O R T.¹

THESE relations are various, and for the most part unfriendly and deceptive. Medicine, as a science and an art, with its attendant hygiene, incessantly desires and aims to bring about a removal of the disorders of both body and mind; and, at the same time, to promote the greatest health and consequent ability in all to discharge every duty, personal, social, and political, and to enjoy the present life under an animating sense of the bounties of creation, while looking to a brighter future with devout hope and aspiration. With all its imperfections in teaching and practice, to medicine has been accorded the merit of increasing the average duration of life, and the means of making life desirable and pleasant for the masses, by improved public and private hygiene, and a clear explanation of the natural laws to which man must conform for the preservation of his health and the avoidance of disease. How shall we designate the relations of alcohol—a poison, a constant source of disease, of strife, and of turmoil, of personal misery, and social disorders—to medicine, as now presented in its expressive and readily recognized lineaments? There are, however, advocates of alcohol, with some poetry and songs on their side, who, remembering only the short gleam of sunshine during a few minutes of elevated feelings and social hilarity, claim for alcohol benign relations to medicine, as giving it aid and support, and holding out promises of renewing a health and strength which it never originally imparted, exciting joyous feelings, gladdening the hearts of the wan and weary, quickening the intellect, and, in fine, beautifying and elevating humanity. But the real and unbroken record, beginning with the drunkenness of the patriarch Noah, and taking note of

¹ The other members of the committee are Drs. Dunbar and McSherry, of Baltimore, whose assistance the chairman was not so fortunate as to procure on this occasion.—J. B.

that of the just Lot, and coming down to the last instance of falling from grace of a Christian minister, tells of the faithlessness of alcoholic support. In a like unbroken series, from Alexander in a fit of drunken passion killing his dearest friend Clytus, on to the murder in our own day of his children by a father, crazed with alcoholic drink, we learn how the nearest and dearest ties of kindred and friendship are ruthlessly broken under the dominion of this wide-spread poison. Youth, health, and beauty have been made hideous; genius and high moral worth, perverted and degraded by the same malign influence. The State, at a moment of its greatest need, has been deprived of its best men—its rulers, counsellors, and defenders, who had become the slaves and worshippers of alcohol. Its productive industry is curtailed by the sickness, infirmities, dissolute courses, and premature deaths to which so many of the laboring and manufacturing classes have been reduced by drinking alcohol in the form of fermented and distilled liquors. But the evil does not stop here: the State, through its citizens, is taxed for the relief and support of the poor, a large number of whom have become destitute and helpless by the habitual use of alcoholic drinks; and the State is farther taxed in the cost of bringing to trial and punishing criminals, and the erection of prisons and penitentiaries for their safe keeping and confinement. A majority of these criminals have been made so by their previous addiction to alcohol in some form or another. To alcoholic account must, also, be placed, in large proportion, the necessity of constructing and maintaining State hospitals for the insane, as well as the numerous institutions of a similar character sustained by individual benevolence. Farther proofs of the extent and depth of the evils of alcoholic indulgences are painfully exhibited in the increasing calls for asylums for inebriates of both sexes, who come from all grades of society, and who can furnish from among themselves examples of every degree of previous intelligence and refinement. One of the first presents and soon one of the first articles of barter offered by civilization to barbarism is alcohol, in the form of ardent spirits—"fire-water," as the poor degraded Indians appropriately call it, for it has been to their tribes and race an inward fire, increasing their thirst for blood and impelling them to the wildest acts of cruelty and torture of their unfortunate captives.

The relations of alcohol to medicine should be studied under a fourfold point of view, as presented under the several heads of HYGIENE, ETIOLOGY, THERAPEUTICS, and MEDICAL JURISPRUDENCE.

At the very beginning of our inquiries it may be asked, if alcohol is a poison, why should it be spoken of in connection with hygiene? It is not a food; it forms no part of the protein compounds out of which the tissues are organized, nor of fat and oils which serve other purposes in the living body. As far as regards anhydrous or absolute alcohol, spirit of wine, there can be no doubt of its being a violent poison, nor of its destructive effects in this way, even when diluted with water, as in distilled spirits, if taken in a large quantity at once. A single draught of spirits—brandy, rum, or whiskey—in quantity varying from three ounces to a quart, has been followed by speedy death, sometimes at the very instant, and at other times after an interval of a few hours. The shock of a large dose of alcohol on the nervous system acts like a blow on the head, or a kick in the stomach. Prussic acid is not more deadly. In the second degree of acute alcoholism, coma and lethargy supervene, and death takes place after a period varying from twelve to eighteen hours. But need we ask for more conclusive evidence of the toxic operation of alcohol on the human frame than that daily furnished by the last stage of drunkenness, in the bewilderment of the mind and senses, loss of muscular power, and final insensibility and stupefaction, resembling apoplexy itself? We shall have something more to say on this point under the head of etiology. If it is alleged that alcohol, like other poisons, may, when diluted, be used with benefit in many cases, the reply is that in no case is any other poison, however serviceable, when used medicinally for a limited period, had recourse to as daily food, to nourish the system. Not only is no acknowledged poison ever employed with this intention, but no medicine, even the mildest vegetable bitter, can be continued for a length of time without damage to health in some form or another—more usually by deranging the digestive and nervous systems, for the relief of which it was first taken. It can be shown both by physiology and by the still stronger evidence of large and long experience in all ages and countries, that alcohol, although its habitual use may be tolerated for a length of time, is always detrimental to a person in ordinary health, and still more if he be a sufferer from chronic disease and debility.

Is Alcohol a Calorifacient?—A plea for the habitual use of alcohol has been set forth on the ground of the chemico-physiological hypothesis of Liebig, which would make this liquid, not a food, but as giving indirect aid, by furnishing elements for respiration and the evolution of animal heat. Alcohol, according to this view,

is a carbo-hydrate on the same line with starch, sugar, fat, and oils. It is known to be rapidly absorbed and to enter into the circulation, whence it in part escapes with the excretions, and in part is burnt in the lungs; its carbon uniting with the oxygen of the inhaled air to form carbonic acid and its hydrogen similarly combined to form water. During the process of oxidation, heat is supposed to be given out. This hypothesis rests on the postulate that a part, and it must be the larger part, of the alcohol taken into the stomach is not, after its absorption, subsequently discharged through the various eliminating organs, but that it remains in the blood for the purposes of combustion. To what extent this postulate is available we have no means of judging, nor have we any demonstration of the soundness of the hypothesis itself. If there is to be a continued evolution of caloric, maintained by continued oxidation in the manner just stated, there must be a constant supply of alcohol, which would be followed by dangerous consequences to the brain and other organs, all of which, it will be shown, suffer from such supply. But granting that all the conditions are complied with, the promised results are not obtained. The greater the quantity of alcohol ingested and absorbed the greater ought to be the quantity of its carbon furnished for combustion and the larger the amount of carbonic acid excreted. Now, so far from this being the result, it has been ascertained by Prout, Vierdort, Perin, Boecker, and others, that there is less carbonic acid both relatively and actually given out from the lungs after even a moderate use of spirituous drink. Dr. Edward Smith shows, as the result of his carefully conducted experiments (*Transactions Royal Society*, 1859), that alcohol and substances containing much alcohol *disturb* the respiration rather than influence it in any direction. The respiratory process, therefore, instead of being quickened into greater activity, and made more productive of animal heat, is retarded; and there is, at the same time, a confinement and accumulation in the venous blood of waste or used-up materials seeking for oxidation and elimination, to relieve the system of what would be oppressive and disturbing if not poisonous. If animal heat were generated so rapidly and largely by the fuel furnished in alcohol we ought to look to its free use for enabling the living body to resist cold, whereas the very opposite is the true result, as will be shown in a subsequent part of this Report. It may be stated, in advance, that the temperature is always lowered by the free use of alcohol in the form of ardent spirits. Drs. Böecker and Hammond

found this to be the case in their own persons even from moderate doses of spirits.

Is Alcohol an Accessory Food?—Another plea in favor of alcohol is, that it acts indirectly as food, not by contributing anything itself to build up or to repair the tissues, but by its diminishing the metamorphosis to which they are constantly subjected, and the consequent waste, it removes the immediate call and necessity for the renewal of food, prevents the cravings of hunger, and lessens the debility from fasting. This plea, the second, for the use of alcoholics, it must be seen, is quite incompatible with the first plea, that their use favors the generation of animal heat. The conditions for the latter are, increased respiratory force, increased oxidation of carbon and hydrogen, not only of these elements as furnished by alcohol, but also by the fat and broken tissues in the blood, and correspondingly increased metamorphosis from the degradation of the detached textural remains. On the contrary, the diminution of waste or wear of the tissues implies, of necessity, diminished transformation or metamorphosis, less oxygen, the prime agent in all these changes, and its diminished combination with carbon, and of course less completeness of respiration and less evolution of animal heat. A choice must be made of the two hypotheses; and if the last be the one taken, we must admit that it gives color to the plea in favor of the indirect action of alcohol as a nutriment; but if it be received, we must utterly repudiate the claim set up for alcohol being a supporter of animal heat. Many difficulties, however, stand in the way of our subscribing to a belief in alcohol being even an indirect food. It gives no strength and repairs no waste; and if it seems to act as food, it is by preventing certain changes in the constitution of the blood which are essential to health, and by substituting its own combustion in the lungs for that of the disintegrated and waste substances in the venous blood. There is less appetite under these circumstances and less consumption of ordinary food, but on what conditions is this saving brought about? The reply must be, a loss of the balance between supply and waste, a temporary derangement of the functions of digestion and innervation, a living on material that has been thrown off from the tissues as worn and unserviceable and the retention and accumulation of which increase the proportion and deteriorate the quality of the venous blood, causing remora, plethora, congestion of the great organs, and especially of those in which the veins abound, viz., the brain, liver, and

lungs. We would ask, in the words of Professor Miller, of Edinburgh: "Whether shall we take alcohol, eat less, and be imperfectly nourished; or take no alcohol, eat more, and be nourished well? Whether shall we thrive better on a small quantity of new nutritive material, with a great deal of what is old and mouldy; or on a constant and fresh supply of new material, in sufficient abundance to dispense with the old, which, being then in all respects useless, is extruded from the system?"¹ The diminished metamorphosis of tissue under the use of alcohol is evident not only in the lessened elimination of carbon, as carbonic acid, but also in that of nitrogen, as urea. This indicates that less mechanical force is produced in the body and less work is got from the human machine. Large quantities of alcohol, therefore, tend to cause an accumulation in the system of imperfectly oxidized bodies, such as uric and oxalic acids. The action of the lungs and kidneys is lessened—less carbonic acid, less urea, and less water are eliminated. It is very evident from all that has been said, and the assertion cannot be too often repeated, that alcohol has no claim whatever to be regarded as food in reference to nutrition or the repairing of tissue, nor can we admit its claim to be considered as an ordinary agent for maintaining temperature by intra-combustion as tenable. Whether it is entitled even to a place among condiments will be better ascertained after we shall have inquired into its alleged value as an aid to digestion.

The firm hold which, for some years past, the animal chemistry of Liebig has taken of the minds of so many persons, both in and out of the profession, who found in it a show of science to support their alcoholic creed, must serve as an apology for arguing afresh against a theory the weakness and fallacies of which have of late been exposed by the experiments of Dr. Edward Smith, already cited, and of Frücke and Wislicenus. Dr. Anstie, who insists on alcohol being a food, which disappears in the body and is decomposed there, but in a manner yet unknown, is, however, obliged to admit that our search for the oxides of alcohol must be entirely recommenced. We should go a step further and say with Lehmann, "that we are still entirely deficient in the very first principles necessary for a scientific treatment of the theory of the metamorphosis of matter in the animal organism." As remarked by the same writer, "we should be unable to give a *scientific explanation* of the mechanico-chemical processes in the living organism

¹ Alcohol: Its Place and Power, pp. 71-2. Philadelphia: Lindsay & Blakiston.

until we had acquainted ourselves with the yet unknown law of molecular forces." The very foundation of the metamorphic speculations in which alcohol is made to take so large a share, is not stable. They rest on the presumed fact of its being only partially eliminated from the organism and of the greater portion of all that is ingested being turned to account in generating animal heat and in forming fat. Numerous experimenters, Percy, Bouchardat, Sandras, Lallemand, Perrin, Duroy, and Hammond, show that alcohol is present in the blood and tissues of both man and animals after its ingestion in the stomach. Dr. H. never failed in experiments performed by himself on dogs to which he had administered strong alcohol to recognize the presence of this substance in the blood, the brain, the stomach, the expired air and the urine of these animals; but when using liquid, containing from eight to fifteen per cent. of alcohol, such as the German, French, and Spanish wines, he was never able to find it in the solids, though detecting it in the products of respiration by a solution of the bichromate of potassa in sulphuric acid.¹ In the experiments of Dr. Percy, an injection of about two ounces and a half of strong alcohol into the stomach of a dog was followed by the almost immediate death of the animal; and in submitting the brain immediately after to distillation, a notable quantity of the alcohol was procured.

Alcohol, says Bence Jones,² produces on each substance, in each texture, its chemical action, still continually undergoing oxidation, so that, in a few hours, one part has entirely escaped, and another part has been entirely oxidized in the blood and textures. Strong or weak, it combines with oxygen; more or less increased oxidation, increased circulation, increased secretion, increased effusion of liquor sanguinis and altered nutrition result. But one great and pervading error in all these chemical explanations of functional action is, in overlooking the part performed by the nerves, on and through which the larger number of vital phenomena following the use of alcohol, are produced. Not only is this fact evinced in the disturbed and deranged functions of animal life—the brain and senses, and the ready servitors of the former, the muscles—but also those of organic life, digestion, respiration, and nutrition, etc., all the movements and changes in which are modified by the varying degree of innervation to which they are constantly subjected.

¹ A Treatise on Hygiene, p. 553.

² Lectures on some of the Applications of Chemistry and Mechanics to Pathology and Therapeutics, p. 204.

If we would have a measure of the power and dangerous effects of alcohol on the human organism, it will be found in the disorders of the nervous and muscular system, far more than in the altered relations of the chemical elements to one another.

Alcohol as a Stomachic, Condiment, or Food.—Of all the sanitary feats for which alcohol has obtained credit, the greatest stress has been laid on its alleged cordial and invigorating action on the stomach. Its advocates assure us that it will give appetite, promote digestion, relieve if not cure dyspepsia and its concomitant blues, and vapors, and horrors, stand in the place of food, when this is not obtainable, and obviate the oppression which follows excessive repletion. Who shall explain the contradiction of its being imagined to be capable, according to the wants of the case, of filling a vacuum, or reducing a plenum, of being equally good for the starveling who cannot get wherewithal to eat, and for the glutton who eats too much? The unsoundness of this creed can be demonstrated by general observation and experience, to which chemistry and physiology lend their aid. Water, heat, and acid are mainly instrumental in the first process of reducing the ingredients of the food taken into the stomach to a semi-fluid homogeneous mass, the chief component parts of which are albumen and casein; and the process of this first or stomachic digestion is completed by the addition and incorporation of pepsin, the active organic solvent in the gastric juice. Alcohol has no share in this stomachic digestion; but, on the contrary, it interferes with and retards the reduction of food, and in place of dissolving, it coagulates and hardens the protein compounds, and after first increasing, diminishes and obstructs the secretions of the solvents from the mucous glands of the stomach. Schwann, Blondlot, and Müller have shown that alcohol destroys the digestive property of pepsin, and Todd and Bowman in their *Physiology* are equally decided in the same belief as expressed in the following language: "The use of alcoholic stimulants also retards digestion, by coagulating the pepsin and thereby interfering with its action. Were it not that wine and spirits are rapidly absorbed, the introduction of them into the stomach in any quantity would be a complete bar to the solution of the food, as the pepsin would be precipitated from the solution as quickly as it was secreted by the stomach." The common use of alcohol by anatomists and naturalists to preserve animal organs and tissues unchanged, ought to be sufficient proof that this liquid must be opposed to the reduction of animal matter, either

into a homogeneous pulp, such as is required for its conversion into chyme, or into a homogeneous fluid, as we see in chyle. What can be said now of the popular fallacy of a glass of wine after soup or after fish at a dinner party, or a glass of spirits and water, if not two or three glasses, especially if dyspepsia be complained of? At one time the advice almost universally given by physicians to dyspeptics was, for them to make their dinners of beefsteak and brandy or whiskey and water. Every now and then, some of those who followed this dietetic course would tell of the relief obtained; but no list has been preserved of the many who were made hopelessly intemperate by this systematic drinking of alcohol, in progressively increasing quantity; for the invalid would find it necessary to increase, from time to time, the amount of his liquor, in order to procure the same agreeable feelings that ensued after the first prescription. Similar evils have, we know, resulted from the frequent use of alcoholic tinctures of various bitters; and on this account a very natural prejudice is beginning to be felt against this class of remedies. It is alleged, with good reason, that in the alkaloids of the various bitter, tonic, and narcotic vegetable substances, as well as in the form of powder, extracts, and aqueous solution, we can procure all their active properties without recourse to an alcoholic menstruum. Doctor Benjamin Rush, in his admirable tract¹ on the subject, after speaking of the danger of valetudinarians who labor under disorders of the stomach and bowels, flying to spirits for relief, says: "So apprehensive am I of the dangers of contracting a love for spirituous liquors by accustoming the stomach to their stimulus, that I think the fewer medicines we exhibit in spirituous vehicles the better." The immediate effects of alcohol as experienced in exhilaration of mind, and removal of painful feelings from oppression of the stomach may impose for a time on the dyspeptic, but he will not be long in discovering that no abiding benefit, in improved power of digestion, can be expected from its use. It may be, that the muscular coat of the stomach, obedient to the excitement of the sensitive mucous membrane, contracts with more force and propels into the duodenum the offending or difficultly managed food. But if this food has not been fully converted into good chyme by solution in the gastric juice, and is hurried onward into the intestines, it becomes an irritant to this portion of the alimentary canal, and continues to be so in its whole course,

¹ Enquiries into the Effects of Spirituous Liquors upon the Human Body, and their Influence upon the Happiness of Society.

and fails at the same time to furnish its due proportion of properly elaborated fluid for chyle and blood. If we are in quest of a safe auxiliary to pepsin, one that prepares the food for complete reduction by the latter, it will be found in dilute acetic acid, but never in alcohol. If we want a safe and active condiment, one always at hand and of universal use by all mammals, we find it in common salt, or the chloride of sodium, which plays so important a part, from the first solution of food in the stomach on to its assimilation into blood, and the formation and metamorphosis of tissues. Unlike the alien alcohol, which, when taken into the stomach, is rapidly absorbed and hurried along with the circulation, to be eliminated in great part as speedily as possible, or when retained produces very equivocal if not mischievous results, this salt of soda is everywhere at home in the organism. It is one of the saline constituents of the blood, the chyle and the bile, and has a share in the processes of nutrition and secretion, especially in that from the kidneys. A comparative trial of the dietetic value of the two substances might be made in the following way. Let one human being take a drachm of common salt daily, through life, as a condiment with his food, and another for the same period an ounce of alcohol diluted with water in the shape of distilled spirits, and note the result. It is not difficult to foretell on whose side the advantage would lie.

The question of the claim of alcohol to be regarded as in any sense a food, naturally comes up again when digestion is the theme before us. Interfering seriously with this process, we could not but regard alcohol as adverse to nutrition, and so its habitual use is found to be. While the main proposition is beyond dispute, there are, it is alleged, exceptional circumstances in which this liquid keeps up the powers of life, not by augmenting the receipts, but by diminishing the expense—it supports but does not nourish. Dr. Hammond, distinguished for his physiological and psychological researches and his contributions to hygiene, has made experiments on himself to show that alcohol should be regarded as an accessory food, which he puts on the same line, in this respect, as pepper, cayenne, mustard, and vinegar, and tea and coffee. The experiments of Dr. Hammond¹ “had reference to the influence of alcohol—1, when the food was just sufficient for the wants of the organism; 2, when it was not sufficient; and 3, when it was more than sufficient. Four drachms of alcohol were taken at each meal

¹ Physiological Memoirs—A Treatise on Hygiene.

diluted with an equal quantity of water." Each of the three series of experiments was continued for a period of five days, and in each period 60 drachms of alcohol were taken. After the first series, when the food was of such a character in quality and quantity as to maintain the weight of the body at its normal standard, Dr. H. found that he had gained .45, or a little less than half a pound. In the same period the amount of carbonic acid and aqueous vapor exhaled from the lungs had undergone diminution, as had likewise the quantity of urine and its solid constituents. During these experiments his general health was somewhat disturbed. His pulse was increased to an average of ninety per minute, and was fuller and stronger than usual, and there was an indisposition to exertion of any kind. There were also headache and increased heat of the skin. The second series of experiments was made when the body was losing weight to the extent of .28 of a pound daily. Under the use of the alcohol this decrease was arrested, and there was again a small indeed but appreciable increase equal to .03 of a pound, or rather more than half an ounce daily. The quantity of food previously too scant, now fully satisfied the appetite, and all the functions of the body were performed with regularity, while during the five days of diet that preceded the use of alcohol there was unusual exhaustion after exertion. "In the third series of experiments, in which more food was ingested than was necessary, the ill effects of the alcohol were well marked. Headache was constantly present, the sleep was disturbed, the pulse was increased in frequency and force, and there was a general feeling of *malaise*." Dr. Hammond adds: "I am sure that had the experiments been continued, I should have been made seriously ill." But "notwithstanding all these abnormal phenomena, the body continued to increase in weight above the ratio which existed before the alcohol was ingested, and the excretions were diminished in quantity."

Alcohol Injurious in Health.—While giving full credit to the experimenter for the zeal which prompted and the intelligence which guided him in making these trials, we cannot but regard them as too limited in duration and as wanting in number and variety of persons to allow of our receiving them as conclusive in settling a mooted point. As far as they go, they prove most strongly the injurious effects of alcohol when drunk by persons in health, either when they take their customary allowance of food, or when they go beyond it. These two classes of persons will probably

give us the larger number of all those who use alcoholics in some form or another; they are kept in a state of unnatural excitement and continual predisposition to disease, and are never in the full possession of their mental and muscular power. Were the young, when they begin to use alcoholic drinks, to analyze their feelings and sanitary condition, they would acknowledge that they experienced some at least of the discomforts and functional disturbances described by Dr. Hammond, as resulting from his first and third series of experiments. Left to their own instinctive appetites and feelings, most of these young persons would at once desist from the further use of drinks which make them dull and feverish, but for the evil example and the still more pernicious advice, under a show of philosophy, of those with whom they associate. After a while they get habituated to the poison; but after a somewhat longer while, the poison takes possession of them; they are its slaves, and a certain number—how fearful the proportion—are put on the roll of regular toppers and confirmed drunkards, broken down in health, in mind, and character, and often victims to *delirium tremens* and confirmed insanity. Drunkenness is not, as many seem to think, an extemporized thing; but, on the contrary, it is reached by slow progress—a gradual metamorphosis of the outer man and of his character corresponding with a metamorphosis of tissues taking place in the interior of his body. The beginning of the disease and vice, for continued drunkenness, prolonged alcoholism is a compound of both, is in the season of youth, of health, of confidingness, when evil is least anticipated, and measures of prevention are not even discussed. And yet this is the very time for prevention, and for putting young persons on their guard against the danger before them. The means of protection for their whole lifetime are simple, easy of fulfilment, involve no mortification of the flesh, or ascetic observances of any kind; they check no generous emotion, no lofty aspirations; they interpose no impediments to the development of the greatest intellectual and bodily vigor, nor abate in the least, business activity and acuteness. These means are simply abstinence from alcoholic or intoxicating drinks, the immediate effects of the use of which are shown in derangement of health and uneasy restless feelings, and the secondary and remote but still certain effects in diseases of various kinds, and more especially of those in which the brain and nervous system at large are most affected. This is not a question of mere physiological curiosity or of speculative hygiene, the solution of which is to

show to what extent an appetite for a poison, diluted and disguised as it may be, but still a poison, can be indulged in without immediate ill consequences, and whether the alleged enjoyment of the many is to be prevented for the safety of the few. The real question is one of much wider and deeper significance; it is eminently practical, and calls for the decided opinion and action of every member of a community, of every liver in the land. There are persons with a happy temperament and under favoring circumstances, such as advanced age, who have no fears of their falling into habits of intemperance, but how few there are who can look round on their family circle, or, if safe there, on the circle of their relatives and friends, without being pained and mortified at seeing one of the number a drunkard, or who is suffering from a shattered constitution and incurable disease owing to the habitual use of alcoholic liquors, a burden to himself and a sore grievance to others. What profession or calling, what religious or philosophic teaching, can give security against such a degradation of the individual who persistently exposes himself to danger. Would then all the members of a family, or of a family connection, have deemed it any hardship determinately to abstain from the use of all intoxicating drinks, if by so doing they might have induced the youth—a son, a brother—whom they loved and cherished, to abstain also, and thus prevent the long train of heart-rending scenes resulting from his intemperance. Would they not gladly, rejoicingly abstain from such drinks, if in the midst of his career of drunkenness they could get him to imitate their example? If it be the part of wisdom to look beyond the hour, and to furnish guidance for the future from experience acquired in the past, her lessons ought certainly to prevail under the circumstances we are now describing. Medical men, more than all others, have the knowledge and the opportunities for giving effect to these lessons; they, more than the rest of mankind are cognizant of the evils, both physical and moral, that follow the habitual use of alcohol; and, as guardians of health, they are imperatively bound to exert themselves to the utmost not only in mitigating but in preventing these evils. If medicine be allowed to dwell in a self-complacent if not exultant spirit on the improved public health, and prolonged average duration of life of the masses in all civilized countries, it is because of a more and more diffused application of hygiene in pointing out the means for the prevention and against the recurrence of diseases both sporadic or occasional and epidemic. Medicine, true to her mission, cannot—must not—

hold back from preventing the diseases, not to speak of the concurrent moral blight and destruction ensuing on the continued use of intoxicating drinks.

Continuing our comments on Dr. Hammond's experiments, it would seem that the mere diminution of the excretions and a slight increase of weight, following the use of alcohol, do not of themselves evince health, for they coexisted in the first and third series of experiments, with considerable functional disturbances, viz., headache, disturbed sleep, increased frequency and force of pulse, increased heat of the skin, and indisposition to exertion of any kind, and—though not mentioned—we must believe, loss of appetite, all of which would have ended in serious illness, had the experiments been continued. Great eaters might profit by a knowledge of these experiments, and learn that the free use of alcoholic drinks, so far from diminishing the effects of repletion, and helping them to digest their food, only increases their oppression, causes feverish thirst, which they often try to assuage by more drinks of the same kind, and a general disorder of the body, culminating in serious disease. If they are told that this is the result of intemperance, they would probably be quite surprised, and perhaps somewhat nettled at the imputation, which they would repel by asserting that they were never drunk in their lives. What a marvellous diminution there would be in the number of diseases and deaths, and of individual and social distresses and miseries, if drunkards were the only sufferers from the use of alcohol. Dr. Chambers, who is not opposed to its occasional use, declares most emphatically, that the action of frequent small divided drams is to produce the greatest amount of harm of which the alcohol is capable, combined with the least amount of good. A few pages before he had said, as the result of observations of cases coming under his notice, "On the whole, we may conclude that the effect of continued small doses of alcohol is to diminish vital metamorphosis, to make it irregular, and to induce in healthy people the necessity for crises of evacuation. Its first action is upon the stomach, enabling more food to be digested, and increasing vitality; but if advantage is not taken of this first action, its secondary effect is a diminution of vital functions in general, and of digestion among the number."¹ Small encouragement to the dyspeptic for his having recourse to alcoholic drinks. Present relief and increased digestion, to be followed in an indefinitely short period by vomiting or purging, or cholera,

¹ Lectures, chiefly Clinical, p. 568.

and aggravation of his disease. The same writer tells us that he has "never known a forenoon tippler, even though he never got drunk in his life, without a condition of stomach which most infallibly shortened his days." In the selection of lives for insurance, Dr. Chambers thinks it much more to the purpose to ask the proposer the pointed question: "Do you take spirits in the forenoon? Is that a habit?" than to make the usual aimless inquiry whether the proposer is "sober and temperate." Nobody is anything else, of course, on these occasions, and the answer is a mere declaration of opinion. Doctor Christison states that three-fourths of all the cases of Bright's disease which he saw were produced by the habitual, long-continued abuse of drink. Very great occasional excess did not act so strongly as long-continued smaller excesses.

The second series of experiments of Dr. Hammond are exceptional, and cannot be allowed to represent what would be the sanitary condition of laborers, workmen, and all those who take active exercise, if placed under the alcoholic regimen. These persons might bear up under it for a few days, as they would, for the same time, aided by the excitement of hope or promise of reward, but no longer. Their systems would require better blood material than retained excreta from broken-down tissues, to make up for a deficiency of real food to sustain them under the additional exhausting metamorphosis from muscular contraction, and the waste from largely increased cutaneous and pulmonary exhalation and secretion, which would find no adequate offset in the diminished waste caused by alcohol. In treating of the origin of muscular force in animals, Lyon Playfair draws the conclusion that the normal food and fuel of muscles consist of albuminous bodies, which must constantly be supplied to produce sustained effort, and prevent corporeal deterioration. Dr. Chambers, who talks of alcohol as accessory food, is obliged to admit that we are unable to trace any direct increase of force to alcohol, even in the smaller doses, and for the minutest period of time.

WINES.—More favor has been asked for *wine* than distilled spirits in treating of the effects of alcoholic liquors on the animal economy, and not a few writers on dietetics are disposed to make a compromise by giving up the products of the still to merited reprobation, and yet holding on to the fermented juice of the grape. In the present stage of our inquiry, we need only observe that, although wines differ in strength and consequent activity of ac-

tion, yet they are all of them alcoholics, and as such, when ingested, produce the effect already described, of interrupting stomachic digestion by precipitating and coagulating pepsin. Their primary action on the brain and heart, by stimulating these organs, is analogous to that of distilled spirits; their secondary and remote effects are different, but whether to their hygienic credit, is a question that may admit of great doubt. It will suffice to say, with Pereira, who is no ascetic or enemy to vinous drinks, that "it cannot be denied that the most perfect health is compatible with total abstinence from wine; and that the habitual employment of it, especially by the indolent and sedentary, is calculated, in many instances, to prove injurious. To a person in perfect health, and who has been unaccustomed to it, no possible benefit can accrue from using it. The preternatural excitement which in these cases it would occasion, must be followed by a corresponding degree of depression. Even though no sensible injury may result therefrom, no benefit can be expected to result." And in another place this writer says: "To persons in health the dietetical employment of wine is either useless or pernicious." All that we have said, in the way of advice and warning to the young and the healthy respecting the danger they incur in the use of alcoholic drinks in general, is applicable to their use of wine. If, as a matter of taste, or of gentility, or may be from conscientious scruples, a young man rejects brandy, or whiskey, or rum, let him not believe, for a moment, that he incurs no danger to his health at the time, and is not beginning a habit which may enslave him, when he takes a glass of Madeira, sherry, or port. He compounds with temptation by drinking twenty-three or twenty-five per cent. of alcohol, in place of forty-eight or fifty per cent., a glass of heavier-bodied wine being equal in strength, if not in intoxicating property, to half a glass of brandy. He will, however, probably prefer champagne, the favorite beverage of the day among intoxicating liquors; and then he takes but twelve per cent. of alcohol. If he drinks four glasses of this wine he will be alcoholized to the same extent he would be by a glass of brandy or whiskey, with the additional chances of having more headache and disinclination for breakfast next morning after the champagne than after the brandy, or its equivalents, whiskey or rum. We are told of the alcohol in wine being modified, not only in taste, but also in its inebriating operation, by the different substances—sugar, gum, extractive matter, salts of potassa, and in the red wines, tannin, and in the champagne, carbonic acid

—with which it is mixed. The practical fact, however, is that other things being equal, as regards sanitary habits and social position, the spirits drinker will be apt to outlive the wine-bibber, supposing that each of the two carries his intemperance to the point of getting frequently drunk. Pitt, and Fox, and Sheridan, names so distinguished in the political and parliamentary history of England, all shortened their days by their free drinking of wine, although the stigma of drunkenness was fixed on the last alone, who towards the close of his life became a brandy toper. Let not, then, the ingenuous youth of our country lose their buoyant feelings, gayety, and susceptibility to true enjoyment in the muddling effects of wine, or of alcoholic drinks in any form. Would, that advice on this topic were required only for young men; but the other sex is also in imminent danger. It is, unhappily, no fancy sketch to see young girls just beginning to mix in general society, who are too ready to quaff champagne with their male partners in the dance, or at the supper-table, unconscious of the consequences in their changed features and expression, flippant speech, and loss of that air of retiring modesty which constitutes so much of their charm. They are not aware, at the time, that they are beginning to lay up a store of nervousness, fitfulness, and feelings of languor and lassitude which may soon furnish an excuse, and, perhaps, in the opinion of a thoughtless physician, a cause for recourse to stronger wines in the day. More ready still is the now almost inevitable stereotype prescription of milk-punch—that is to say, the best food and strengthener and blood material, half prepared to become chyle, mixed with a liquid that is no food, destroys pepsin, and otherwise spoils digestion, and poisons the blood, if it is not soon expelled from it by the eliminating organs. Others of the female sex, not tempted by wines, find at their social meetings sweet cordials—liquors of which they are persuaded to drink, and thus lay the foundation for habits of intemperance which crop out when they become wives and mothers—sadly to the distress and embarrassment of their physicians, who may now with some feelings of compunction ask themselves how far their own previous prescriptions or their entire indifference to the subject of intoxicating drinks had contributed to produce this melancholy state of things.

Intemperance from Wine.—Many well-intentioned persons, who deplore the evils of intemperance caused by distilled spirits, think that a remedy would be found in the substitution of fermented liquors, and, in this belief, advocate the cultivation of the vine on

a large scale, so that the people everywhere may be able to procure wine for common use. Foreign countries are cited to show the temperance of the inhabitants where wine is largely made and consumed; and of these France is spoken of with the most emphasis. A careful inquiry into the subject has not by any means justified such a favorable view. Your reporter, who spent a year in Paris, had an opportunity, while attending in the hospitals of that city, to learn something of the habits of the lower and poorer classes of the population, who do not come under the notice of travellers. Statistical returns show that the people, not only of Paris, but of other great towns of France, furnish a large quota of victims to alcohol, and the evils of intemperance are deplored by not a few of the medical men and publicists of that country. The subject subsequently engaged his attention, and he would refer to a small volume¹ of his for documentary and other proofs that wine countries, taking France as their representative, have little cause for self-congratulation and boast on the score of exemption from drunkenness. As said in the work referred to, "What is the experience of those persons who mix with the people in their fêtes; who look into their *cabarets*, or small wine and brandy shops; who watch the crowds returning into Paris of a Sunday evening from outside the barriers, where they get wine cheaper than in the city; who visit their hospitals, to note the causes of disease and of surgical injuries, and to make a record of their insane, and the causes of this disease; who read the newspapers, and learn in them the origin of quarrels and duels between soldiers at a cabaret, and of disobedience of men to their officers?" Villermé, high authority on all statistical and benevolent questions, said, years ago, that drunkenness is the greatest curse of the laboring classes in France. Wine, especially the common country wine, does not stimulate them enough; it only serves to give them an appetite for something stronger, which they find in their own brandy. The successive stages of intemperance are so well described by Villermé, that one might suppose he had drawn the picture from what transpires so commonly in our own country, and in the United Kingdom of Great Britain and Ireland. The workmen or operatives drink spirituous liquors, he tells us, at first, without pleasure, and merely through imitation; soon to indifference succeeds an agreeable sensation; then an insensible desire is felt, and a passion continually augmenting. "It is thus gradually, and by a rapid descent, a man passes from habits of

¹ On Regimen and Longevity.

sobriety to habits of intemperance; from the moderate use of intoxicating drinks to their abuse. Henceforth everything becomes an occasion for visiting the tavern (*cabaret*): he goes there when times are prosperous, because he gets high wages and has money; when he is for a while without work, because he has nothing to do; when he is happy, in order to enjoy himself; when he has domestic troubles, in order to forget them. In fine, it is at the tavern that he contracts his debts, and pays them when he can; that he makes his bargains; that he contracts his friendships, etc., and that even he gives his daughter in marriage."

After describing the waste, idleness, turbulence, debasement, diseases, shortening of life, vices and crimes which drunkenness brings in its train, Villermé adds: "We may affirm that drunkenness is truly the chief cause of the quarrels, a great number of crimes, and nearly all the disorders and irregularities which the operatives commit, or in which they take a part."¹ Chevalier, in his treatise on "The Prevention of Diseases among Printers," states as the chief means for meeting this end, dissuasion from the excessive use of intoxicating drinks, and from frequenting petty taverns and pot houses. After these statements of their own writers, the French people will not, probably, feel themselves scandalized by the following extract from the work of Sir Henry Bulwer,² who, by the way, generally describes France in as favorable a light as possible. He is speaking of the workmen and operatives of Paris. "Hatters, drunkards; tailors, vicious and dissatisfied; nappers and cotton spinners, so wretched that no fault should be found with them; cabinet-makers, fond of drinking, but of quiet tempers; printers and analogous trades, drunkards; house painters, drunkards, very careless; marble cutters, drinkers and hot-headed; workmen in harbors, exceedingly addicted to drinking; curriers, drunkards in the highest degree." The operatives of both sexes in Lille, St. Quentin, etc., exhibit an amount of disease and demoralization from alcoholic drinking equal to that in the large manufacturing towns of Great Britain, but, happily, without a parallel in those of the United States. We have mentioned insanity as one of the diseases in France which ranks intoxicating drinks among its causes. Of 256 persons received in the hospital for the insane at Charenton, near Paris, who were deranged from physical causes in

¹ Annales d'Hygiène, t. xxii.

² Monarchy of the Middle Classes, 1834-36. Vol. i. p. 219. Intemperance and its attendant evils have been on the increase in France since Sir Henry wrote.

three years, 64, or one-fourth of the whole, had become so in consequence of excess in the drinking of wine (*abus du vin*); of these twelve were females. At Caen, the proportion of patients from drunkenness in the insane asylum was one in every eight and one-half. The returns of the cause are strong drinks (*liqueurs fortes*).

M. Fleury, in his course of lectures on Hygiene in the Paris School of Medicine, speaks in very decided but not flattering terms of alcoholic drinks. They exert, he assures us, "an action of very brief duration, and if the working classes would substitute for the abuse of these drinks the use of good food, and especially of meat, they would gain in strength and health, and would be protected from all the diseases which follow in the train of drunkenness. Alcoholic drinks are anything but tonics and corroborants with the use of which hygiene cannot dispense; they are at most stimulating agents the use of which ought to be prescribed and regulated by therapeutics. Alcoholic drinks are for humanity and society an inexhaustible source of physical, intellectual, and moral evils. To prohibit completely *fermented and distilled liquors*, to restrict the use of *fermented liquors* within the narrowest limits, seems to us to be the right and the duty of paternal and really civilizing governments."¹

These are not the opinions which the people of America and Great Britain, with their imperfect knowledge of the dietetic value of wine, would expect to be held and still less to be uttered by a learned professor in the School of Medicine of the great city of Paris, the capital of France, the great wine producing country of Europe. Professor Fleury must have been deeply and painfully impressed with the evils of intemperance, caused by the general use of alcoholic liquors by his countrymen, when he gave utterance to opinions so decidedly adverse to their use, and at the same time to the immediate interest of a large and influential body of his countrymen, the producers and sellers of the boasted wines of Champagne, Burgundy, Bordeaux, etc., and of the distillers of brandy at Cognac and other places. M. Fleury's patriotism does not mislead him for a moment into a belief that France can stand apart and look with a compassionate feeling on other countries the people of which are given to intemperance as if she enjoyed comparative exemption. "Drunkenness is," he tells us, "widely spread in France, England, Germany, Russia, Sweden, and the United States. In France *wine* is the chief agent; in Germany and in

¹ Cours d'Hygiène, tom. i. p. 200.

England beer and ardent spirits; in Russia, Sweden, and the United States principally that from grain. The lecturer gives nearly the same picture of the cabaret, but in darker colors, as that presented thirty years before by Villermé, which we have copied. The deeply interesting nature of the question, and a desire to still further awaken the dreamers of wine-land to a clear perception of the realities of the whole subject, induce us to repeat the language of M. Fleury: "Drunkenness at home in the midst of his family is very rare; it is at the cabaret that the workman parts, in exchange for wine or brandy, with the money which ought to go to provide food for his wife and children; it is at the cabaret he contracts habits of violence and debauchery; it is at the cabaret that he gives himself up to all the suggestions of hate and envy; it is at the cabaret that he indulges in his dreams of communism, and revolts against inevitable social inequalities, and puts himself in insurrection against hierarchy and authority."

The cultivation of the vine, so far as it relates to the manufacture of its fruit into wine and brandy, gives no activity to social progress or improvement, affords no genial incentive to the powers of man, does not quicken any germ of civilization into a display of superior industry, literature, or science; but, on the contrary, the people thus engaged are behind their countrymen, who live under the same government and institutions with themselves, in all that makes useful citizens and contributes to the sum of human worth and intelligence. Of the two divisions of France into North and South, the proportion of superficies of soil is as 18 of the first to 34 of the second, of population 13 to 17, and of agricultural laborers 7 to 11. The south contains the chief wine districts; it has a more genial climate and more fertile soil than the north, and yet, notwithstanding these differences, all to the advantage of the former division, Baron Dupin, in his work on *Productive Forces*, shows that the people of northern France derive a larger mean income per individual from the soil and from manufacturing industry and pay more taxes than their countrymen to the south. Their agricultural products are to those of the latter as 5 to 6, although the proportion of laborers, as just stated, is 7 to 11; and of surface for cultivation not much more than one half, or 18 to 34. At the time these calculations were made, the south with a greater population sent one scholar to a primary school for two sent by the north. The condition, physically and mentally, of the small laboring proprietors and laborers and jobbers is every way

poor. They consume but little of the wine they manufacture; their chief drink is *piquette* wine, a liquor made of the wastage of the wine barrels, the remnants of grapes, etc., which are subjected to a kind of fermentation bordering on the acetous. The inhabitants of the wine regions in France are accustomed from their infancy to drink *piquette*, and it is the ordinary beverage of the poor. The people are generally sober, but thriftless and wanting in the knowledge and practice of household economy. Their amusements are "dancing, public houses, and gambling." Grain claims a vast superiority over vineyard agriculture, in reference both to the amount of food furnished to man and the profitable exchange with other countries where soils are less fertile. Mr. Tomes, who was for some time American Consular Agent at Rheims, in the midst of the "Champagne Country,"¹ describes the laborers in the vineyard, and during the season of vintage, in anything but inviting colors, or such as would make us hopeful of greater temperance among a people by the substitution of wines for ardent spirits. He tells us that drunkenness, supposed to be of unfrequent occurrence in France, is common enough in Champagne.

Still more emphatic is the language of a late traveller, Dr. Holland, in Switzerland, as relates to the cultivation of the vine for the purpose of making wine. This gentleman thinks that there can be no question that the people would be better, healthier, happier, and much more prosperous if there was not a vineyard in the canton of Lausanne, from which he was then writing. It is, he continues, the opinion of the best men in Switzerland, those who have the highest good of the people at heart, that the increased growth of the grape has been steadily and correspondingly attended by an increase of drunkenness. They lament the planting of a new vineyard as we, at home, the opening of a grog shop. It must not be forgotten that there is a close connection between the wine-press and the still, not only in their furnishing the same element, alcohol, but in the former supplying wine for distillation into brandy, and the product of the still being sent back to give strength and body to the wine reserved for home use, and especially for exportation. More than a seventh part of the wine made in France is manufactured, by distillation, into brandy. We learn from estimates made by Mr. McCulloch that for every three pipes of Catalonian wines sent to Cuba, South America, and the North of Europe, there goes with

¹ This is the title of his work, giving the result of his observations in that country.

them more than a pipe of brandy. Nearly all the wines made are doubly alcoholized, first by the process of fermentation, and next by the addition of brandy or other distilled liquor, before they are sent to market. The assurance and the skill with which foreign wines are adulterated are not now exhibited for the first time. Redding, in his work on wines, tells us that claret is not a simple wine, or the produce of one kind of grape, or even one vintage, but is a mixture of Bordeaux and Bene Carlos, sometimes Languedoc and Bordeaux, at others Hermitage or Alicant with Bordeaux, and uniformly a portion of brandy is added to it in the proportion of six per cent. Its actual proportion of alcohol after this addition is about fourteen per cent. The information furnished by the same writer on the so much lauded Port wine is instructive. For more than a century the Portuguese have ceased to send pure wine to England. In its preparation for the English market "they did not spare brandy nor elderberries, nor burnt grain, nor anything that would answer to color the wine when it was not thought deep enough. They created at length such a wine as the world never before saw, especially when *improved* by subsequent adulterations in London, where the imitations of Port wine have been so facile, in consequence of the absence in most of that imported of the prime qualities of good wine, that a vast quantity more is sold than Oporto, with its Company, has ever been able to export."¹ And again: "Five-eighths of the wine brought to England is so coarse and such a medley of ill-flavored heterogeneous vine produce, bad Portuguese brandy, and other matters, that any ingenious person may increase one pipe to three by the addition of inexcusable articles without any fear of injury to the stomach of the consumer, or to the appearance of the wine happening." Physicians, everywhere, ought to know the real nature of the stuff which they prescribe under the supposition of its being a pure wine fresh from the London docks, and primarily from Oporto. But how much is sold of a vile compound called Port wine, of home manufacture, without its containing a drop of wine of any description, we are left to conjecture. The quantity is, however, considerable. Madeira wines receive an addition of brandy when wracked from the vessels in which they had been fermented, and another portion is thrown in previously

¹ The entire export of Port wine is twenty thousand pipes, and yet sixty thousand, as given in evidence before a committee of the House of Commons, are annually consumed in Great Britain and Ireland. Dr. C. A. Lee believes that the annual importation of what is called Port wine, into the United States, far exceeds the whole annual produce of the Alto Douro.

to their exportation. When Madeira was a fashionable wine, every sort of deception was practised with respect to it; and after Sherry took its place the latter was soon adulterated on a large scale. It must have been quite amusing for those in the secret to see the amateurs of sherry sip and prolong the pleasures of gustation before swallowing their favorite wine which had been subjected in England to such additions as are described by Redding: "Sherry of the brown kind and low price, when imported, is mingled with Cape wines and cheap brandy, the washings of brandy casks, sugar-candy, bitter almonds, and similar preparations, while the color, if too great for pale sherry, is taken out by the addition of a small quantity of lamb's blood, and then passed off for the best sherry by one class of wine sellers and advertisers. The softness of good sherry is easily imitated." Champagne is everywhere manufactured to meet the existing demand in Paris, London, and other great cities in Europe, and in those of the United States. Not one bottle in a hundred of that which is drunk in England or in this country comes from Champagne. Balls, races, dancing parties, and crowded public dinners are profitable markets for adulterated wines. The manufacture of this class of liquors is now conducted on a large scale in France itself, and not surreptitiously but as a regular branch of trade. Many curious and startling details on the subject are given in a late work, by M. Lebeuf, on the Culture and Treatment of the Vine in its Relations to the making of Wines, and the Proportions of the genuine and the artificial liquors, or those made by the addition of alcohol and spirituous essences to the original juice of the grape. The favor with which the wines of Burgundy, Bordeaux, Macon, Chablis, Champagne, etc., have been received, has tempted the cupidity of the wine merchants, and induced them, says M. Lebeuf, to make with avidity various imitations. These manufacturers undertake to manufacture all kinds of wine to order, and they often make good imitations. Did room permit, we could introduce some amusing anecdotes in proof of success, even years ago, in this way. These spurious products find a rapid sale, and some people become so much accustomed to them as often to prefer them to the real article. A similar preference for adulterated porter, in which other bitters were introduced to replace the hop, was asserted several years ago by a London brewer, in an examination before a Committee of the House of Commons. It is somewhat curious that the recipes given in M. Lebeuf's work have not a drop of the

real wines they are intended to imitate. There are three plans for making new wine old: First, letting it become old by age; secondly, ageing it by a stove or hot-house; and thirdly, ageing it chemically. M. Lebeuf describes one of the chemical concoctions for giving age to new or manufactured wine. Many of the liquors called French clarets or other alleged products of the vintage in different parts of France are mere chemical compounds; and no more dependence can be placed on their purity than on that of the heavier and more spirituous wines of Spain and Portugal. When would-be connoisseurs inhale with apparent delight the delicate "bouquet" or perfume of European wines, purchased by retail, they are not aware, that in all but the very finest vintages this bouquet is the triumph of the chemist rather than a product of the grape.

At the great French Exposition in Paris, in 1867, there were specimens of artificial essences of sherry, port, gin, rum, cognac, arrack, Madeira, Masella, etc., which would enable fraudulent publicans and grocers to manufacture those poor compounds, called wines, with which the ignorant and unsuspecting purchasers are slowly poisoned. On a review of the whole subject, it will be seen that French experience affords small ground for our believing that protection against the evils of intemperance will be found in an extensive cultivation of the vine, and a correspondingly large production of wine. The line once passed from drinking water, as the sole beverage, to alcohol, however it may be weakened by large dilution, a desire is soon created for further stimulation by stronger drinks, until, step by step, men, and women, too, are led on from the use of the weak table wine to the highly alcoholized, bewildering, and stupefying absinthe. This is not the case with all; but who, in advance, can designate the exempt.

Opportunities are now being afforded, and will annually increase, for the people of the United States ascertaining from their own experience, the effects, considered hygienically and therapeutically, of the drinking of wine. California, a State in which everything exists, and is done on a large scale, has already thirty millions of vines in bearing, the fruit of which yielded, in 1868, more than fifteen millions of gallons of wine, and one million of gallons of brandy. The *Overland Monthly* very wisely urges the growers to make a strictly pure wine, and assures them that if this condition be complied with, the demand for the wine will exceed greatly the production. In other western States great attention is being paid to the cultivation of the grape-vine. There are said to be three thousand acres de-

voted to this object within a radius of fifty miles from Keokuk, Iowa. The product of wine from the cultivated grape is quite considerable in Ohio, North Carolina, etc.

Nearly 5,000,000 acres of land in France are given to the cultivation of the vine, which affords occupation, in one way or another, to upwards of 5,000,000 of persons. The vintage in 1868 amounted to 1,620,000,000 gallons, and the annual average value is estimated at \$100,000,000. Some French writers have rated it in former years as two hundred millions. One department alone, Herault, produced in 1864 three times more wine than Portugal.

After this exposition of the "wine question" made on the evidence and experience of judicious and independent observers, what shall be said of such a flippant way of disposing of a grave question as is attempted in the following language: "And in the day when every farmer can, from half an acre of land, easily and cheaply planted and tilled, even by the unskilful, harvest what will fill his ten or twelve barrels with honest juice, for the habitual daily drink of himself and family—our two heavy afflictions and sins, excessive water drinking and excessive whiskey drinking—will vanish from the land, and a beneficent change in our national temperament begin to be wrought."¹ The great cordial of life, according to this writer, is red wine, which he recommends to be taken daily in the quantity of a quart for every adult, and of a pint for each child. The age of the latter is not specified. Is the drinking to be begun when the little being is yet at the breast, imbibing its mother's milk? And this is the prescription which we are assured "will prevent and cure dyspepsia." Far different from this is the opinion held by French medical writers, who are familiar with the effects of the drinking of wine dietetically and medicinally considered. Fodéré,² for example, says: "If my opinion were asked on the necessity of using wine in a state of health, and as a hygienic agent, I would frankly reply with Plato"—Galen might have been also cited—"and after what I have seen of the evils caused by it, that it would be much better not to accustom children to its use, and that we have no call for this factitious stimulus until the approach of old age." This writer, who is the author of a standard work on *Legal Medicine and Public Hygiene*, refers to his experience in the treatment of children of all ages at the Medical College of Strasbourg, and adds that boys in good health especially have no need

¹ Three Seasons in European Vineyards, etc., p. 20. By Wm. J. Flagg.

² Dict. des Sciences Méd., art. *Vin*.

of wine during the period of their growth, and that this liquor, of which too indulgent parents are afraid to deprive them, so far from being beneficial, disposes them, on the contrary, to serious and fatal diseases, among which he specifies hæmoptysis, pulmonary consumption, and mania. Pomme, author of an excellent work on hysterical and hypochondriacal diseases,¹ those which are so often supposed to require the exhilarating operation of wine and analogous liquors, cautions invalids against their use, and declares emphatically, that both nature and common sense clearly point out water as *the only fitting drink*.

Whatever misgivings may be felt by the advocates of temperance, as regards the general use of the fermented juice of the grape, and however reasonable their dread of its being made to undergo a farther and deleterious change by distillation, there can be no question of the sanitary benefits ensuing from the extensive cultivation of this fruit for its legitimate ends, viz., to gratify the palate, quench thirst, and be a real "accessory food." While thus to a certain extent nutritive, it is also medicinal. We may not look for a complete arrest of pulmonary consumption by the "*cure de raisins*," or a diet consisting chiefly of bread and grapes; but we cannot reject the testimony in its favor in chronic bronchitis associated with irritable dyspepsia, and, also, in hypochondriasis, dysentery, and certain diseases of the skin and renal organs. Grapes might well enter into the dietary of persons of all ages, from childhood to the most advanced period of life, and would prove to be alike grateful to those in the enjoyment of health, and to those wracked by pain and fever. Vineyards may be spread over the country and their natural unsophisticated fruit product be made an article of lucrative commerce, not only by its consumption on the spot where it is grown and in the season of vintage, but, also at a distance, both in its recent state, and when dried so as to become raisins. With the increased means of preserving fruit fresh on a large scale and of transportation to any part of the United States, the inhabitants of regions remote from the favored lands of the vine will be able to procure grapes in even greater abundance than they now do apples, oranges, lemons, and figs, not to speak of the more tender pineapple and banana. California and other vine districts will supply us on the Atlantic side with fresh grapes in quantities a thousand-fold greater, and of more varied flavor than we now receive

¹ *Maladies Vaporeuses des Deux Sexes.*

from the Mediterranean. The practice of gathering grapes just before they attain maturity and of divesting them of any adherent moisture, and then of packing them away in some light and dry substance, was known to the ancients. Grapes were called by the Romans *uvæ ollares* when they were put away in jars hermetically sealed with pitch, or in well-closed vessels with dry straw. California, the vegetable productions of which are on such a grand scale, will, no doubt, soon grow grapes of a size to rival those of the bunch found in the valley of Eschol, that required two men to carry it, or those of Damascus of the present day, which have been found to weigh twenty-four pounds to the bunch.

The juice of the ripe grape consists of sugar, gum, albumen, fatty matters, pectic acid, pectates of lime, potash and soda, acid, bitartrate and tartrate of lime, and alumen. Also sulphate of potash, chlorides of potassium and soda, phosphate of lime, oxides of iron, silex, and essential oils. Sugar, gum, and gluten are in quantity available for nutrition in the juice of the grape; but by the process of fermentation into alcohol they are changed, and show themselves in much smaller proportion. Your reporter draws from his work, already quoted, the following particulars on the use of the unfermented juice of the grape, which, together with "the sap of the palm-tree, are, as we learn from Captain Charles Stuart, common and delightful beverages in India, Persia, Palestine, and adjacent countries. *Must*, or the expressed and unfermented juice of the grape, was used by the Egyptians at an early date (Gen. xl. 11). Another mode of using the juice of the grape for the purpose of drink was to evaporate the more watery portion, by which the remainder was thickened and could be kept for a length of time without farther decay. When wanted for use, it was made with the addition of water, not only a refreshing, but a somewhat nutritive drink, as its mucilage or extractive matter and sugar were still retained. Dr. Russell, in his history of Aleppo, thus speaks of the practice in modern times, in that part of the world: 'The inspissated juice of the grape (*sapa vini*) called here *dibbs*, is brought to the city in skins and sold in the public markets: it has much the appearance of coarse honey, is of a sweet taste, and in great use among the people of all sorts.' This extract, as it may be called, of the juice of the grape, mixed with water and allowed to remain in this state for a time, would undergo a slight acetous fermentation, rendering the drink analogous to the light ascendent wines used by the people of southern

Europe, or to the *piquette* already described."¹ In all ages, writes Fodéré in the *French Dictionary of Medicine*, previously quoted, the rich have drunk wine and the poor *piquette*, but the latter class, sober from necessity, have, also, always enjoyed better health than the rich. *Piquette* (*posia* or *lora*) has been called secondary wine. This was the drink issued as part of their daily allowance to the farm laborers and slaves, by the ancient Roman landholder. In parts of Asia Minor, the Turks make a thick confection of grape juice, *raisiné*, which they use largely as a condiment in place of sugar or honey.

There is yet another state in which grapes are largely used, viz., when partially deprived of their watery part by drying, but still retaining their sugar, mucilage, and an acid. The fruit thus prepared is known as raisins; in some places it is dried in the sun, in others immersed in lye. In all cases, it is desirable that the grapes should be perfectly ripe before they are gathered, and in order to secure this result, the leaves and branches which partially cover the bunches of the fruit are drawn to one side so as to expose it fully to the sun. The damaged berries are carefully removed. In eating raisins, care should be taken not to swallow the skin and seeds, both of which are indigestible.

People often speak of wine and the juice of the grape as equivalent terms, and hence regard the former as a natural product, obviously intended for man's use and enjoyment. Wine is no such thing; it is the product of carefully elaborated and artificial processes, necessary to encourage fermentation and to keep this latter within certain limits, passing which the liquor would lose its alcohol and become vinegar. The juice of the grape left to itself soon runs into the acetous fermentation, and this change gives us the really natural product, the true resulting liquor, but not wine. Alcohol is always a stranger, and with few exceptions an enemy in the human organism; acetic acid, on the contrary, is found in the gastric juice, and aids digestion. Vinegar was part of the ration of the Roman legionaries, the conquering soldiers of the republic; with it they quenched their thirst after long marches, and mitigated by mixture the effects of bad water. One can hardly procure a more refreshing and cooling drink during the dog days than vinegar and water, to which molasses is added. To workmen exposed to the sun, it offers every advantage over any of the alcoholic liquors. Next to salt, vinegar should be regarded as a universal condiment.

¹ *Regimen and Longevity*, pp. 231, 232.

Diluted with water it is most refreshing and curative in most forms of fever, and might be turned to good account in many chronic affections.

MALT LIQUORS.—If wine be regarded as the natural drink of the French people, malt liquors bear the same relation to the English. The proportion in quantity of the former to the latter is about as three to two, and in the amount of alcohol, of which they are the bearers, as 9 to 5. The drinkers of malt liquors by the laboring classes of Great Britain pursue nearly a parallel course with the wine drinkers of the same class in France. They begin with small beer, and they end with gin. The use of these liquors by the English people for so many centuries might be adduced in their favor, for we may suppose that the revelry and dissipation in Harold's camp on the night preceding the fatal battle of Hastings, were kept up by large potations of the national beverage. "Considered dietetically, beer possesses," according to Pereira,¹ "a threefold property; it quenches thirst; it stimulates, cheers, and, taken in sufficient quantity, it intoxicates; and, lastly, it nourishes or strengthens." "From these combined qualities, beer proves a refreshing and salubrious drink (always presuming that it is used in moderation), and an agreeable and valuable stimulus and support to those who have to undergo much bodily fatigue." The friends of lager beer, which is beginning to be drunk so largely in many parts of the United States, will doubtless hold the same language with the English writer just quoted. Franklin, however, showed long ago, when he was a journeyman printer in London, that he got more nourishment and strength from his penny loaf and pint of water than his associates from their free draughts of beer. Similar experience has been obtained from large numbers of working men in England, who have been induced to abstain entirely from beer and all intoxicating liquors. Abstinence of this nature is the more called for on account of the wholesale adulterations of beer, and especially porter, in that country. *Cocculus Indicus* is used to increase its intoxicating quality; and some of the popular treatises on brewing give directions for employing it. As the use of this poisonous article is prohibited by the legislature, and heavy penalties imposed for infraction of the law, brewers' druggists are in the habit of preparing a watery extract of the fruit, which is sold as *black extract*, or *hard multum*.

¹ On Food and Diet.

Quassia is used for hops, to communicate a bitter taste; grains of Paradise and Cayenne give pungency; coriander, caraway, etc., are used to communicate flavor; liquorice, treacle, and honey give consistence and color. A mixture called *beer-heading*, composed of green vitriol (sulphate of iron) and common salt, is used to give a fine frothy or cauliflower head to beer. If to this list we add *nux vomica*, or now its more readily measured alkaloid, strychnia, and opium, henbane, foxglove, oil of vitriol, and jalap, we can form an opinion of the real nature of the English compounds called malt liquors, and of the extent of confidence to be placed in them, either for dietetical or medicinal purposes. It is to be hoped that the brewing in this country is of a more honest character, and that they who drink American-made beer, ale, and porter will not be subjected to more than the effects of the true fermented liquor from grain, with the addition of hops, and not be made to suffer from any imitation of a popular brew and its additions on the other side the water. Little can be said in favor of the much-dwelt-on nutritive property of malt liquors, if we receive as correct the statement of Liebig, that fourteen hundred and sixty quarts of the best Bavarian beer contain only the nutriment furnished by a two and a half pound loaf of bread. Beer is a common beverage in the northern part of France; in quantity, it is equal to about a tenth of the products of the vine in that country. Cider is also made and drank in nearly the same proportion in Normandy, and the adjoining districts. But of all the countries of Continental Europe, Germany is the one in which the manufacture and consumption of beer are the greatest. The national practices in these respects are kept up, to a great extent, by the Germans who have settled in the United States, and lager beer has become as famous among us as brown stout and Burton ale in England. The proportion of alcohol in the malt liquors of this latter country is one per cent. in smaller beer, and eight per cent. in the best brown stout porter.

CIDER, or apple-wine as it has been sometimes called, contains from five to ten per cent. of combined alcohol, and it is often made stronger by the addition of distilled spirits, in order to preserve it from acetous fermentation. It is a pleasant drink, and its use has sometimes been contrasted with ardent spirits, as less alcoholic and so far safer; but it is often productive of colic and otherwise disturbed digestion, and, like all the alcoholics, it will, when

freely used, intoxicate, and induce an appetite for stronger liquors. Hence, if a person wishes full protection for himself against the risk of intemperance, he will put it on the list of intoxicating drinks, from the habitual use of which he should abstain. There is nothing either in the health or habits of the inhabitants of the cider counties in England and France to make it desirable that its manufacture be extended in this country. The perverse ingenuity of man has not been content with converting the juice of the apple into a drink of doubtful value by fermentation, but has compelled it to yield, by distillation, an ardent spirit, and thus add to the number of the most pernicious and destructive alcoholics.

Alcohol Powerless in Resisting Cold.—Having spoken of the various combinations of alcohol with water and other substances in the different liquors most commonly used as drinks, we shall now inquire into the validity of the claims set up for them on the ground of their imparting additional strength and power of endurance under exposure to extremes and vicissitudes of temperature and weather generally. In anticipation of the conclusion to be reached, we shall invert the customary proposition, and affirm that the recorded experience of men in all situations and climates, and under all kinds of labor and exposure, proves that abstinence from intoxicating drinks gives increased ability to go through the labors of the farm and the workshop, and to encounter hardships by sea and by land beyond what has ever been done in these respects under the unnatural excitement of alcohol, followed, as it always is, by depression and debility, if not by fever and other diseases. First, as regards alcoholic liquors being a preventive against cold. On this point there is a singular unanimity of opinion among voyagers and travellers both by land and sea, in their condemning the use of distilled spirits, or of wine or beer, as a preventive against cold. We may mention as holding this view, Sir James Ross, Sir John Richardson, Sir John Franklin (first voyage), Captain Kennedy, Drs. Kane, Hayes, and McRae, and all Arctic explorers. In North America, the Hudson Bay Company entirely excluded the use of spirits by all persons in their employ. The Russian army, on the march in cold weather, not only uses no spirits, but no man who has lately taken any is allowed to march. In the Antarctic regions, we have the testimony of Dr. Hooker and the practice of many "teetotal" whalers to the same purport. Dr. Hayes says that he not only will not use spirits, but he will take no man with him on an Arctic voyage who is accustomed to their

use. Sir James Ross, the commander of two different expeditions in search of a northwest passage, asserts that of two equal boats' crews in a heavy sea, the water-drinkers will far outdo the others. Dr. Kane, in a conversation on the subject, told your reporter that spirituous liquors may be of use for a momentary effect, but they are decidedly deleterious where continuous exertion and sustained labor are required. The Rev. W. Scoresby, who was engaged in so many whaling voyages in the Arctic regions, says emphatically that spirits are decidedly injurious in cold climates. "The men who have been assisted by such stimulus have been the first who were incapable of duty. They became perfectly stupid, skulked into different parts of the ship to get out of the way, and were generally found asleep." This gentleman adds: "In the case of a storm or sudden difficulty, I should most decidedly prefer the water-drinkers to those who were under the influence of any stimulant. The latter are unspeakably more liable to accident." In 1619 the crew of a Danish vessel, sixty in number, and fully supplied with provisions and ardent spirits, attempted to pass the winter in Hudson's Bay, but there died fifty-eight of them before the spring. Very different was the result of a similar wintering by an English crew of twenty-two men, who had no spirituous liquors; they lost but two of their number by death. In another instance, of eight Englishmen, also without spirituous liquors, who passed the winter in the same bay, the whole of them survived and returned to England. More remarkable still was the case of four Russians who were left without ardent spirits or provisions in Spitzbergen, and who lived six years in that cold and dreary region, and ultimately were restored to their country. Dr. Aiken, in a paper published in the first volume of the *Transactions of the Literary and Philosophical Society of Manchester*, says, after his examining and comparing a good number of narratives of parties who attempted to pass the winter in high northern latitudes, that in all the instances of failure, vinous and spirituous liquors had been used, and probably in considerable quantities. The Greenlanders, who are the most civilized, perhaps we ought to say the least barbarians, of the people who inhabit the regions around the Pole, are remarkable for their sobriety and entire abstinence from intoxicating beverages. They contrive, notwithstanding, to keep warm, and laugh and grow fat and enjoy themselves at the intervals when not engaged in their fatiguing and perilous fishing expeditions. Their intemperance consists in the excessive use of

coffee, "kavit." It is not probable that a supply of alcoholic drink would have enabled one of this people, named Caleb, an assistant to the missionary of Lichtensfels, to survive, as he did, an exposure of two days and a night in the open air, while the thermometer was at zero. At night he drew his kajak, or boat, upon the ice, and slept on it in a sitting posture. On his return home, he merely complained of thirst, though he had tasted no food during the whole time of his absence. The narrator of this incident adds that such privations are of common occurrence among these hardy natives. The table-talk of the Greenlanders is often kept up for several hours after dinner, without the incitement of the bottle; the chief theme is a seal-hunt, which, whether we regard the animal or the exciting nature and risk of the chase, is to the full as interesting as a fox-hunt told and talked about by more civilized and Christian men in their cups, or perhaps half-seas over. The noble reindeer, the friend and servant of the Laplander, keeps up its animal heat and muscular strength and activity on very reduced respiratory and nutritive elements, viz., grass in summer and moss in winter. The amphibious walrus contrives to be fat and strong, and to take long sleeps on the ice; and the mighty whale, with all the disadvantage of long and frequent immersion in the cold water, breathes fully and with good effect, and sustains its ponderous body in strength and activity, and its animal heat up to 104° F., on food not particularly abounding in fats or carbohydrates, or mixed with alcohol in any shape. Equally precise and explicit with maritime experience is that derived from the testimony of all those persons who have been engaged in travel or hard work on land, in high latitudes or in the inclement seasons of more temperate climates, and at the same time have been abstinent from intoxicating drinks of any description. What can now be said of the intrusion of chemistry on hygiene in a question affecting the health and morals of all peoples by its teaching that alcohol was a generator of heat in the organism, and so far helped to protect from the operation of cold? It would have been difficult, if not impossible, to offer a more plausible and at the same time a more pernicious persuasive for the inhabitants of cold and temperate latitudes to indulge in the large use of intoxicating drinks, with all its attendant perils, than this chemical speculation of Liebig and his school, which universal experience proves to be utterly without foundation. The subjoined cautionary remarks of the eminent philosophical chemist Lehmann cannot be too strongly impressed on our minds, when our

faith is asked to rest on the deductions of the laboratory in place of observations on man himself: "In our application of chemistry to physiology, we must be especially mindful of the fact that most of the fundamental propositions which at the present time have attained to a general recognition in chemistry by no means possess such a degree of scientific, or rather of logical, exactness as to place them beyond all dispute. We must not forget that chemistry, like medicine and theology, possesses a dogmatism of its own." How much better would it have been for the health and lives of the people if, instead of their being led away by the ingenious speculations of the chemist, they had attended to and acted on the opinion of the experienced and philanthropic Rush, when he said: "There cannot be a greater error than to suppose that spirituous liquors lessen the effects of cold upon the body. On the contrary, I maintain that they always render the body more liable to be affected and injured by cold. The temporary warmth they produce is always succeeded by chilliness."¹ Not drunkards only, but free drinkers of alcoholic liquors, incur the greatest danger of frostbites, and of the loss of life itself, on exposure for any length of time to great cold. Whereas, they who abstain from such liquors can, as we have seen, bear up under the extremest diminution of temperature. Their protecting beverage will be tea or coffee, which Dr. Smith has shown to be true excito-respiratory agents. Mr. Atkinson, an English painter, who travelled from Russia proper through Siberia, amusing himself the while by sketching and hunting, declares that in tea he found the best cordial and dietetic protection against cold and fatigue, whereas spirituous drinks entirely failed to answer these purposes.

Alcohol Powerless against Heat.—Alcohol, which was to protect against cold, was also to perform a wonder-working part in mitigating the effects of heat. Blow cold, blow hot, it was believed to be a ready and reliable friend. Facts innumerable now show that its promise is false in both cases, and that it lures those who confide in it to their destruction. The best authorities on tropical diseases—Drs. Robert Jackson, Henry Marshall, Ronald Martin, Parkes, and many others—speak strongly against the use of spirits. Not only is heat less well borne, but insolation is predisposed to under the influence of this cause. Dr. Jackson, who was at one time at the head of the medical staff in the West Indies, expresses

¹ *Inquiries into the Effects of Spirituous Liquors upon the Human Body, and their Influence upon the Happiness of Society.*

his firm conviction that an English soldier may be rendered capable of going through the severest military duty in the hottest islands of the West Indies, and that temperance will be one of the best means of enabling him to perform his duty with safety and effect. Dr. Jackson, when giving incidents of his own personal experience, specifies more particularly a journey he took on foot in the island of Jamaica, of four days' duration, in the first of which, setting out at twelve o'clock, he walked eighteen miles before dark, and on the three following ones a hundred miles. This was done at a time and in a climate in which the consequence of walking any distance on foot was believed to be dangerous, and to cause sickness if not death. In this journey the traveller attributes his escape to temperance and spare diet. "I breakfasted," he says, "on tea, about ten in the morning, and made a meal of bread and salad after I had taken up my lodging for the night. If I had occasion to drink during the day, water or lemonade was my beverage." Dr. Marshall, inspector of hospitals, in commenting on the narrative and opinions of Dr. Jackson, observes, "I have myself marched on foot with troops on actual service, in a tropical climate, where the mean temperature was considerably higher than that of Jamaica, without any other beverage than water, and occasionally a cup of coffee. So far from being calculated to assist the human body in enduring fatigue, I have always found that the strongest liquors were the most enervating, and this in whatever quantity they were consumed; for the daily use of spirits is an evil which retains its pernicious character through all its gradations; indulged in at all, it can produce nothing better than a diluted or mitigated kind of mischief." Testimony equally strong on this head is borne by Dr. Mosely, also an English army physician, in his volume on the Diseases of Tropical Climates. "I aver," he says, "from my own observation and custom, as well as the custom and observations of other people, that those who drink nothing but water, or make it their principal drink, are but little affected by the climate, and can undergo the greatest fatigue without inconvenience, and are never subject to dangerous or troublesome diseases." Of the like purport is the emphatic language of Dr. Bell, a respectable writer on the Climate and Diseases of the West Indies. "Rum, whether used *habitually, moderately, or in excessive quantities*, in the West Indies, always diminishes the strength of the body, and renders men more susceptible of disease, and unfit for any service in which vigor or activity is required."

If we turn to the recorded experience of medical men who have served in the East Indies, and who have written on the hygiene and diseases of those countries, and especially of India, we shall find it to be equally adverse to the use of alcohol. Dr. Parkes¹ says expressly: "The common notion that some form of alcoholic beverage is necessary in tropical climates is, I firmly believe, a mischievous delusion." The records of the 84th regiment, he tells us, show that from 1842. to 1850 it numbered many "teetotalers," at one time more than 400 in its ranks, and that both on common tropical service and on marches in India, the teetotalers were more healthy, more vigorous, and far better soldiers than those who did not abstain. General Havelock and his "saints," as his religious and temperate men were mockingly called, were always selected by the commander-in-chief, when an expedition requiring great promptness, decision, and boldness was to be carried out. The experience of almost every hunter in India is to the same effect. As regards service and exercise in the tropics, we have the testimony of Ronald Martin that warm tea is the best beverage, and this will be corroborated by every one who has made long marches or hunting excursions in India. Sir John Hall, Inspector-General of the British Army, gives as his own experience, that neither spirits nor wine, nor malt liquor is necessary for health. The healthiest army he ever served with, that in the Kaffir war, at the Cape of Good Hope, had not a single drop of any of them. In Algeria the French soldiers find coffee to be their best cordial and preservative. Alcohol, says M. Périer, is our worst enemy, the real and most cruel wound of Algeria. We believe that the medical and surgical records of the late war will show that in our own country, as it has been shown in tropical regions, that the probabilities of exemption from disease, and the power of enduring the greatest and longest strain on the muscular system, and the entire locomotive apparatus, are in the direct proportion to which abstinence from all intoxicating liquors is carried out.²

Transitions of temperature and the rapid passage from one extreme to another are peculiarly trying to the constitution, and prove a frequent cause of disease. But these trials are better borne by the temperate, that is to say, the abstainers from intoxicating drinks than by the intemperate, or the persons who habitually indulge in

¹ Manual of Practical Hygiene.

² See Dr. Flint's volume for U. S. Commission.

the use of these drinks. General Cass used to say that he never used ardent spirits, and in the variety of atmospherical exposures to which he had been subjected, he had every reason to be pleased with his abstinence. General Howard, with still rougher experience, will bear similar testimony of himself. Professor Edgar, of Belfast, relates the case of a man who had been for thirty years in the British army, and in twenty-seven general engagements, had suffered from every vicissitude of weather, and had, not unfrequently, found his companions dead with cold by his side. He attributes the preservation of his life and of that of five others, who left England at the same time with himself, to his having abstained from strong drink. A gentleman who heard the narrative of this case at a public meeting rose and said: "I feel myself called upon to corroborate the statements which have been made, by detailing the results of my own experience. I served thirteen years in the hottest climates. I have since been exposed to the severest winters of Canada, and to the rapid changes of American climate; I have nine times crossed the Atlantic; and I attribute my sound health, now at fifty years of age, to my having abstained entirely from all intoxicating liquors." Sailors can now encounter extremes and transitions of temperature, from a tropical to an arctic climate, or the reverse, and often associated humidity, and yet preserve their health and alacrity to perform their duty, without a drop of spirituous liquor aboard their vessels. Their commanders know this, and if abstainers themselves, they will select their men accordingly; and insurance offices, fully alive to the fact that there is diminished risk of the loss of a vessel at sea with a temperate crew and a temperate captain, will ask a lower premium than they would under other circumstances. The following incident will serve to enforce the soundness of these views. Some years since a vessel going from Virginia to New York was overtaken by a storm, which raged with great violence, and continued for a long time. All the sailors on board who drank ardent spirits gave up and ceased to labor, under the combined influence of fatigue and despair. There was, however, one man on board who drank no ardent spirit, and although he with the rest had been exposed to the buffetings of the storm, he took the helm, and stood at it for six hours after the others had ceased to make any exertion, and the whole crew were saved. Had it not been for this water drinker it is most probable that both vessel and crew would have been lost long before the storm abated. It has been too truly

said by a distinguished navigator: "The great day of account will bear terrible witness, when the sea shall give up the dead that are in it, of the vast and unsuspected extent of the sacrifice of life among seamen from shipwrecks and other catastrophes occasioned by drunkenness."

In former times, so soon as a vessel was aground and threatened with wreck, or in mid-ocean came in danger of foundering, the crew, in place of redoubling their efforts, under the orders of their officers, to save the vessel, would make their way to the liquor room, and breaking open the vessels containing it, drink themselves into a state of helpless and hopeless drunkenness. At the present time there is less risk of shipwreck, not only on account of a better knowledge of navigation, but also of greater temperance among sailors and their officers; and even when this catastrophe does occur, there is greatly increased probability of the lives of all on board being saved, owing to the captain retaining his coolness and judgment, and the men being sober and ready to obey orders, the seductive poison being no longer at hand. With a bottle of strong alcoholic drink at his elbow, and a belief that he may use it with benefit, no man is sure of his conduct in any critical emergency of his life. He takes a glass in advance, to give him, as he imagines, additional strength and readiness; he takes a second one to make sure of the hoped-for effect, and a third, that there may be no mistake; but at the trial moment he discovers, when too late, that his strength and resolution, and clearness of mental vision are gone.

Your reporter would state a case in point, coming within his own observation, although it dates more than fifty years back—May, 1818. The vessel on which he was aboard, as physician, was approaching the coast of China after a voyage of nearly six months from Leghorn. The captain, an excellent sailor, and equal to all the emergencies of sea life, was pacing the deck, on the lookout for a pilot; and as the air was close and sultry and he thirsty and anxious, he called to the steward to bring him his customary drink, a glass of grog—rum and water. But soon the call was renewed for another glass, and again for a third, and a fourth time were heard the words, "Steward, bring me a glass of grog." Both the doctor and his friend the supercargo became uneasy at this state of things; and the former went up to the captain and in a kindly tone asked him if he was aware how often he had called for grog. The reply came that he was not, and he immediately thanked the doctor for

reminding him of the fact. This captain, like most nautical men in those days, was in the daily habit of drinking ardent spirits, but never to the extent of inebriety. He took his grog with his biscuit and cheese, as a matter of course, every day at noon, after having made his observations, "taking the sun," in order to ascertain the latitude; and he used to repeat the draught at intervals through the day. On the occasion now described he only meant to indulge in a glass or two extra, moved thereto by thirst and anxiety to get safely into Canton, where he had never been before. He had brought his vessel from Philadelphia to the Mediterranean and thence over the Atlantic and Indian Oceans and China Sea, without the loss of a spar or a sail, and he counted on terminating his long voyage successfully in a few hours more, with reputation to himself and profit to his owners. And yet, if a friendly voice had not reached his ear at the critical moment, he would have continued his calls for grog until he had become a helplessly drunken and a disgraced man. After his return home he had charge of a vessel in another voyage, and then he remained on shore, becoming more and more a slave to strong drinks, until he finally sank under an attack of delirium tremens. On relating the above case to a friend, he told of a similar one to which he was himself a witness. On a dark and stormy night the vessel in which he was a passenger was close to the coast of Cuba, and was in imminent danger of being driven on shore, which would have been followed by the loss of life of all the persons on board. The captain, dead to every sense of duty, set in drinking until he was taken completely drunk to his berth, and the vessel was, of necessity, left to the charge of a young and inexperienced mate, who providentially brought her off in safety. On how many occasions in common life ought not the warning voice of the physician against the habitual use of alcoholics be heard. His interposition may not be necessary for the safety of a vessel and her crew, but it will be for the happiness and well-doing of a family when the head of it is imperilling them all by his free use of the deleterious and maddening draught.

In the exposures to extreme heat, as in foundries, glass-blowing establishments, and the like, the men engaged in them are less exhausted by heat and sweating if they drink water than if they use alcoholic liquors; and it has been found that those persons who are exposed to wet and vapor, as hatters, dyers, etc., in their daily work escape most of the diseases which had been regarded

as the unavoidable consequences of these occupations, but which experience now shows are mostly brought on by the use of ardent spirits, or the excessive potations of malt liquors. Whatever is wanting to increase the infirmities caused by long confinement in crowded manufactories and work-rooms is found in the use of distilled and fermented liquors by the operatives in these places. On the other hand, these persons can be placed on as good a sanitary footing as any other class in the community by their getting the benefit of an improved hygiene, which would consist in abstinence from alcoholic liquors, ventilation of the rooms in which they work, and a limited number of hours at their task. Farm labor of every kind, in all seasons, is now carried on to a considerable extent and more satisfactorily by abstinence from intoxicating drinks on the part of all—from the owner of the farm to the stripling who is just beginning to work in the field. The harvest is gathered in more readily and cheerily by all those engaged in it where coffee or chocolate takes the place of whiskey or other equivalent alcoholics. There are fewer cases of cholera morbus, colic, or dysentery among the temperate at this season than among the habitual, not to speak of the excessive drinkers.

Alcohol no Imparter of Bodily Strength or of Mental Vigor.—Of the many fallacies of opinion on the action of alcohol, there is no one so widely spread and generally accredited, and, at the same time, so entirely groundless, as that which assumes its power of increasing the strength of the body either for occasional display or enduring effort. We would say, with Dr. Parkes, that if we look upon the body as an agent of work from which we desire to obtain as much mechanical and mental force as is compatible with health, we can consider the effect of alcohol *per se* as simply a means of diminishing this development of force. This truth has been abundantly demonstrated in our preceding statements of the superior ability to encounter bodily strain in every variety of climate and situation in which men are required to exert their muscular force. In the training of the Roman athletes, as well as of the modern pugilist, we find strict temperance to be an indispensable condition. To the former all sensual enjoyments were prohibited, whether in devotion to Bacchus or to Venus. "*Abstinuit venere et vino*" was, according to Horace, the course pursued by a youth who was desirous of reaching the goal first in the race. Modern trainers are somewhat divided in opinion as to the advantage of allowing a small quantity of wine or of malt liquors; the best trainers do not

give any intoxicating drink. But all are agreed in never permitting the use of ardent spirits on any consideration whatever, even when diluted with water. This is the declared experience of a late successful pedestrian, Weston. Horses in training for the turf and the chase attain their greatest speed and bottom without any alcoholic drenching. Milton, himself an example of the inspirations of genius unclouded by alcohol, has left those oft quoted lines in reference to Samson, in which he exclaims:—

“O madness! to think use of strongest wines
 And strongest drinks our chief support of health,
 When God, with these forbidden, made choice to rear
 His mighty champion, strong above compare,
 Whose drink was only from the liquid brook.”—*Samson Agonistes*.

To make the lesson complete in this case, let us bear in mind the strong injunction of the angel of the Lord, when he appeared unto the wife of Manoah, and promised that she who was now childless, should bear a son, a chosen champion, to deliver Israel out of the hands of the Philistines. “Now, therefore, beware, I pray thee, drink not wine nor strong drink.” And at a subsequent visit, when Manoah besought the heavenly messenger to tell him “how to order the child,” he received for answer: “Of all that I have said to the woman let her beware. She may not eat of anything that cometh out of the vine, nor drink wine nor strong drink.” This reiterated injunction of the angel has not been taken to heart by expectant mothers and their medical advisers in succeeding times; and the more the pity, for although women are not expected, now-a-days, to be the mothers of Samsons, they are all of them desirous of giving birth to healthy children. But, too frequently they allow their wishes in this respect to be counteracted by certain longings of another kind, and they crave a stimulus “to keep them up,” when occasionally depressed and languid; and, too often, physicians are ready to humor them by prescribing a glass of ale or porter, or of wine; or, most convenient of all, the now inevitable milk-punch. To what extent the child *in utero* must suffer from these alcoholic indulgences of the mother, we may have some idea by our knowing the disastrous consequences to the child at the breast from her drinking malt liquors, with the expectation, forsooth, that they will increase her flow of milk. Convulsions and death of the child have followed this false practice.¹ On an important part of the hygiene

¹ Combe, Andrew, on the Management of Infancy. Edited by Dr. Bell.

of pregnancy, we would recommend to pregnant women and their medical advisers a careful reading of the thirteenth chapter of "Judges."

The vulgar error, as we believe it may now be called, that spirit rations to soldiers are necessary to sustain them under long marches and debilitating influences incident to a campaign, would never have been indulged in if ministers of state and leaders of armies had drawn a little on their historical readings. These persons might have learned that the Roman legionaries, conquerors of the world, knew of no other drink, in the earlier days of the republic, than water, with, at times, the addition of a little vinegar. The history of Mohammedan conquests shows that the followers of the "prophet" became masters of the best parts of Asia and Africa and Spain, and at one time threatened to overrun all Europe, without recourse to the stimulus of wine or other alcoholic drinks, all of which are strictly prohibited in the Koran. We have, in a preceding passage of this report, said something of the capabilities of water drinking soldiers at the present day to show their martial prowess and bodily strength. In common life, porters, carmen, and others, who are obliged to lift and carry heavy weights, have in many instances made the agreeable discovery that they have more strength for their work, and feel less exhaustion after it when they became water drinkers than when they used alcohol. "I have backed as many as sixty tons a day with perfect ease," said a London coal whipper, "since I took the pledge. But, before, I could scarcely have been able to crawl home, certain to have lost the next day's work." Alcohol stimulates, it may be, for a short time the nervous system, and through the latter, the muscular, and hence it may serve as a goad to incite to a great temporary exhibition of muscular strength; but this is soon followed by exhaustion proportionate to the previous excitement, and there ensues inability to keep up to the ordinary standard of work. With the water drinker "there is no lassitude, headache, feverishness, foul tongue, or aching limbs next day, even after the hardest labor. All is fresh, and supple, and free; there is no reaction." Alcohol cannot nourish or give strength; it cannot give working power; it can only hurry the expenditure of what we already have; and, besides, it hampers and opposes in getting that store renewed. The attempt at bodily recruitment of a laboring man by his taking a glass of brandy or whiskey is often the beginning of a habit that leads to drunkenness.

If the brain be the organ of the mind, or rather a congeries of organs, the functions of which are displayed in the operations of the mental faculties, we may readily see that there can be no thorough work done by the mind unless its instrument or instruments be in a good condition. The brain is the first in the order of time, and the chiefest, in comparison with other organs, to receive the impressions made by alcohol after its reception into the stomach; and in the increased fulness and congestion of the cerebral vessels and the temporary poisoning of their blood occurs the material cause of the symptoms of inebriety. For the mind to work freely, fully and reliably, and with consistent measure, and to be able to dive into and explore the mysteries of science and philosophy, or to soar on the wings of poetry and song into the blue empyrean, a healthy brain is necessary—a brain not alcoholized, not exposed to alternate excitement and depression, or stimulation and narcosis. Of such a brain, with a capacity for immense labor, was that of Newton, a vegetarian and water drinker, eschewing all alcoholics; of such, also, were the brains of his great successor, La Place, and of Locke, of Milton, Cowper, Wordsworth, etc. Through murky vapors raised by alcohol there may still be found, at intervals, corruscations of genius, snatches of wisdom and critical acumen, but there will be wanting the steady light to illumine the landscape, and to enable the mind to see every object in its true place and proportion. We have, now and then, examples of the brain—in the same person—working during an interval of some length between its healthy and its morbid state—as in the case of Byron, who wrote the two first cantos of “Childe Harold” when a water drinker, and “Don Juan” when a gin drinker and a chewer of tobacco. Mistaken notions of the real character of alcohol have led many students and writers to attempt to spur on their jaded intellects to additional exertion in the still hours of night by their taking alcoholic stimulants, in place of seeking rest and the true means of renovation in sleep. Lord Brougham, a man of wonderfully diversified faculties and power of work, suffered greatly in the latter period of his life from this cause. He was fortunate enough to acquire fame, eminence, and honor for his vast labors in the cause of education, law, and social reform before he became a drunkard. Most men, who attempt the perilous experiment, fall into habits of intemperance before they can accomplish the work that was to give them fame. Nature will not be cheated out of her dues; or, more properly speaking, the natural laws of God, as binding in their way as his

revealed ones, cannot be broken without the defaulter being punished by loss of health and weakening of both mind and body. Alcohol is the lowest and worst means of helping us to evade these laws. Under a show of protection, it robs us of that which no money can replace.

A number of ailments which plague both the idle and luxurious man and the sedentary student, and for the relief of which alcohol is often heedlessly and unwarrantably prescribed, are due, in many cases, to the habitual use of this liquor by the complaining parties. Some of these persons are induced to increase the quantity or change to a stronger drink, and thus innocently become, after a time, victims to inebriety. But, on the other hand, dyspepsia, depression of spirits, disturbed sleep, nervousness, weakness, irritability, headache, capricious appetite, in its being sometimes good, often wanting, rheumatic and neuralgic pains have all been, severally, either quite removed or greatly mitigated by abstinence from alcoholic drinks; and at the same time there was a marked improvement in the general health and strength, and greater ability to exercise both mind and body in the discharge of various duties required. Of the numerous attestations in proof from professional gentlemen and scholars, we present the following. The first is from the Rev. Sydney Smith, one of the founders of the Edinburgh Review, and a frequent contributor to its pages, the racy Englishman and laughing philosopher, who writes thus to his daughter, Lady Holland: "Many thanks for your kind anxiety respecting my health. I not only was never better, but never half so well; indeed I find I have been very ill all my life without knowing it. Let me state some of the good arising from abstaining from all fermented liquors: First, sweet sleep; having never known what sweet sleep was, I sleep like a baby or a plough-boy. If I wake, no needless terrors, no black visions of life, but pleasing hopes and pleasing recollections—Holland House past and to come! If I dream, it is not of lions and tigers, but of Easter dues and tithes. Secondly, I take longer walks, and make greater exertions without fatigue. My understanding is improved, and I comprehend political economy. I see better without wine and spectacles than when I used both. Only one evil comes from it: I am in such extravagant spirits that I must lose blood or look out for some one who will bore or depress me. Pray leave off wine—the stomach is quite at rest, no heart-burn, no pain, no distension." The second relator of his own case is the Rev. Samuel Miller, D. D., of Princeton. For sixteen years

he had followed the advice of his physicians, to take a glass or two glasses of sound wine daily. "During all this time," he writes, "my health was delicate. More than six years ago, when approaching my sixtieth year, I broke off at once. The experiment had not proceeded more than a month before I became satisfied that my abstinence was very strikingly beneficial. My appetite was now more uniform, my digestion much improved, my strength increased, my sleep more comfortable, and *all my mental exercises were more clear, pleasant, and successful.*" Of the same nature is the personal experience of the late eminent Professor Silliman, of Yale College. After several years of failing health, notwithstanding the use of the most approved stimulants and the most nutritious and varied diet, he was induced to abandon the use of wine and every alcoholic stimulus, and to substitute a plain diet composed chiefly of vegetables and milk, with very little flesh meat. The result was, at the end of a year an ability to resume all his arduous duties with constant exertion of both body and mind. Dr. Cheyne, Physician-General to the Army in Ireland, an eminent practitioner in Dublin, and a strenuous advocate of temperance and temperance societies, gives the following case in his second letter, written more than thirty years ago, on the effects of wine and spirits. "Nearly three months ago, a gentleman far advanced in years, came to Dublin to obtain relief from a painful affection of the biliary ducts, under which he had been suffering for nearly a year. He considered himself to be temperate in wine, of which, I believe, he seldom exceeded a pint after dinner. Before he left the country he was ordered to take not more than three or four glasses of wine in the course of the day. This gentleman came under my care, and shortly after had an attack of the palsy, one side of his body becoming nearly insensible and powerless. I took the opportunity of withdrawing from him every description of fermented liquor, limiting him to aqueous drinks. Under this regimen, to which, being a man of strong resolution, he cheerfully submitted, in four or five weeks, he nearly recovered the use of his paralyzed limbs, and, what was not to be expected at his advanced age, he recovered flesh."

Immediate Abstinence from Alcohol Safe.—Another cruel and pernicious fallacy in relation to the disuse of alcohol is, that this ought to be gradual, and that there is danger from a sudden cessation in drinking intoxicating liquors, especially in cases of confirmed drunkenness. Acting on this fear, the advice often given to the

unfortunate victim of intemperance is, that he should leave off gradually, by diminishing the quantity of liquor from day to day; but, unfortunately, the reform is so slow, and so interfered with by fresh temptations, as often never to be completed, and there is continual risk of the inebriate, with his system still poisoned by alcohol, and his strongly acquired vicious appetite, falling back on his old usages, if not running into some wild excess. The anticipated danger from an immediate withdrawal of every kind of intoxicating liquor is utterly groundless, as we know now by a large array of facts bearing directly on the question. The most besotted drunkards, on being sent to prison and deprived at once of their alcoholic drinks, for the most part distilled spirits, have not suffered in their health in consequence; but, on the contrary, their health and appearance have been much improved. For a few days they are uneasy and indifferent to persons and things around them, and their appetite is poor; but, after this, they eat heartily and gain in the manner just mentioned. How much easier must it be in ordinary life for the sufferer, who is in his own house, and can pursue a suitable regimen, and take air and moderate exercise, to make, at once, the desired change in his drinking habits. Most of the paupers sent to our county almshouses have been reduced to indigence by intemperance. Many are admitted with worn-out constitutions, bloated bodies, swollen limbs, and other disgusting effects of drunkenness—there appears to be but one step between them and the grave; but yet, although deprived from the moment of their admission of all intoxicating drinks, they soon rally and their bodies seem to be quite renovated under this new and improved regimen. Webb, the noted pedestrian, who was remarkable for vigor of body and mind, used water alone for his drink. He was recommending, one day, his regimen to a friend, and urged him with great earnestness to quit a course of living, by which his health and his intellect would be equally destroyed. The gentleman appeared convinced, and told him that he would conform to his counsel, but thought he could not change his course of life at once, and he would leave strong liquors by degrees. "By degrees!" said Webb, with indignation; "if you should fall in the fire, would you tell your servant to pull you out by degrees?"

Social Pleasures marred by Alcohol.—The social principle is said to be more genial and expansive under the exhilarating operation of alcohol; but under this incentive the line of true exhilaration is soon reached and easily passed, and the excitement is apt to abate

with the first feelings and pledges of good fellowship and mutual regard, and soon be lost in a confused perception of what is really going on. Self-control is weakened, and mistrusts and jealousies, which had been long dormant, are revived, and show themselves in a tone of petulance at first, and then of anger, increasing with every round of the bottle, until men who, at the beginning of the symposium had grasped each other's hand with cordiality and smiles, find themselves, at its end, indulging in bitter interjections of dislike and hatred, and ready to engage in bodily strife, to the extent of the shedding of blood and the taking of life itself. No such doubtful and treacherous help as alcohol is required to increase the activity of the social principle; it expands under other and safer and more abiding influences, and if exhilarating beverages are required, they will be found in tea and coffee. On this point your reporter can speak from personal experience. He was associated with seven of his medical brethren in a club which used to meet, once a week, at the house of one of its members in succession. It was agreed, in advance, that there should be no other beverage, after water, than tea and coffee; and no other solid than a few slices of bread and butter and light cakes. The meetings were continued for more than thirty years, and the members of the club, and the few friends invited to join them, could all bear the same testimony to the pleasant, genial spirit, the ready joke and repartee and laugh, intermingled sometimes with occasional remarks on the topics of the day, which abounded on those occasions. There was sure to be the cordial bidding good night, and on the following morning exemption from headaches, and all unpleasant feelings and reminiscences.

Holidays intended, and wisely too, for recreation and pleasure, and for allowing opportunities for relaxation from work, and for social enjoyment, are too often commemorative of scenes of disorder and turmoil, under the mischievous belief that alcoholic liquors must be drunk at such times with more than usual freedom, as a means of increasing the pleasures of the day. Physicians are apprised, on the following morning, by an addition to their sick list, of the nature of the rejoicings of many deluded persons, for which they are thus doing penance. Magistrates are called upon to rebuke and punish infractors of the peace, "marrers of the general joy;" men who would have conducted themselves as quiet and well-behaved citizens, but for their having poisoned their brains by alcoholic drinking.

It is to be feared that in many parts of this country the same language might be held as that used by the Rev. Augustus Wm. Hare, Rector of Alton Barnes, England, in one of a series of practical sermons addressed to a plain country congregation: "I verily believe," said this good man, "that there is more drunkenness, more rioting, more wickedness of all kinds going on at these three holy seasons of Christmas, Easter, and Whitsuntide, than on any other three weeks of the year." Our great national holiday of the fourth of July is probably the most abused, we might say, desecrated of all. Now, with a knowledge of these facts, ought those persons to be considered as ascetics and opposed to the people and especially to the youth of our country enjoying themselves on all anniversaries and festive occasions, if they were to recommend entire abstinence from all intoxicating drink by the parties participating in these rejoicings? Would not the sleep after a day thus spent be more sound and refreshing, and the waking in the morning more cheerful, and bring with it more alacrity to resume regular labor or business, than if alcohol had been freely used?

ETIOLOGY.

Alcohol as a Cause of Disease.—With a knowledge of the long list of diseases caused or aggravated beyond recovery by the use of alcohol as a drink, it must seem a mockery to call it a food or a substitute for food. Excuses are made for alcohol by our being told that any article of ordinary food may, if eaten in excess, be a cause of sickness, and that it is not more logical to condemn alcohol for its deleterious effects when taken in excess than it would be to forbid the use of mutton-chop or beef-steak, because men have gorged themselves with these meats and died in consequence. But there is no analogy in the two cases. Meat is a highly nutritive food; it furnishes large material for making blood; and is in no sense a poison. Alcohol is not a nutritive food, it contributes nothing towards the formation of blood, and is in its nature always a poison. If a person commits an excess in eating meat, and suffers in consequence, he will be more cautious for the future, and eat less, but still know all the while that he is increasing his tissues and gaining material to keep up his health and strength. A drinker of alcohol is seldom admonished by his excesses, but continues on in increasing quantity, or even if he lessens this he is

still alcoholized, still primed for an explosion of disease. Gluttony is a vice, but its being indulged in by one man furnishes no excuse or apology for another man becoming a drunkard. Relief is sometimes sought by the glutton in alcohol to relieve his overloaded stomach or to quicken a palled appetite, but the result is disastrous. "A glutton," says Darwin, "may be crammed up to the throat, and fed like a stalled ox, but he will not be diseased, unless he adds spirits or fermented liquor to his food. This is well known in the distilleries, where the swine, which are fattened by the spirituous sediments of barrels, acquire diseased livers." The tendency of the general use of animal flesh is to keep up the health and augment the bodily strength of the individual, and to increase population. The tendency of the general use of alcohol is to impair health and bodily vigor, and to diminish population.

Whatever causes tend to impoverish and demoralize a people, contribute, at the same time in so doing, towards diminishing the public health and increasing disease. On this account, statistical returns, which would seem, at first sight, only to interest governments and political economists, have real importance in the eyes of medical men. What a startling announcement is that made in our daily papers, viz., that the sales of retail liquor-dealers in the United States during one year amounted, according to the report of Commissioner Wells, to \$1,483,491,865! Of this sum, New York is credited with \$246,617,520; Pennsylvania, \$152,603,495; Ohio, \$151,734,875; and Illinois, \$119,033,945. When to this enormous amount of nearly fifteen hundred millions of dollars is added the value of the time wasted in the consumption of ardent spirits, and of the property destroyed by intoxicated persons, we can readily credit the assertion that the savings, from the disuse of alcoholic drinks, would extinguish the public debt in one year. Another estimate, at reduced figures, is that the people of the United States expend enough annually for liquor to more than half pay the debt. Even if we assume this last estimate to be correct, what a fearful interference is caused by alcohol with national economy and progress! But, on the ground of humanity, the most important items have been left out, viz., the diseases caused by drinking alcohol, and the loss of time on the part of those laid up from this cause. It is estimated that in Great Britain the annual consumption of intoxicating liquors is 1,025,000,000 gallons, upon which there is a tax of \$120,000,000 a year to the country. During the five years ending September, 1867, there were

nearly 1,000,000 cases of assaults and drunken and disorderly conduct summarily disposed of before the magistrates in England. The annual average of these cases was 193,640. Again, the total value of intoxicating liquors consumed by the people of Great Britain in 1865 was \$443,098,380. This sum exceeds by many millions the gross expenditures of the United Kingdom in 1865. A recent calculation shows that on a Saturday evening in London there is one intoxicated person for every eight persons who are sober. In Scotland, the people who pay taxes for the support of the poor have had a reminder of the increase of intemperance in that country in the fact that within thirty years the cost of pauperism has increased from \$950,000 to \$4,250,000. The prolific cause is intemperance. We might multiply statements of this nature, such as all civilized countries, more particularly those of Northern and Middle Europe, and the United States—every city, town, and county in the latter—would furnish. The same melancholy story is told in all of them—poverty, insanity, and crime to the individuals; enormous expenditure, nearly all of it preventable, by the government.

Alcohol Shortens Life.—The first charge under the present head which we bring against alcohol is that its use shortens life. It appears from the tables of Mr. Neison, Actuary of the Medical Invalid and General Life Insurance Company of London, that, on an average of the different periods of life from 15 to 90, there are 32 deaths of the intemperate to every 10 of other persons. Thus, between the ages of 15 and 20, of the intemperate 18 and of others 10 persons die; between 20 and 30, of intemperate 51, of others 10; between 30 and 40, of intemperate 42, and 10 of others; between 40 and 50, of intemperate 41 to 10 of temperate; between 50 and 60, of intemperate 29 to 10 of others; between 60 and 70, of intemperate 19 to 10; between 70 and 80, of intemperate 20 to 10. These estimates do not include moderate drinkers, but those only who were "decidedly addicted to drinking habits." The total also of other deaths is taken from the whole population; so that, in fact, the disparity is greater than it appears. If we look at the rates of mortality from the points of view of equation of life, we find that at the age of 20 the general population had an equal chance of living 44 years, while the intemperate have the chance of living but 15½ years. In other words, they have but 35 per cent. of the chances of living. We learn from another source that the annual mortality in the Temperance Provident Society of

London, during seven years, averaged only 4 in 1000. In agricultural laborers in the prime of life, the more highly favored of the working classes, it is 8 per 1000. Among healthy persons generally it is 10 per 1000. Among clerks, at the same age, it is no less than 22 per 1000. "The Teetotal Society" in Preston, England, presented some years ago, as we learn from the report of the Rev. Mr. Clay, not merely the smallest proportion of sick, but it also suffered the shortest average duration of sickness. We meet every now and then, however, with instances of longevity among notorious drunkards, whose constitutions seem to be proof against alcohol-poisoning, as some of the peasants of Styria are against the regular use of large doses of arsenic. These old drunkards have been aptly called "the devil's decoys," as encouraging younger persons with less tenacity of life to imitate them; but they are exceptional, and do not help the average which is against the intemperate as a class. Dr. Cheyne affirms that, "should ten young men at twenty-one years of age use but one glass [of ardent spirits] of two ounces a day, and *never increase the quantity*, nine out of ten would shorten life more than ten years."

Organic Lesions caused by Alcohol.—The same causes which shorten life by weakening the springs of action predispose the intemperate to the attacks of disease, especially of an epidemic or malignant character, whether it be influenza, cholera, yellow fever, or smallpox. This predisposition shows itself also in a readiness to contract almost any other disease, especially where there exists an hereditary tendency to their occurrence, as in gout, epilepsy, insanity, and consumption. The special brain disease of drunkards, *delirium tremens*, is often brought on by a debauch or very slight increase of alcoholic drinking, and also by some special irritation of the nervous system, as by a fractured limb, etc. The cumulative effects of prolonged imbibition of alcohol have been clearly proved by the experiments of Dr. Ogston.

Alcohol acts on the *stomach* by causing a chronic catarrhal condition, increase of connective tissue between the glands, degeneration of their contents, and more or less atrophy or disappearance of the parts. Taking another view, when spirituous liquors are introduced into the stomach, they tend to coagulate, in the first instance, all albuminous articles of food or fluids with which they are brought in contact; as an irritant, they stimulate the glandular secretions from the mucous membrane, and ultimately cause permanent congestion of the vessels and spurious melancholic deposits.

The coagulation of food by alcohol is very different from that produced by gastric fluids, and tends to render it more difficult of solution by the gastric juice or by pepsin. Chronic vomiting acknowledges alcohol as one of its causes. On its first entering into the circulation after absorption by the stomach, alcohol finds its way through the vessels of the portal system and permeates all the tissues of the liver. But the nervous centres are the greatest sufferers; the morbid changes within the skull amounting to 92 per cent. of those examined, as we learn from Dr. Ogston, who made an autopsy of 117 drunkards. The prolonged action of alcoholic poison on the brain produces induration of the cerebral and cerebellar substances in by far the larger number of cases, coincident with an increased amount of subarachnoid serum, while the steatomatous degeneration of the small arteries leads to atrophy of the convolutions and œdema of the brain. Dr. Aitken¹ tells of the case of a person who for many years had been in the habit of drinking daily a large quantity of brandy. He died of typhoid asthenia, with characteristic degeneration of nearly every important organ of the body and of the bloodvessels. The fluid collected from the cavities of the brain, consisting of the serum and some blood, contained 2.6 per cent. by volume and 2.1 per cent. of alcohol. Dr. Samuel Lewis, of Philadelphia, when house-surgeon in the hospital at Edinburgh, made a careful autopsy of a man who had been a vagrant, and habitually indulged in strong drinks. Dr. L., following the process laid down by Ogston, detected alcohol in the brain. Dr. R. D. Mussey, in his brief report to the Association, on the "Effects of Alcoholic Liquor in Health and Disease" (Vol. III. of *Transactions*), quotes Dr. J. C. Hanson, who bled a man that had been drinking for three or four days, and who detected in the blood thus drawn alcohol in the form of a halitus which burned for thirty seconds with a blue flame, on the application of a lighted taper. Ogston found alcohol in the brain of sufficient strength to burn upon a light being applied.

The changes in the respiratory organs succeed in frequency those of the nervous centres, being in the proportion of 63.24 per cent. As already stated, alcohol ingested in any quantity, however small, lessens the amount of carbonic acid in the air of respiration; habitually taken in larger quantities, it alters the molecular constitution of the lungs, as chronic bronchitis and lobar emphysema

¹ Science and Practice of Medicine, Medical Examiner, vol. i.

are certainly more common in those who take much alcohol. Dr. Craigie says that all the spirit-drinkers whom he has ever seen have been either subject to chronic cough or have labored under chronic bronchial disorder with asthma. Alcohol acts on the *liver* by producing enlargement of the organ and an albuminoid and fatty deposit, or it causes at once increase of connective tissue, with *cirrhosis*, or the waxy liver of French, the hob-nailed liver of English writers, by both of whom it has been carefully described, and attributed to the same cause. Finally, there is contraction of Glisson's capsule, and atrophy of the portal canals and cells, by the pressure of shrinking exudation. The fatty liver is often met with in persons who lead an indolent life and are at the same time gross feeders, "eating largely of fatty substances, and drinking freely of spirits, but more especially of porter and other heavy malt liquors." If, says Dr. Bence Jones, the different organs and textures of the body were arranged in a series according to the different amount of fat-producing or fat-depositing action that takes place in each, the liver would occupy the highest place and the lungs the lowest. It must be remembered, however, that the waxy, sometimes confounded with the fatty liver, is common in phthisis, and is seen in cases of great constitutional disturbance and exhaustion connected with cancerous ulceration and abundant suppuration. The liver in a state of fatty degeneration would seem to grow at the expense of the fat of the body, as is the case in the geese which are largely fed, deprived of exercise, kept in a dark place, and so treated that the only growing organ is their large liver, which goes to make the celebrated *patés de foie gras*. Chemical theory might suggest, *à priori*, that alcohol in the hepatic vessels would be decomposed and its carbon be eliminated in the bile, of which this element forms so large a part; but experiment and observation teach the very reverse, and that, so far from there being an increased quantity of bile, and consequently of carbon, discharged from the liver of alcoholic drinkers, this secretion is diminished. The morbid changes in the liver amounted to 56.4 per cent. The *heart*, under the free and habitual use of alcohol, becomes altered in its molecular constitution, and there is not only a tendency to the deposit of fat on its external surface, but it undergoes a real fatty degeneration in its substance by the deposit of fat in the interstices of its muscular fibres, and displacement and diminution of these latter. This organ also undergoes hypertrophy, dilatation, pericardial adhesion or thickening, and valvular disease.

Its percentage, including the aorta and pulmonary artery, was 47.86. The kidneys, under alcoholic influence, fail to eliminate the usual quantity of urea and of water; the amount of phosphates is diminished, and of the sulphates increased. They are altered by hypertrophy, congestion, and fatty degeneration in the proportion of 41 per cent. Setting aside tea and coffee, our stimulants are, writes Dr. Bence Jones, essentially alcoholic, and it is the long-continued strong chemical action of alcohol on oxygen and on the different textures of the temperature of ninety-eight degrees that gives rise so frequently to that increased motion and increased thickening, followed by contraction and suboxidation, which constitutes cirrhosis of the liver and kidney. "The increased oxidation, the increased flow of blood, the altered nutrition, are identical in kind with the first actions of inflammation; and when the series of actions are repeated over and over again for years, the result is the same as might have been produced in a shorter time by an ordinary inflammation, when no alcohol whatever had been taken." No doubt the alcohol acts on the vessels and ducts of the kidney, but not so powerfully as on the interstitial texture, the change in which, thus produced, gives "interstitial nephritis." The insidious progress of disease from alcohol, and the apparent impunity with which in some cases it is taken into the system, are indicated in the preceding extract, and ought to give warning, not so much against the coming danger, as against any exposure to it at all. The writer just quoted says: "With regard to treatment, medicine avails little for stopping the effect of alcohol poison, or for removing the thickening of the interstitial structure. No appreciable alteration of structure occurs *until the alcohol has acted for months*; but as each day produces its infinitesimal effect, some good may be done by recognizing the disease early, and by stopping, as far as possible, the further action of the poison. Usually the second nature cannot be changed, and the treatment consists then only in alleviating symptoms and in warding off complications as they arise." Dr. Jones describes interstitial nephritis in connection with or as a complication of Bright's disease. A correct diagnosis and knowledge of cause are the more important, as, of all the symptoms, general debility is the one which most frequently presents itself, and for the relief of which there would be a strong temptation to have recourse to alcoholic drinks, either distilled or fermented. Christison has been already quoted in this report, as stating that three-fourths of all the cases of Bright's disease which he saw were

produced by the habitual abuse of alcoholic drinks. Dropsy is a common attendant on organic lesions of the heart, liver, or kidneys, and is for the most part to be regarded as symptomatic of disease of one or other of these organs. Albuminuria affords a ready example of this connection in the case of the kidneys. Ascites, as resulting from fatty degeneration of the liver, is thus explained by Dr. Chambers: "The constant presence of alcohol in the blood obstructs the necessary renewal of the fibrous capsule of the liver; contraction of the degenerated tissue ensues, the portal blood cannot pass through the viscus, to get rid of its effete particles or to bear the nutriment to the general circulation; the natural halitus of the peritoneal sac cannot be reabsorbed, and therefore accumulates, to form an ascitic (or, as the Greek word means, an 'ensacked') collection of serum. With this fluid is mixed, also, the albuminous serum and fibrous serum which exudes from the obstructed capillaries, and often these capillaries rupture, and blood-corpuscles are found in the dropsical fluid."

In the *bloodvessels*, alcohol causes general turgescence, and especially of the skin, and ready tendency to congestion. The amount of fat is increased in the blood, or it is more visible, under alcoholic drinking. Fat increases in the blood in most acute diseases when the biliary secretion is retarded, and when a scanty amount of food is taken. These are the very conditions which obtain in alcoholism. Oil is found in the blood and urine, and a milky appearance is imparted to the serum of the blood of drunkards. The white and fatty blood of Frank originates in the use of alcoholic drinks. An analysis of the blood of two patients with *delirium tremens*, made by Mr. W. J. Cox (*Sanit. Rev.*), showed that this fluid was in both instances attenuated and deficient in plastic material; and contained a great excess, or from six to eight times more than common, of fatty matters. Lecanu found in one case of a sot the still higher proportion of one hundred and seventeen parts in a thousand. The blood, in addition to the fatty matter which it holds, is also surcharged with unchanged and unused or unmetamorphosed material, and contains about thirty per cent. more of carbon than in the normal state. How poorly is this nutrimental fluid enabled, under these circumstances, to supply the tissues; or if anything is sent, it is fatty or oily matter with which the organs become infiltrated. Impaired health must soon follow by the retention of carbon and urea, oxalic acid, etc.; a retention, be it remembered, of substances which ought to be eliminated. So long as alcohol remains

in the blood as alcohol, a certain toxic or poisonous effect continues to be produced upon the nervous system through which this corrupt blood circulates; and if a constant supply of the alcohol is kept up, the phenomena of alcoholism, chronic or persistent, and acute paroxysms generally, in the form of *delirium tremens*, supervene, which is at once the most common and the most prominent evidence of *alcoholism*. In other instances, the degeneration of several vital organs may become so excessive that death follows by asthenia, or by typhoid phenomena ending in coma. Congestion in the mucous membranes of the lungs and stomach is evidence of retarded motion of the blood. Hæmorrhoidal swellings are always aggravated by the use of alcoholic fluids.¹ Among the morbid effects of alcohol on the liver should have been mentioned the formation of sugar, or rather of glucose, the material out of which sugar is generated in this organ. This process may go on to the extent of producing diabetes mellitus.

Dr. Rush, in his tract so often quoted by us (*Inquiries, etc.*), enumerates the following diseases as the result of the drinking of spirituous liquors, viz: 1. A sickness of the stomach and vomiting in the morning; 2. A universal dropsy; 3. Obstructions of the liver; 4. Madness; 5. Palsy; and 6. Apoplexy. Alcohol is an occasional cause of chronic vomiting. One woman had acquired the habit of dram drinking only the preceding year, while staying with some friends in Scotland at their shooling, where a nip of whiskey was the regular preparation for breakfast. The words of lament of Dr. Chambers which follow, have unhappily an equally strong application to many of our medical friends in the U. States: "But dram drinking is by no means confined to uneducated persons; those whose 'talk is of bullocks,' or to idle women. I am ashamed to say that I have been consulted about its consequences by several members of our profession who ought to know better and set a better example. *Quis custodet ipsos custodiet.*" To these should be added, as the effects of alcoholics in general, albuminuria, rheumatism, gout, epilepsy, and certain skin diseases. Intemperance is the most usual predisposing cause of albuminuria or Bright's disease, as exposure to cold or to cold and moisture, is the most commonly exciting one. Dr. Bright remarks: "Where intemperance has laid the foundation, the mischief will generally be so deeply rooted before the discovery is made, that even could we remove

¹ Aitken, *op. cit.*

the exciting cause, little could be hoped from remedies; but at the same time, a more impressive warning against the intemperate use of ardent spirits cannot be derived from any other form of disease with which we are acquainted; since, most assuredly, by no other remedy do so many individuals fall victims to the vice." The words of warning do not carry with them the needed force here, as they are directed against what the writer calls "the intemperate use of ardent spirits," instead of saying the use or habitual use; for one may very pertinently ask, what is the line between the temperate and intemperate use? Every drunkard begins with the temperate use of alcohol, and in doing so puts himself on the road to intemperance, with all its consequences. A man may, as we have previously shown, destroy his health, and become the victim of incurable disease, by continued small drinking of alcoholic liquors, without his ever having been drunk or subjected himself to the imputation of intemperance. What plea of necessity, what promise of pleasure are there, to make a man encounter such alarming dangers and positive sufferings? He begins to drink alcohol moderately, temperately, as he believes, and without meaning it drinks, for a longer or shorter time, immoderately and intemperately, and he gets an incurable disease of the liver or kidney, and dropsy and all kinds of complicated disorders, which end in death. Was this sacrifice of self made for the sake of advancement in the world, the acquisition of wealth and honors, the benefit of his family, his friends, or his country? Would he, in fine, be less of a free agent under a pledge of total abstinence, than under the dominion of an invincible habit?

Diseases caused by Fermented Liquors.—Under the head of "Hygiene," some observations were made on wine drinking as a cause of disease. Distinctions have been attempted to be drawn between different kinds of liquors, in regard to their effects on the human organism, and it is quite common to find writers and consumers who, for instance, are ready enough to give up to reprobation the use of ardent spirits, while, at the same time, they insist most strongly on the blamelessness and often salutary effects of fermented liquors—wine, beer, and cider. We have touched on this point when speaking of the different kinds of intoxicating drinks under the head of hygiene. Examined in its relation to disease, the distinction will not hold. Alcohol may be variously disguised, but in all its forms and combinations it is still alcohol, with its constant property of producing intoxication and other disorders of body and mind. If

the diseases from excess in wine drinking be less violent and acute than those from ardent spirits, they are in greater number and more complicated from the first than from the latter cause. The drinker of ardent spirit, if he survive the first shock given to his constitution, may sometimes, though rarely, attain old age, and in the tolerable enjoyment of his faculties. The tippler in wine subjects himself to such a complication of diseases that he sinks earlier under them. If he survive for any long term of years, his life can only be called a long disease—showing itself at different times as gout, rheumatism, cerebral disorders, gravel, and painful eruptions and boils on the skin. The lovers of the bottle, says Beddoes, flatter themselves that care in selecting wines will exempt them from evils which they cannot dissemble from themselves wine produces. But the distinction, he is afraid, rests upon a difference little in point as to health. "It is the result of common observation," he continues to remark, "confirmed by unvarying medical experience, that among country gentlemen, citizens, the frequenters of the common and combination room, the associates of the mess, the farmer, the merchant's clerks, and the artisans that crowd the smokeshops in places like Birmingham, a large proportion injure their digestive organs, whatever may be the purity or adulteration of liquors, provided they be of the same strength, and taken with nearly equal freedom." The following case is full of instruction, as showing the promptness with which remote parts will sometimes respond to disturbance in the stomach, produced by a fermented liquor. It is related by Mr. Crampton, Surgeon-General of Ireland, and published in the *Dublin Hospital Reports*: A gentleman of a fair complexion and rather delicate frame, who labored under a severe pain of a periodic nature, which depended upon an inflammation of the periosteum of the right tibia, noticed a circumstance with respect to the influence of fermented liquors in this affection, which, says Mr. Crampton, appears to be of considerable importance, as illustrative of the effects of even very small quantities of alcohol in diseases of an inflammatory nature. The patient observed, at first, that the pain invariably recurred within an hour after dinner, at whatever hour he might have taken that meal, and whether the food had been animal or vegetable. Suspecting that this might be connected with the nature of the liquid, rather than the solid matter which he took into his stomach, he left off fermented liquors. On the first day after he made the change, the pain did not return till he had been an hour in bed; and this led him to institute a

number of experiments upon the influence of the different kinds of fermented liquors in different quantities. The result was that the pain could, with certainty, be excited within an hour by drinking a glass of any kind of fermented liquor, however weak; and a single drachm, by measure, of port wine, diluted with four ounces of water, acted with equal energy as a glass of undiluted wine. Sir Anthony Carlisle tells of a gentleman of a gouty habit who, before he had done drinking his claret at dinner, felt twinges of pain in the great toe of one of his feet. Dr. Cheyne remarks, as a commentary on Mr. Crampton's case, that "in a numerous class of protracted disorders, hence called chronic, in which some viscus continues long in a state of inflammation, before it is disorganized, a very small portion of alcohol will often feed the inflammation, and hence, in such diseases, the most important part of regimen, as will be acknowledged by every physician of experience, consists in an entire disuse of distilled or fermented liquors."

It is a common if not a professional opinion that the *gout* is as frequently owing to gluttony in eating as to intemperance in drinking fermented or spirituous liquors. To this Dr. Darwin replies, that he has seen no person afflicted with gout who has not drunk freely of fermented liquor, as wine and water, or small beer. Dr. Wood, in the like sentiment, makes the remark that the abuse of wines and malt liquors is more apt to cause gout than that of ardent spirits.¹ In a person with the gouty diathesis, one may fear that any use of those liquors is an abuse, inasmuch as he will be in danger of an attack by taking the smallest quantity of them. And then again, whoever should put himself on a prophylactic regimen, to prevent the recurrence of gout, could scarcely include in this fermented liquors, any more than condiments and rich sauces. Dr. Garod, in his valuable work on Gout and Rheumatic Gout, tells us very explicitly: "There is no truth better established than that the use of fermented liquors is the most powerful of all the predisposing causes of gout; nay, so potent that it may be a question whether the malady would ever have been known to mankind, had such beverages not been indulged in. Distilled spirits, taken exclusively, appear to exert little or no power in inducing gout, whereas with wines, strong ales, and porter, the reverse holds good." The author takes care, however, not to be misunderstood on this point, for he says, it must not for a minute be supposed that spirits

¹ Therapeutics and Pharmacology, vol. i. p. 645.

are less pernicious to the system than wine. On the contrary, the occurrence of granular kidney and dropsy is exceedingly common among populations where large amounts of distilled spirits are imbibed. Van Swieten says that gout was little known in Holland until wine was introduced as a substitute for beer. Linnæus was inclined to regard wine as almost the sole producer of gout, seeing that the Laplanders partook plentifully of malt liquors without so much as dreaming of such a disease. But this exemption from gout when drinking malt liquors is enjoyed by those only who use the weaker kinds. The effects of large draughts, daily, of strong porter are well shown by Dr. William Budd, in his account of the great indulgences in this way of a body of men employed to raise ballast from the bottom of the Thames, and who are under much exposure to inclemency of weather; their occupation requires great bodily exertion, occasioning profuse sweating and much exhaustion. Their allowance of liquor is very large; each man drinks from two to three gallons of porter daily, and generally a considerable quantity besides. Although not a numerous body, many of these ballasters are yearly admitted to the Seaman's Hospital Ship, affected with gout. The fact is otherwise interesting, as it seems to show that no amount of bodily exertion is adequate to counteract the influence of such large doses of porter. Dr. Garod's own experience of the relative power of alcoholic liquors in inducing gout is, that port, sherry, and other stronger varieties are the most potent in their operation. The lighter wines, as claret, hock, moselle, and even champagne, although capable of acting as the exciting cause of an attack in gouty subjects, have, when taken in moderation, but comparatively little inducing power, and probably in this respect rank with the weaker kinds of malt liquors. The exemption, in a good measure, of the wine drinking population of France and Rhenish Germany is due not only to their using weaker vinous liquors, but, also, to their simple living in other respects, and the relatively small amount of animal food which they consume. The same explanation will apply to the agricultural population of England in their use of the weaker kinds of malt liquors. In some of the large cities of France and Germany, gout is common; there the finer qualities of wine are taken, together with larger quantities of animal food. Stout and porter were found by Dr. Garod to rank next to wine in predisposing to gout, as is seen in the cases of the men connected with the great London breweries, and who not unfrequently drink an

almost fabulous quantity of malt liquors. In Bavaria and Berlin, where a large amount of beer is taken, gout also prevails. Cider and similar beverages will also act to some extent in predisposing to attacks of gout. Certain wines, such as champagne, even to the amount of only a single glass, are among the most common *exciting* causes of gout. Beer and cider sometimes act in the same way. Gouty pains in the limbs have been felt before leaving the dinner table, from partaking of champagne wine.

In the last century, when wine was proportionately more used, and at the same time more pure in England than it is at the present day, all the diseases attributed to strong drinks were freely referred to this liquor as a cause, and surnames were given to those who drank much of a particular kind, as we find in Sir John Floyer's work on the Cold Bath, in which he speaks of the (diseased) livers of most *Clareteers*. The witty author of *Hudibras*, in the century preceding, in his satire on drunkenness, speaks throughout of wine as the aliment to this vice. He concludes in the following quaint but expressive lines:—

“ So Noah, when he anchored safe on
The mountain's top, his lofty haven,
And all the passengers he bore,
Were on the new world set ashore,
He made it next his chief design
To plant and propagate a *vine*,
Which since has overwhelm'd and drown'd
Far greater numbers on dry ground
Of wretched mankind, one by one,
Than all the Flood before had done.”

Nowhere can be found more emphatic warning against indulgence in wine than in the “Proverbs” of Solomon, the wisest of men. Who, he asks (chapter xxiii. 29, 30), hath woe, sorrow, contentions, babbling, wounds without cause, redness of the eyes? “They that tarry long at the wine; they that go to seek mixed wine.” How admirably does he describe in a few words (in verses 32, 33, 34, and 35) the virulent poisoning, the imaginary company, the foolish utterances, bewilderment, insensibility, and stupor of drunkenness. The wise Preacher, himself a king, enjoins total abstinence on kings and princes. “It is not for kings, O Lemuel, it is not for kings to drink wine, nor for princes strong drink.”—Chap. xxxi. 4.

In some of the returns of the causes of the disease in French asylums for the insane, we read, as already stated, “abuse of wine,”

and in others, "abuse of strong liquors." Both men and women were the sufferers. When Juvenal lashed with all the severity of satire the drunkards and gluttons of his day,* he knew of no other intoxicating drink than the fermented juice of the grape, wines variously combined and spiced, as when he speaks of

"Hot, heavy lees, to fire the wretched guests,
And turn them all to Corybants or beasts."

It was this liquor which gave rise to the scene that he describes when he says:—

"At first with sneers and sarcasms you engage,
Then deal round mutual wounds with mutual rage."

McNish¹ speaks in very decided language of the deleterious effects of malt liquors. Those addicted to their use increase enormously in bulk. They become loaded with fat; their chin gets double or triple, the eye is prominent, and the whole face bloated and stupid. Their circulation is clogged; their pulse feels like a cord and is full and laboring, but not quick. During sleep the breathing is stertorous. Everything indicates an excess of blood, and when a pound or two is taken away, immense relief is obtained. The blood in such cases is more dark and sizzly than in others. In seven cases out of ten, malt liquor drunkards die of apoplexy or palsy. If they escape this hazard, swelled liver or dropsy carries them off. The abdomen seldom loses its prominence, but the lower extremities get ultimately emaciated. Profuse bleedings frequently ensue from the nose, and save life by depleting the bloodvessels of the brain. This picture is deeply shaded, but it was drawn from the life by a careful and experienced observer. The drunkenness in question, continues this writer, is peculiarly of British growth. They who would make bare endurance an evidence of benefit received, may read without fear, if not with entire approval, of the enormous quantities of malt liquor drunk daily by men engaged in their work without immediate prostration, sickness, and death. "Many of the coal heavers on the Thames think nothing of drinking daily two gallons of porter, especially in the summer season, when they labor under profuse perspirations. A friend has informed me that he knew an instance of one of them having consumed eighteen pints in one day, and he states that there are many such instances."

¹ Anatomy of Drunkenness.

In respect to the chronic effects of beer, Dr. Chambers believes that a long continued-course of excess in beer, even moderate excess, is more productive of degeneration, than excess in wine or spirits. It is with malt liquors in England as it is with wine in France, the habit of drinking them leads often to the use of distilled spirits—gin and brandy. The free use of intoxicating drinks, whether they be fermented or distilled, in our own country, is the more to be deprecated, as our climate will less admit of the inhabitants using stimulants; the air itself which they breathe, and the atmosphere in which they live being more exciting than that on the other side of the Atlantic. Climatologists may not be able to give a full explanation of the cause, but the fact is not the less undoubted: we see already the more mercurial character of our people than that of their European ancestors. We have heard intelligent gentlemen from Great Britain volunteer the observation, that they could not take, in the United States, their wine or other liquors with the same freedom that they were accustomed to at home. No one has given the respective characters of the malt and ardent spirit drunkard with greater truth than Hogarth, in his pictures "Beer Alley," and "Gin Lane." The denizens of the first are represented as plump, rubicund, and bloated; they of the second as pale, tottering, and emaciated, and dashed over with the aspect of blank despair.

Cider is, we have seen, both a predisposing and exciting cause of gout. It also, in districts in which it is largely used, gives rise to colica pictonum, or vegetable colic, and under circumstances in which no lead was present to be brought in contact with the cider. Dyspepsia and other derangements of the alimentary canal are sometimes referable to the use of this liquor. Professor Silliman, of whose experience in the use of alcohol drinks we have spoken, attributed bleeding at the nose, under which he had at different times suffered, to his drinking cider. He mentions two other cases of the disease referable to the same cause.

All Distilled Spirits Bad.—Drinkers of distilled liquors are not content to regard them as a group from which they can take, indifferently, any one that happens to be at hand and is most easily procured. They will, on the contrary, be heard discussing the respective merits, on the score of health even as well as of taste, of brandy, rum, gin, whiskey, as if the question were really an open one, on the solution of which vital interests depended. Thus, by one set, we are told that brandy, the real cognac, is distinguished

by its cordial and stomachic properties ; by another, that good old Jamaica rum with its volatile oil is wholesome and pleasant, and suggestive withal of jack-tar and jollity. A third party will expatiate on the virtues of gin, old Holland, with its fine flavor of juniper, sweet flag, etc., which makes it so good a diuretic—good in often causing inflammation of the kidney and bladder in cases of imperfect or suspended discharge of urine for which it was taken. But the patriotic American hoists the flag over a line of hogsheads of old Monongahela, the watchword a few years ago, old Bourbon at the present time, as the liquor on which to get merry with one's friends, and uproariously drunk on our great national festival of the fourth of July. There was a time, we do not know how it is now, when old Virginia used to exclaim "Psha" to both rum and whiskey, and point to her fine old peach brandy, oily with age; and then looking towards the Blue Ridge with a significant gesture, intimate that her young folks who lived on the other side of the mountain, and had got mixed up with Pennsylvania Germans and Scotch Irish, were burning their vitals with new apple brandy, in place of keeping to their primitive cider. But we can imagine the consternation among the *spiritualists* who had met in friendly council when they heard suddenly a loud voice from Germany, denouncing one of their prime favorites, and of such respectable parentage, too, as coming from the grape. Dr. Roesch, of Urach, who is by no means an advocate of total abstinence, denounces brandy for its pernicious effects both physical and moral. He says, "Whoever shall succeed in banishing brandy from use will confer an advantage equal to the discovery of vaccination." We agree with him, but to denounce brandy while approving of the use of the other distilled liquors is very much like the conduct of a swearer who has a vocabulary of oaths which he ejaculates without stint, but who denounces the utterance of a particularly strong one, which he considers infamous and a sad breach of good manners and politeness. It undoubtedly is so, but what of the rest of the vocabulary? Brandy deserves lavish censure; but if we thrust it to one side with ignominy, shall we, smilingly, invite to our table or festive board the rest of the noisy family—rum, gin, whiskey, arrack, absinthe, or their professing peace relatives, wine, beer, and cider, at the risk of being ourselves turned out of house and home, and contracting diseases of a virulent character?

Rheumatism caused by Alcohol.—Having shown the fallacy of the belief that fermented liquors should be placed in favorable con-

trast with distilled spirits, when treating of alcohol as a prolific cause of disease in so many different forms, we continue our notice of some of the more conspicuous of these morbid changes. In speaking of cold or of cold and moisture as the common exciting cause of rheumatism, due stress is not laid on the predisposition which makes this cause effective. Careful observation will show that a great predisposing cause not noticed by many of our systematic writers on the practice of medicine is the free use of alcoholic drinks and most commonly of distilled spirits. The laboring classes are frequent sufferers from rheumatism, on account, we are told, of their greater exposure to cold and moisture in their various employments, and, also, of their being often imperfectly clad, but it should be added that these persons are, at the same time, in large numbers, drinkers of distilled spirits. So long as they indulge in this habit so long will they be liable to a recurrence of the disease, which, after a time, may assume a more chronic form. The product of the still would seem to perform nearly the same part in the production or at least ready recurrence of rheumatism that wine does in gout. But in the former as in the latter disease, other alcoholic drinks take a share in bringing on a state of predisposition as well as inviting to an attack. We are glad to be able to adduce recent testimony in favor of our opinion, long since founded in clinical experiences, of the share that alcohol often has in the production of rheumatism. Mr. Higginbottom, of Nottingham, writing to the *British Medical Journal* at the beginning of last year, lays down the following conclusions¹ on what he calls alcoholic rheumatism.

1. Alcohol rheumatism is the result of a distinct cause.
2. It is produced by drinking fermented alcoholic beverages.
3. It is slow in effecting a marked visible change in the system.
4. It does not actually appear before middle life.
5. Its effects are produced by the accumulation of the fermented alcoholic fluids taken into the system.
6. It causes stupidity, stiffness in the body, hobbling gait and ultimate lameness.
7. It causes changes of structure, producing chronic alcoholism.
8. The remedy is abstinence from the use of all fermented alcoholic drinks, and taking vigorous exercise in the open air.

Valuable as these conclusions of Mr. Higginbottom are, they do not cover the entire ground, nor include the acute

¹ We borrow on this occasion from the "Half Yearly Compend of Medical Science," by Drs. Butler and Brinton. Part II., July, 1858.

rheumatism which shows itself more frequently in early manhood and in the prime of life, and which is due in large measure to the free use of distilled spirits as its predisposing cause. As bearing on this subject, in the way of cause, prevention, and cure, we give the case of an inhabitant of Birmingham, who many years since wrote as follows: "Three years ago I was very poorly, I had the rheumatism in my back and legs, and if I drank even half a pint of my own home-brewed ale I was sure to have a headache in the morning. Once I left off drinking strong drinks, I got well of all my pains and aches. I am now in my sixty-ninth year, and never did I enjoy better health; my appetite is good, my sleep refreshes me, and I scarcely ever feel tired. All my life I have been a very moderate drinker." Another teetotaler, after referring to habits of intemperance which he acquired when a clerk in the city of Durham, England, says, that during this time he was attacked periodically with rheumatic affections of the most violent kind, bowel complaints, etc., but after he abstained from all intoxicating drinks he never experienced one moment's uneasiness, or, with the exception of cold, had a day's illness. We cite another case nearer home, and it is far from being a solitary one. A respectable and very intelligent farmer near Newtown, Pa., found himself afflicted with rheumatic complaints and sinking under the infirmities of age. Suspecting that his habits might have something to do with his infirmities, he abandoned the use of ardent spirits and simplified his diet. His rheumatic and other complaints soon left him entirely, and he felt that he had renewed his tenure of life by more than five years. In a harvest time, when he was then more than sixty years of age, he went into the field and cradled with his two full grown robust sons and a hired man, and he held his way with them all, doing as much as any of them. He drank but twice in the day, and then only water. His sons and the hired man drank repeatedly of spirits. At the date of this account, the old gentleman, then sixty-three years old, was uncommonly well and active, and his mind clear and energetic; his sight was so much improved by his change of habits that he could read newspapers and other small print without glasses. This case and that of the Birmingham man, and others of the like stamp that abound in the annals of temperance, make the best reply to the fears so often expressed and acted on, of the danger of a person in advanced life entirely and at once abandoning the use of his customary stimulants.

Symptoms of Alcoholic Poisoning.—We gave a brief sketch of the lesions of the several organs caused by the habitual use, or, as most commonly phrased, the abuse of alcoholic liquors, without our attempting a description of the functional disorders, which would have led us into details not called for on the present occasion. A few words, however, on the symptoms of alcoholic poisoning in the confirmed drinker, will be in place, as connected with imperfect nutrition, and a break-down of the system. These are irregular appetite and digestion, irritable state of the alimentary canal, heartburn, squeamishness, vomiting, palpitation of the heart, constipation, deficient secretion of bile. With retarded circulation, but the action of the heart temporarily increased, there is congestion of the capillary vessels of the lungs, and a short tickling cough. The morbid results of prolonged alcoholization are of a double nature; partly chemical, and partly physiological or real. The general nutrition of the body suffers, and a bad state of health is at last induced, of a particular kind, which is sometimes described as the *drunkard's cachexia*, or "*dyscrasia*." That there should be marked symptoms of great disorder of the nervous system in drunkards is what must ensue as a consequence of the frequency of the lesions of the nervous centres and their meninges, as previously stated. Hence, the diminished innervation in the morning, and exhaustion after the excitement of the evening previous; tremors of the hands, feeble and uncertain gait, which are in degree removed by taking breakfast, and in a more prompt but deleterious way by a morning dram, sometimes of the raw liquor, oftener disguised in the form of bitters, mint sling, etc., putting the blood early in a ferment, and the nervous system in an irritable condition, and increasing the morbid appetite, which finds further gratification in an alcoholic drink at midday, if not sooner. The fickleness, and moroseness, and muscular weakness of the morning have now yielded to a show of cheerfulness, and greater freedom of movement. The dinner hour comes, and food of a substantial nature is partaken of, and material is furnished for adding to the blood, and enabling the system to bear up under the alcoholic poisoning which is renewed at this time by free potations of liquor, varying in strength and quality, according to the circumstances of the tippler, or the wealth and dietetic tendencies of his host or companions. He is now "high up," boisterously merry, or captious and quarrelsome, according to his temperament; but he is almost as annoying when he attempts to be agreeable, with his maudlin talk, extrava-

gant promises—never meant to be fulfilled—and affected sentimentality, as when he is purposely offensive by rude speech and threats of violence. Night comes and finds him somewhat calmed, but still restless and excitable, and eager to renew at supper the alcoholic indulgences of dinner, with the addition of song, jest, and ribaldry, until, overcome by liquor, he is taken helplessly to his bed, or if he be a visitor, is helped by some of his companions, not quite so far gone as himself, or by a sober servant, to his own home. Such is the daily course of a genteel drunkard, one who in all other matters may be found to affect great regard for the proprieties of life. There are others, again, who would not for any consideration expose themselves to public observation of their infirmity, and who deprecate excess in drinking. They are content to take their bitters in the morning, to strengthen their stomach, and help it, as they suppose, to digest their breakfast; they take a glass of wine or of brandy and water at noon to help them along in getting through their work, whatever it may be; and they must have a glass or two at dinner as an aid to digestion, and to prevent heartburn, or to correct acidity, and what not. If they meet with friends in the afternoon they do not object to a glass and a cigar, and when night comes they treat themselves just before going to bed to another glass, perhaps a little stiffer with brandy or whiskey than in the day, in order to make them sleep sound, and prevent cramps or deaden some rheumatic or other pain. In fine, they lie down quite boozy, and passably stupid, and awake in the morning ready to repeat the same course of moderate drinking and a show of sobriety to the outer world. But in time they are overtaken by infirmities of different kinds, for the poisoned organism cannot wear the mask of hypocrisy, and it gets disease of the liver, or becomes dropsical, or falls into palsy, to the great wonderment of the man's friends and acquaintances, who always considered him to be steady and sober, and who have often heard him say that he was never drunk in his life. It must, of course, be a vile slander to say that this man was broken down and destroyed by intemperance? Was he not even one of the prayerful?

Chronic Alcoholism.—The state of prolonged or chronic poisoning from the habitual and inordinate use of alcohol has been designated by Huss *chronic alcoholism*, which is not to be measured by the lesions of any particular organ or apparatus, although its chief seat is in the nervous system. It is thus defined by the Swedish writer: "The name chronic alcoholism applies to the collective

symptoms of a disordered condition of the mental, motor, and sensory functions of the nervous system; these symptoms assuming a chronic form, and without their being immediately connected with any of those (organic) modifications of the central or peripheric portions of the nervous system, which may be detected during life, or discovered after death by ocular inspection; such symptoms, moreover, affecting individuals who have persisted for a considerable length of time in the abuse of alcoholic liquors." The symptoms of the disease depend, says Marcet,¹ in a functional disturbance of the properties of the nervous system, which may last for weeks, months, or years, even after the habit of excessive drinking has been given up. There is often something peculiar in the look and gait of individuals prone to drink to excess, or even of habitual tipplers—a trembling of the limbs, often of the whole body, or a want of steadiness and co-ordination in the movements not very unlike incipient chorea. In the daytime the patient is seized with trembling, especially when in the sitting posture; some hardly tremble at all when walking. The trembling may be very slight indeed, or confined to a particular part of the body, being frequently visible in the tongue, or only occurring at intervals. Marcet, whose descriptions we are now following, mentions want of sleep as one of the prominent symptoms of chronic alcoholism, the patient perpetually turning himself in bed, and, as soon as he shuts his eyes, extraordinary visions, mostly of a painful kind, appear before him. Complaint is generally made, also, of giddiness and headache, and a ringing noise in the ears. Hallucinations, so characteristic of delirium tremens, are very often noticed in chronic alcoholism, although usually to a much more subdued extent. They mostly affect the organs of sight and of hearing. Great weakness, especially in the knees and hips, is a prevalent character of the disease in question; and it may be considered as threatening paralysis. Difficulty of breathing perceived in the throat, as a sensation of choking, is a frequent symptom of chronic alcoholism, entirely independent of any affection of the lungs. It would seem that the habit of swallowing air, so frequently met with in those who drink to excess, is in some way or other connected with the difficulty of breathing; which latter, in fact, instead of being relieved, as it apparently is at the time, is increased by this ingurgitation.

¹ Chronic Alcoholic Intoxication.

Of the causes predisposing to chronic alcoholism Marcet enumerates the quantity and quality of the alcoholic beverage and the time during which it has been taken; also, the age, sex, temperament, habits, and profession. He quotes McNish to say that "claret is the most wholesome wine that is known." It has been observed that wines of the same quality (bearing the same generic name), and grown in adjoining districts, do not act with equal power upon the brain. Most of the patients coming under Dr. Marcet's notice, and who suffered from chronic alcoholism, drank to a considerable extent both malt liquors and spirits. He specifies, however, some cases in which the disease was brought on by drinking beer alone. One man, aged 28 years, had always been of sober habits, and was only drunk once in his life, when no more than twelve years of age. His daily allowance of beer has been one pint, and he has taken no spirits. "Three years ago he became a teetotaler, because he found that even so little as one pint of beer daily did not agree with his health. He has suffered from the usual symptoms of chronic alcoholism for the last three years." A temperance advocate who would be heard asserting that a pint of beer daily, drunk by a man in the prime of life, might, after a time, subject him to the break-down and suffering from chronic alcoholism, could not be expected to escape the complimentary epithets of ascetic, fanatic, ignoramus, etc. He would be told, with an air of triumph, and as at once refuting all heresy on this point, of the quantity of beer consumed by the English people, and of its being to them often food and drink. In reference to the time the habit of drinking alcohol has been indulged, Dr. Marcet points out the interesting fact of the disease occurring or of the symptoms becoming frequently aggravated long after the drinking to excess has been given up, and even in many cases after a complete abstinence for some time from alcoholic stimulants. A melancholy proof, this, of the long and persistent action of the poison, and a lesson of warning against first indulgences. On the score of age, as affected by alcohol, we learn from McNish that a child suckled by a drunken nurse is hardly ever healthy; it is especially subject to derangements of the digestive organs, and to convulsive affections. Dr. North has observed this latter disease to be instantly arrested by transferring the child to a sober woman. At forty years of age, or thereabouts, they who have habitually indulged in alcoholic liquors begin to suffer. One individual becomes a prey to gout,

another to rheumatism, another to bronchitis, and another to disorders of digestion. "Now, these very diseases are known to predispose greatly to chronic alcoholism, and it is therefore not to be wondered at that this disorder should make its appearance at the above-mentioned period." The youngest patient coming under treatment by Dr. Marcet for chronic alcoholism was eighteen years of age, and the oldest seventy-five. Women seem to be much less subject to suffer from the long abuse of alcoholic liquors than men. The habits of an individual are among the most important of the causes predisposing to chronic alcoholism. As a general rule, we can say, with Dr. Marcet, that habits of indolence and idleness, independently of their acting as a strong inducement to drink, favor slow poisoning by alcohol. In its milder state, the disease has been repeatedly checked in a remarkable degree by having recourse to exercise of both mind and body. Among the predisposing causes of chronic alcoholism, Dr. Marcet lays great and deserved stress on smoking tobacco, as one of them; and he cites cases in illustration of the fact. Alcohol and tobacco aggravate, respectively, each the pernicious effects of the other. The author concludes his observations on this point by "advising young men, whatever may be their position in life, not to take to smoking, as such habit is certainly not conducive to health;" and we may add, with a knowledge of the narcotic and poisonous nature of the weed, that its use in this, or indeed in any other period of life, cannot be merely harmless. As relates to the professions or employments which most predispose to chronic alcoholism, Dr. Marcet, contrary to the once generally received and still by many accredited dictum, expresses his conviction that "such professions as exhaust the body, from their requiring great muscular exercise, especially under circumstances which excite excessive perspiration, favor the early development of chronic alcoholism; and occasionally, in these instances, a very small proportion of alcoholic beverage will be hurtful. Thus individuals obliged to remain long before a blazing fire, as furnacemen and engineers on board steamboats or in factories, are very liable to suffer from spirituous stimulants." Professions affording very little or no exercise of the mind and body predispose also to suffer early, and consequently when young, from the habit of drinking. Although a proportionately larger number of cases of the disease is found in the laboring and industrial classes, yet there still exists "a comparatively vast number of

individuals in comfortable as well as wealthy circumstances whose nervous system becomes affected from the effects of the long-continued habit of drinking wine or spirits." The tendency of alcoholic drinks to produce "chronic alcoholic intoxication" is increased by drinking early in the morning, before breakfast, and consequently on an empty stomach, and living on a spare solid diet. This fact, one of general observation, must show the fallacy of the belief in alcohol being an auxiliary food, for at this very time it is gradually poisoning the system into a state of chronic alcoholism. It also must serve to show the error in administering morning drams either of pure liquor or in the form of bitters, early in the morning, as a preventive of fever. While the waste of the body may be diminished by the use of alcoholic drinks, the nervous system is not the less poisoned and the stomach inflamed in consequence.

Dr. Marcet enumerates what he conceives to be the immediate causes of an attack of chronic alcoholism. In these we find an exceptional excess and a severe fit of drunkenness, coexisting disease, such as inflammation of the lungs, rheumatism, or gout, the occurrence of any one of which will bring on an attack of chronic alcoholism in a person who is addicted to the use of intoxicating liquors. This chronic poisoning is often accompanied by a secondary disorder in the form of bronchitis, or, more frequently still, affections of the stomach. Cerebral concussion has suddenly developed chronic alcoholism. It may be mentioned that the symptoms of the two are very much alike.

Affections of the nervous system resembling chronic alcoholism are pointed out by Dr. Marcet. They are produced by long-continued and excessive intellectual exertions, and by sudden and violent emotions; and he has treated them successfully by the same means as those of alcoholic origin.

Although it does not come within the scope of this report to enter into details of treatment of the diseases caused by alcohol, yet reference may be made, on the present occasion, to a remedy, oxide of zinc, which Dr. Marcet regards as exceedingly efficacious in chronic alcoholic intoxication. Among its other effects, this substance produces, in a remarkable degree, sleep. It is a tonic as well as a sedative and narcotic. The author has found it to be very serviceable in cases of mental exhaustion; he has, also, prescribed it with advantage in epilepsy, chorea, mild hysteria, paralysis, and lead palsy. Gastric disorders, which so frequently accompany

chronic alcoholism, are sometimes rapidly subdued by oxide of zinc. The addition, at night, of opium will be found useful where there is great pain of the stomach and much vomiting. In some of these cases the carbonate of ammonia may for a few days be substituted for the oxide of zinc. The usual effects of this medicine in simple cases of chronic alcoholism are improvement of sleep, increase of appetite, return of muscular power, and disappearance of mental depression. The usual dose of the oxide of zinc prescribed by Dr. Marcet was two grains twice a day, often increased to four and six grains at the same times. Bromide of potassium, and, still more recently, bromide of ammonium, have been advantageously prescribed in delirium tremens and in chronic alcoholism to quiet tremors and nervous disorders, and to procure sleep.

Among the disorders caused by alcohol we find enumerated, of late, colica pictonum. Some interesting facts in proof are given by Dr. Amos Sawyer, in the *St. Louis Medical Reporter* for April, 1868. He shows from the experience of a number of painters that the sufferers from lead colic are they who drink intoxicating liquors, and that all those who abstain from them are exempt from its attacks. We have seen that cider is recognized in some districts to be a cause of colica pictonum, or, as called here, vegetable colic.

Delirium tremens is said to be the most exact of all the alcoholometers. In a period of three years, in the Frederic Hospital at Copenhagen, there were 456 persons laboring under this disease, in a total of 9000 patients, or nearly 1 in 20. There is a stage of alcoholism preceding that of complete drunkenness, which has been called *ebrious ferocity*, manifesting itself in coarseness and brutality of deportment, and disregard of the feelings of others, particularly of the savage's own family. A man in this condition is ready to use violence, and to take the life of those who differ from or are opposed to him in any way. This variety shows itself most in individuals of great bodily strength in the uneducated class.

Ebrious moroseness, another variety of a state preceding drunkenness, is met with more in the rich and those not occupied and who have some culture and refinement. They are discontented, morose, and querulous, especially with members of their own family and friends; they are prone to babble to no purpose, are speculative and ready to engage in games of chance. On failure and disappointment they become taciturn and commit suicide. *Ebrious halluci-*

nations of the senses are also met with in chronic alcoholism, distinct from delirium. Dipsomania, *mania crapulosa vel ebriosa*, or oinomania, manifests itself in an irresistible craving for alcoholic drinks, which overpowers all the higher feelings, and the oinomaniac is urged on to a course opposed alike by his reason and his conscience; but then resistance is vain. The disease appears in three forms: the acute, the periodical, and the chronic. The last is the most common form—that in which the patient is under the most overpowering desire for stimulants. Such unfortunate individuals, as truly said by Bucknill and Tuke,¹ are sane only when confined in an asylum. Insanity, always a severe infliction, must be regarded with additional grief by the sane friends of the sufferer when it is brought on by indulgence in alcoholic drinks, or, as it is commonly worded by intemperance; and the case becomes the more distressing when we find numbers of the female sex among its victims. The returns for a period of twenty-eight years show, in the Pennsylvania Hospital for the Insane, 389 cases of insanity from intemperance during this period, of whom 357 were males and 32 females; being, collectively, in the proportion of nearly 14 (13.9) per cent. of the 5315 patients insane from all causes. In four asylums for the insane in England the average was 13 per cent. But worse than insanity from alcohol are the dire consequences to the offspring of intemperance on the part of one or both parents. A drunken mother, for example, will give birth to children in succession who are emaciated, and as it were dried up, and who die soon after being born. At length one at a later period survives for some years, but with “the looks of an old withered baby, its skin loose and wrinkled, for it has no flesh; and is no bigger than one a month old, and no more able to walk or stand than at that age.” Instances of this nature occur more frequently, as might be expected, in the case of drunken fathers, for they, of the two parents, furnish a larger proportion of cases of intemperance. It is a lamentable thing that the other sex should exhibit such a list as they do. Doctor Howe states that out of three hundred idiots in Massachusetts, a hundred and forty-five were the offspring of intemperate parents. Short of these extreme and startling examples of punishment of the children for the sins of their fathers, we meet with inherited predisposition to insanity and to other diseases, caused or acquiring greater force by intemper-

¹ Psychological Medicine.

ance on the part of the parent. Among these morbid predispositions is the inherited love of liquor, or an appetite that prompts its possessor to early and excessive drinking if he once tastes of an alcoholic fluid. Sometimes the inherited feebleness and imbecility are not manifested until the age of puberty, when the individual shows himself to be incapable of further improvement, and sinks into a state of idiocy. Examples of hereditary degeneration, both physical and mental, are given by Dr. Morel in two sections on chronic alcoholism and the effects of alcoholic intoxication, of his instructive work.¹ This author describes the case of a young man who, at the age of nineteen years, was taken to the insane asylum at Mareville, for mental derangement caused by excess in alcoholic drinking. As the inheritor of a good fortune, he received every attention and care in his early life, but they produced no effect on a perverse and obstinate nature, whose instincts were of the most cruel kind. When but three years old, he was the terror of all the children in the neighborhood, whom he subjected to incredible tortures in the absence of older persons who would have restrained him. His chief pleasures of boyhood were in destroying and torturing animals. This young man had for his father a person who moved in educated society, and filled important offices, but who was for a long time intemperate, concealing, however, the fact from the public eye. He had five children, only one of whom survived infancy, and he was the unfortunate being now described. Edward, as he was called by Dr. Morel, evinced in his tender years a great fondness for drawing and reading, and after a time was placed at college; but his teachers soon perceived that all their efforts were in vain, and that this boy, both in body and mind, was afflicted with an arrest of growth; his head was microcephalous and his intellect limited. On his return home, he went rapidly through successive stages of degeneration by continual debauchery, until, fortunately, he was placed under restraint in an asylum. This young man labored under the double curse—1st, of inherited predisposition, and 2dly, of the example given to him by his father's excesses. Morel relates the case of another young man with similarly inherited predisposition and running a similar career of extravagance and misconduct, but pushed to greater extremes even than in the former one. Charles displayed from his earliest years the most cruel instincts. Early placed

¹ *Traité des Degenerescences Physiques, Intellectuelles, et Morales de l'Espèce Humaine.* Paris, 1857. With atlas.

at school, he was sent back in succession from one after another to his parents. It was thought that he might be subjected to some control by his being made to lead a military life, and he entered the army. Here he distressed his family by the most shameful excesses; he sold his military effects to procure brandy, and at last deserted; and he was only saved from capital punishment by the statements of physicians that he was insane and labored under an unconquerable propensity for strong drink. From that time he led a miserable existence in different asylums for the insane; leaving each of them with promises of reform which were invariably broken. It would be difficult, the author writes, to form a correct idea of the degradation and complete degeneration of this brutified being, who will end his days either in a state of general palsy, or in marasmus with an entire abolition of sentiment and intelligence. The records of our own institutions and domestic histories would doubtless furnish many cases of an analogous nature to those here described. Morel exhibits a picture of progressive degeneration of alcoholic origin, and its continuance in a family until it ended in the extinction of the latter, at the fourth generation. In the first generation, there was immorality, excess in alcoholics, moral debasement. In the second, hereditary drunkenness, maniacal attacks, general paralysis. In the third generation, sobriety, hypochondriac tendencies, lupomania, systematic belief in persecutions, homicidal tendencies. In the fourth, limited intelligence, a first attack of mania at sixteen years of age, stupidity, transition to idiocy complete and incurable. While pointing out, as warning, the hereditary predisposition to indulge in the use of alcoholic liquors and in other excesses, we are not to suppose that this is the general course of things. Happily, children who have seen the brutification of their fathers have, generally, a dread of alcohol in any form of combination, and where their surroundings are favorable and no devilish incitements offered, they would, of themselves, entirely abstain from the use of the pernicious liquor. They ought to learn, that under any circumstances they are in danger, if, by evil example or encouragement in the guise of plausible theories, they allow themselves to use intoxicating liquor in even the smallest quantity. Their inheritance, even without their following paternal or, worse still, maternal example, subjects them to many troubles and infirmities, sometimes shown in eccentricities of conduct, nervous disorders, or irritation of some particular organ. These may serve as a goad to the brain and impel the sufferer to the use of intoxicating

drinks. Of 200 persons laboring under chronic alcoholism, and who were the subjects of Morel's observations, he found 55 whose fatal passion for alcoholics was owing to a diseased state; general paralysis occurring in temperate persons caused this morbid appetite. In six hypochondriac men and four hysterical women the most marked desire for alcohol served by its indulgence to complicate the primary neurosis, and produced such complex disturbances in the organism as to make it difficult to judge of the responsibility of the parties for their acts.

Alcohol an Inciter to Vice.—How often physicians hear the same story when consulted by a patient who has recently contracted syphilis. The sufferer had drunk somewhat freely; and in a night stroll with his companions was induced to visit a house of ill-fame, and have connection with one of its inmates; he comes away with the inoculated poison of chancre or of gonorrhœa, and has ample time subsequently to meditate on the criminal act itself, and on the devilish promptings of alcohol that incited him to its commission. Could the secret history of illegitimacy be written, there would be cause for astonishment at the large number of cases that owe their origin to alcohol, which, while weakening the chaste resolve of her who had partaken of it in the shape of sparkling wine or sweet cordial, gives, at the same time, additional impulse to the delirious passion of the moment. Still stronger and more frequent is the alcoholic excitement of the other and chief party to the wrong, in the commission of which he forgets all the obligations of honor, duty, and trust. We hear much of the "greatest social evil" of the day, for the abatement of which the most praiseworthy efforts are made by philanthropists and zealous social reformers of both sexes. By none of these parties can its enormity and extensive demoralizing effects be better known than by members of the medical profession, who are so often made cognizant of the first lapse from virtue of the unfortunate females by whom they are consulted as to the means of concealing its consequences, and entreated to save them from shame by causing abortion. These poor distressed creatures, for such they are, whatever may be their station in life, are not aware of the enormity of their proposal, nor of the danger to their lives and the ruin of health by an adoption of the means of relief by an operation. But what shall be said of a physician who is so base and alike wanting in sound physiology and ethics as to be the operator in bringing on abortion, whether it be under the circumstances here supposed, or to gratify the wicked freak of a married woman

who does not wish any longer to be a mother! This danger escaped, the physician engages in his legitimate task of helping the young mother through her confinement. She is then, not seldom, lost sight of, to make her appearance in another place in the flaunting garb and with the painted cheeks and froward speech of a harlot, who is henceforth doomed to suffer from privations, and disease, and contumely, and scorn. This is not the fate, we must rejoice to know, of all, not even of a majority of the females who become mothers out of wedlock. Throughout all this affecting drama, physicians well know that from the opening scene to the last one alcohol has been a provocative and aggravation to the misdeeds and sufferings of the unfortunate woman. Alcohol first played its sinister part in helping to make her yield to the temptation of the moment, and again, when she has recourse to it to make her insensible to the qualms of conscience and the fears of the consequence of her first deviation from the path of virtue. She flies to alcohol to drown remorse and her feelings of degradation, and, at times, to obtund the gnawing of hunger, and, as she is told, to keep her warm under her scanty clothing. She is now a miserable drunken outcast, and hence the greatest impediment to the prostitute being brought back to penitence and the abandonment of her evil ways is alcohol, taken as it is to the extent of producing frequent inebriation and of destroying all remains of moral sense and womanly feeling.

We cannot better terminate our account of the large share alcohol has in relation to etiology, or as a cause of disease in so many forms and varieties, than by giving the chief results of a series of observations, made by Dr. Marcet, on this subject.¹ The writer bases his conclusions on 695 out-door hospital patients, whose cases he has arranged in a series of groups, as relates to their employments, fifteen in number, and to their diseases, nine in number. The first series included no less than one hundred and twenty-seven different employments. These were so grouped that in-door employments were separated from those carried on in the open air. He gives a *fundamental table*, showing the proportion of "sobers and drinkers" in connection with diseases and employments, from which he deduced the "influence of alcohol as a general predisposing cause of disease." The result of his observations show that, of the whole number of patients (695), two out of every

¹ British and Foreign Medico-Chirurgical Review, vol. xxix. 1868.

three were predisposed to disease from the habitual use of alcohol ; by some merely to exhilarate, by others to cause drunkenness. The greatest proportion of alcoholism was found among shopkeepers owing to their in-door life, want of exercise, and of fresh air, by which they are prevented from throwing off alcohol by respiration as freely as porters who are heavier drinkers. Febrile disorders most abound in drinkers compared to sobers, irrespective of their employments. Both to prevent primary attack and recurrence of fever and ague, strict sobriety is demanded—a conclusion at variance with the popular but erroneous belief. “This influence of alcohol as a predisposing cause of febrile diseases probably results from the abuse of alcohol interfering with the healthy process of nutrition and lessening the general standard of health—a morbid poison exerting thereby more readily its baleful action.” It must be evident, from what Dr. Marcet had said just before, of the prophylaxis against fever consisting in strict sobriety, and the so much greater predisposition of drinkers to be attacked by fever, that the use at all of alcohol by persons thus exposed is an abuse of this article. In regard to the group of diseases of the lungs, the writer’s tables confirm the received opinion that drinkers are much more disposed to these, in comparison with other diseases, than sobers. In no other disease or group of diseases throughout the whole table is the proportion, and, consequently, the predisposition so great as in laryngitis. In speaking of diseases of the stomach and intestines, it is said that *gastritis* is much more liable to be brought on by drink than disorders of the intestines. Alcoholic excesses are regarded as a predisposing cause of cutaneous affections. The cases of gout and rheumatism number 151 in the 695, and it was found that the predisposition to them from alcohol was a little less than the corresponding predisposition to all other diseases taken collectively.

The inferences from these observations and estimates made by Dr. Marcet are of great practical moment, inasmuch as, while themselves supplying data, they prompt to a careful study of the prevention of diseases—a problem, the solution of which interests a far greater number of persons than attempts, necessarily of an uncertain and imperfect nature, to cure. The success of the first would render the second unnecessary, and not only save many lives in every community, but also the feelings, the time, and the productive industry of the sick and of their families, and their friends and attendants. Of the 695 cases of disease rated and clas-

sified by Dr. Marcet, two-thirds of the entire number, or 463, were caused by indulgence in alcohol, and were preventable on the simple condition of abstaining from that liquor in some form of combination or another. If these persons, in place of being "drinkers," had been teetotalers, what tax would they have paid for their exemption from disease? None whatever. But, on the contrary, they would have enriched themselves by improved health, a better frame of mind for personal and social enjoyment, and more ability to gain the means of livelihood for themselves and their families. The loss of life by preventable diseases is begun in infancy and continued to old age. In the first period it is brought about by a defective supply of the mother's milk and its vitiated quality, and by other errors in diet and regimen generally. In the second, it is largely induced by the free and continued use of alcohol. The child is not, however, exempt from the poisonous effect of this article; for the little being, although not drinking it, receives it from the milk of a drunken mother, as it does some kindred poison from the milk of the cow fed on distillery slops. Governments wisely enact laws with penalties for their infraction, to prevent the introduction and spreading of contagious diseases—smallpox, etc., and will not allow of the sale of damaged or unwholesome food; but we look in vain for similarly preventive measures against the production and diffusion of alcohol, the great poisoner and corrupter of the blood, the producer and fermenter of diseases in their worst and most malignant forms, the disturber of the peace of families and communities, the inciter to rebellion against country and God. Governments will not see "the following fact, which has received overwhelming proof, that the least habitual excess beyond a very moderate indulgence in fermented beverages lowers the vital properties of the blood, destroys the normal tone of the nervous centres, and, as a constant *sequela*, most powerfully predisposes the frame to the absorption of epidemic virus of whatever kind. Pure aerated blood affords the best safeguard against the attacks of any epidemic. But the more perfect system of house ventilation, cleanliness, etc., will fail to secure this, if by the constant imbibition of alcohol in excess the functions of the lungs and skin are interfered with, their health-relations destroyed, and their waste products retained within the current."¹ When this intelligent writer speaks of "the constant imbibition of alcohol in

¹ Mr. W. J. Coxe, *Epidemics and their Every Day Causes*. San. Rev., vol. iv. p. 260.

excess," we ought to understand its constant imbibition as always an excess, and assuredly so if a "step beyond the very moderate indulgence in fermented beverages" have the deleterious effects described. In many of Dr. Marcet's patients, alcohol taken to the extent merely of causing exhilaration, was an excess, and a cause of disease. Derangement of function will follow the very first drink of ardent spirits, as in the two cases related by Mr. Coxe, in which, on comparing the amount of carbonic acid evolved from the lungs one hour before, with that given out one hour after a dose of whiskey to the parties experimented on, he found in the first a reduction of 250, and in the second, of 280 cubic inches of carbonic acid.

THERAPEUTICS.

Two great obstacles interfere with our obtaining correct knowledge of the therapeutical value of alcohol. The first of these is imperfect pathology, which prevents our ascertaining the real character of the morbid phenomena that we are called upon to remove; and the second is in the preconceived notions or belief of the action and effects of alcohol in health. The still popular and too often professional belief is, that debility and stimulants stand towards each other in the relations of disease and remedy; and alcohol, as a genial stimulus, and even *quasi* tonic, is made the representative of the entire class, and its use is directed in the debility and prostration arising from fever and inflammation; mainly on the faith of its alleged restorative and strengthening power in the temporary feebleness, and languor, and exhaustion from fatigue, sometimes occurring in ordinary health. Alcohol, under this creed, was given in disease to stimulate and rouse the system from a state of prostration, and to excite the flagging organs to greater functional activity. But in later days, under the theory of metamorphoses of tissues, and of their destructive activity in acute diseases—febrile, inflammatory, etc.—alcohol is prescribed still as a stimulus, but a stimulus which is endowed with a new property of abating this activity of metamorphosis, by acting as a sedative. Strange and contradictory effects are thus expected and believed to arise from alcohol as a medicine. At one time it is to stimulate the weak to become strong, to rouse the torpid organs into full functional activity, and to awaken from stupor and coma in the advanced stage of fevers; it is also to enable us for a time

to do without food and sleep. At other times alcohol is to calm nervous irritation, to procure rest and sleep for the feverish and delirious patient, and to quiet the ravings of insanity. On all these several occasions it is still called a stimulus, and the impartial inquirer finds himself under the necessity either of denying at least its alleged good effects, or of insisting on the action of the remedy being designated by a word or words expressive of its compound properties. When alcohol relieves gastric pain, colic, and neuralgia, it acts as an anæsthetic or sedative; when it brings on heaviness and sleep, and in greater degree stupor and temporary coma—a condition too often seen in a drunken man—it is manifestly narcotic. The stimulant property which is so commonly assumed for it is less seldom displayed, or rather we should say that it is soon lost in and succeeded by its property of narcosis. But it would appear from the experiments of Dr. Edward Smith¹ that the first effects of alcohol, in the shape of brandy taken by a temperate man, are not those of increased excitement, but, on the contrary, display themselves in lessened consciousness, lessened sensibility to light, to sound, and to touch, and relaxation of the muscles connected with the reproductive system. There is in fact diminished vitality, a striking evidence of which is seen in the lessened ability to generate heat. Dr. Chambers, in noticing these experiments, sees in them proof of the primary as well as secondary action of alcohol—showing a diminution of vitality in the nervous system. If we would do justice to the subject, we must take up alcohol, with a knowledge, of course, that we have in hand an active poison, and inquire into its operation and effects, curative and toxic, as we do into those of opium, henbane, belladonna, aconite, nux vomica, prussic acid, arsenic, and corrosive sublimate. So far there is no consistent theory to guide us; materials are not wanting, but they lack connection and arrangement; and until we are better instructed in these respects, we must feel ourselves justified in simply saying that a patient with fever, to whom alcohol had been administered, was alcoholized, and that certain symptoms indicative of relief, or the reverse, followed. It is common enough for us to speak of a patient having been mercurialized, without our thinking it necessary to attempt to explain the *modus operandi* of the mercury that had been taken, and the farthest to be expected of us in this way would be to call the medicine an alterative. So should we talk and write about alcohol; let

¹ Op. cit.

its effects in a case of fever be carefully noted from the beginning to the end, without our being biased by previous theory, or making our record in a speculative nomenclature. It will not be enough to say, "My patient got well under the stimulation of hot toddy, milk-punch, wine, etc.," or "My patient died, notwithstanding his free use of stimulants, in a state of stupor and coma. I did all I could to keep him from sinking." Nor will it be satisfactory to be told that a patient in fever took pints, if not quarts, of spirits and of wine, unless we learn, at the same time, the precise dose and the interval elapsing before the next one, and the symptoms from hour to hour following the ingestion of the alcoholic drink. We have clinical details sometimes quite minute of the history of a case of fever, or of pneumonia, etc., but we have no detail, indeed no mention, of febrile separated from alcoholic symptoms, and we seldom hear of the degree of intelligence of the nurse or other attendant, who is left with discretionary power to ply the patient during the night with the prescribed alcoholic, ignorant or unobservant of its effects all this time. Alcohol as a substance circulating in the blood, and soon finding its way to the brain and liver, is, during the entire period of its administration, constantly and powerfully acting on the organism for good or for evil. Its effects on the nervous system and heart are our chief guides in directing a continuance of or regulating the dose; but other organs, although slower to be impressed by it, are more retentive of its action, and a single spoonful of brandy, which will in part escape through the eliminating organs, may remain for hours in the blood, and a still longer period in the tissues of the different organs in which it was deposited. As an aid to an investigation of the subject, and to greater precision in noting the varied effects of alcohol, we would refer to the valuable work of Dr. Anstie on *Stimulants and Narcotics*. Although we differ from him most pointedly when he insists on alcohol being a food, we must admit the wisdom of his cautionary advice to prevent its common use its prescription in disease being made a reason or pretext for its being taken in health. Numerous experiments—mostly on animals—give additional force to his opinions. While specifying with great care the stimulant as separate from the narcotic effects of alcohol, the author attributes to stimulation a range of action and therapeutical effects, which in common are thought to be produced and explicable by the operation of sedatives and narcotics. Stimulants, as such, are to his mind almost always quieting and

soothing in disease; narcotics are of doubtful utility, and for the most part, as far as represented by alcohol, are injurious. His mode of viewing these vexed questions may be in a measure understood from his remarks on "Narcotic Inebriation," or drunkenness. "This remarkable condition has been frequently very incorrectly described. Its first stages have been represented as the result of the preliminary 'stimulant' influence which is exerted on the brain by a particular class of narcotics. It has been said that alcohol, the ethers, chloroform, Indian hemp, camphor, and some others, when given in large doses, are at first intensely stimulating, but that a secondary depression quickly arises, which disturbs all the intellectual powers. It is, however, highly improper to give the name 'stimulation' to that effect which is produced by a dose of any narcotic which places the taker in such an unnatural mental condition. In order to make this more clearly perceptible, I shall now analyze, with some minuteness, the phenomena of the inebriation produced by alcohol, by chloroform, and by hashish respectively.

"When an excessive or narcotic dose of alcohol is taken into the stomach, the symptoms will vary according to the rapidity with which the blood becomes saturated with the poisonous agent. A certain interval will elapse during which only so small a quantity shall have been absorbed through the stomach walls as may stimulate the nervous matter when carried by the circulation to the brain; and this interval will be long or short according as more or fewer obstacles to absorption have existed, such as dilution of the alcohol, or mechanical obstructions (*e. g.*, food in the stomach). But from the moment that a certain degree of saturation of the blood is overpast, and the so-called 'phenomena of excitement' commence, stimulation is entirely at an end, as we may plainly perceive from the fact that the nervous system, in all its parts, is becoming paralyzed. The first warning of alcoholic inebriation is flushing of the face, an occurrence which indicates that the cervical sympathetic is becoming paralyzed; this is a symptom not peculiar to the action of alcohol; but when caused by that narcotic is always a sign that paralysis of the hemispheres is commencing. It is about this period, or soon afterwards, that the drinker finds himself in unnaturally high spirits; that his animal passions are most prominent; that feelings of vanity carry him away into garrulity of talk, and that whatever sentimentalism there may be in his nature is apt to come out, often ludicrously enough. As more and more alcohol begins to circulate through the nervous system, and espe-

cially through the brain, fresh mental peculiarities are developed, but always *in a certain orderly sequence*, although this fact easily escapes observation. The clue to a right appreciation of the successive phenomena is this: that the feelings ordinarily suppressed by voluntary effort, or observed by the impressions of actual life, are displayed, by the removal of the customary veils, *in the order of their concealment*. Reason and prudence, and the moral sense which form the varnish, mostly a thin one, superimposed upon the sensuous nature, vanish simultaneously with the faculty of estimating ideas of time and space, and with the power of active co-ordination of the muscular movements. It is now that the truth of the proverb begins to be most completely realized, '*in vino veritas*,' for the very most hidden things of the mind come out."

Stimulation resolves itself, according to Dr. Anstie, into a group of physiological effects, of which we give the simplest expression in saying that they one and all tend to restore the healthy standard of some vital process or processes. And again, he says: True stimulation is the supply of some missing influence requisite to the maintaining of that balance of the powers and materials of existence which we call life. The type of the stimulant class is therefore found in foods, with the power of adding to formed tissue, or to the unformed elements of the body—water, salts, or metals deposited or held in solution, etc.—and by evolving heat, which again may be converted into electricity. What the writer here says of stimulation neither explains nor defines, and the same language would be equally applicable or inapplicable to a remedial mode of action produced by tonics, alteratives, etc.

Narcotics, says Dr. Anstie, are distinguished by one central feature which marks their influence upon the organism, viz., the production of consecutive paralysis of the various portions of the nervous system. These effects do not appear to be caused, in the slightest degree, by doses which are of less than a certain amount. Most if not all narcotics, when given in smaller doses than those required to produce the lesser degrees of narcosis, act as stimulants. The stimulant action is not produced in the slightest degree by narcotic doses. The symptoms of alcohol narcosis are very similar to those produced by chloroform and ether. There is the same gradually advancing sensor and motor palsy, commencing with the lower portion of the body, and blended and confused with the effects on consciousness produced by palsy of the brain. Narcosis proper may be described as a physiological process in which the

nervous system is deprived, by the agency of a poisoned blood-supply, of its vital characteristics, with greater or less rapidity, and which directly tends to produce general death of the organism by means of such deprivation.

In repeating these views of Dr. Anstie on stimulation and narcosis, we contribute something to a better understanding of the therapeutical value of alcohol, and the ends to which we should look when administering it. But it is not easy to carry in the mind a clear perception of the precise dose of alcohol, and the time and circumstances under which these two conditions of the system occur or are produced. On one cardinal point he is not as clear as could be desired: it is that of mistaking action for power, and of regarding that which is in fact only borrowed, as an actual increase of capital. As justly said by Dr. Paris, we cannot infuse into the body any specific elixir from the vials of the laboratory; "we cannot directly increase the *vis vitæ*; but by removing the obstacles which oppose the effects of nature, we can enable her to do so." The restoration can only be done by means of the vital stimuli, food, air, water, and heat.¹ The most that other stimuli can do is to excite a reaction injurious, as Muller very properly remarks, in proportion to the change effected by them in the organic composition. "An endless injury has been done to medicine, and many lives have been lost through the error of confounding all agents which excite reaction in the system with those which are absolutely essential to life, and which renovate while they stimulate the organs; the false notion having been thereby induced that, because stimuli feed as it were the flame of life, stimulating agents generally are necessary to life." The theory is changed, but the Brunonian practice is renewed in all its former power, we were going to say virulence, by the free administration of alcoholics in most of the acute, and many of the chronic diseases which come under medical treatment. Let us hope that fifty years hence there may not be occasion for the remark made by a medical writer in the early part of the present century—that the Brunonian doctrine, and the practice growing out of it had destroyed more lives than all the wars of the French Revolution. The writer probably meant to include in this censure the results of the dietetic habits which were strengthened and greatly increased by Brown's teaching. Dr. Rush repeats what has been often said that spirituous liquors destroy more lives than the sword.

¹ Pharmacologia.

Alcohol occupies a foremost place, with many practitioners, in the treatment of fever at the present time. We need not dwell on the details of the alcoholic practice carried to its extremes by Dr. Todd; but shall speak first of its somewhat modified features based on experiments and a show of plausible pathology by Dr. Anstie, who warns us, however, against an undue persistence in the use of the remedy in general. Thus, for instance, after speaking of the great relief in neuralgia afforded by the use of a moderate dose of alcohol, he adds the remark that if the article is to be administered at all for this purpose, it should be given with as much precision as to dose as we should use in giving an acknowledged poison. Admirable caution, and applicable to every form of disease or infirmity in which alcohol is prescribed! In another place the writer, when telling us of the powerful effect which alcohol often exerts in averting threatened *epileptiform attacks*, confesses that he hesitates to order its employment by any epileptic, unless he be a person of great intelligence and firmness of mind, on account of the almost inevitable tendency which patients have to overdo any remedy which they fancy will avert some terrible danger—a measure which in the case of alcohol might have the disastrous effect of leading to habits of drinking.

The classical illustration of the favorable soporific influence of alcohol, to use the language of Dr. Anstie, is to be found in its use in *low fevers, such as typhus and typhoid*. In cases of these diseases, a certain rapidity of pulse shows that the patient cannot obtain natural sleep, but will pass into a state either of coma or delirium, and that under such circumstances it too often happens that meat, broth, etc., cannot be retained by the stomach. "Notwithstanding all that has been said by persons who have never fairly tried the plan, there is nothing which meets the exigencies of this condition with an efficiency which at all approaches that of alcohol in repeated non-narcotic doses." A case is given of a woman, aged 36 years, suffering from typhus fever, who was seized on the tenth day of the disease with rather violent delirium, the skin was hot and rather dry, pulse 146. Six ounces of brandy per diem had been allowed so far; the quantity was now doubled. During the next twenty-four hours the pulse came down to 120, the delirium ceased, and the tongue became less dry than it had previously been. A test of the injurious or narcotic effects of alcohol, where the dose has been beyond the wants of the case, is found, writes Dr. Anstie (*Lancet*, 1868, p. 121), by distillation of an ave-

rage sample of the twenty-four hours' urine. If renal elimination to the extent of one grain *per diem* be proved, it may be confidently asserted that a more or less poisonous effect has been produced, more especially if the sphygmograph gives the evidences of lowered arterial action.

The supporting treatment, in which, among the medicinal agents, alcohol has been assigned a high rank, is that advocated by Dr. John Hughes Bennett in continued fever, which includes typhoid and typhus. His practice partakes, however, of the eclectic (not the shallow teaching so called) as well as of the alcoholic. At the beginning, or the stage of excitement, this writer directs saline antimonials, slight laxatives if occasion requires them, and he orders the head to be shaved and cold applied. Fluid nutrients, such as milk and beef-tea, are given from the first, and wine and other stimulants as soon as the pulse becomes weak after having been rapid and strong, but still retaining its frequency. The quantity of wine usually given is from three to six ounces a day; but in some cases marked by unusual depression, or when the individual has been previously accustomed to alcoholic drinks, a larger quantity, or, in its stead, from one to four ounces of spirits may be required. Caution is given not to continue the use of stimulants longer than is necessary. The same general rules are laid down for the treatment of eruptive fevers that are recommended in that of continued fever.

Dr. Wood assures us¹ that in low febrile diseases alcoholic liquors are a most valuable resource, and, indeed, indispensable. They are not, he thinks, so well adapted to the prostration or collapse which sometimes occurs in the cold stage at the commencement of the fever as to the debility coming on in its course. In this latter condition, which so often supervenes in febrile diseases, and not unfrequently constitutes their greatest danger, they are adapted beyond all other medicines by the universality as well as the energy of their stimulant property. Unless the prostration is sudden and alarming, the mildest form of these stimulants should be first employed, and recourse be had to the strongest only as increasing debility may seem to require them. Thus, it is usually advisable to begin with wine-whey, then, if necessary, to advance to pure wine, and ultimately to ardent spirits. Dr. Wood expresses, we believe, the opinion of most practitioners, when he tells us that alcoholic liquids may often be advantageously used in scarlatina,

¹ Therapeutics and Pharmacology, vol. i. p. 658.

diphtheria, smallpox, and erysipelatous fever, and occasionally in bilious remittent and yellow fevers, when they present typhoid symptoms. Even the existence of inflammation, under these circumstances, does not positively contraindicate their use. Active alcoholic stimulation is often necessary in typhoid or typhous pneumonia. We should have stated that in these specifications of diseases laid down by Dr. Wood it is in typhus, enteric, or typhoid and petechial fevers that the alcoholic remedies generally prove most serviceable. He believes the same treatment, in this particular, is applicable, to the advanced stage of inflammation when copious suppuration takes place, also to various constitutional affections attended with suppurative or ulcerative conditions. Dr. Gerhard, giving in a measure the results of twenty-three years' experience of hospital practice, says¹ that in the treatment of typhoid fever he sometimes gives alcoholic stimulants in large doses, and in many instances considers them totally unnecessary—a discrimination which we could wish to see displayed by some of the wholesale prescribers of alcohol in every stage of a fever. Dr. G. considers it necessary to give the patient some stimulants in typhus fever. Some patients, he tells us, will require large doses, others will do well on small portions. Dr. J. F. Meigs, in a valuable paper on the "Morphological Changes in the Blood in Malarial Fever," gives cases of different forms of severe and malignant remittent fever in which he prescribed with benefit, in the Pennsylvania Hospital, alcoholic stimulants, chiefly in combination, as in the form of milk-punch.

As an offset to the stimulating practice of Dr. Anstie, we must refer to the moderate and non-stimulant course pursued by Dr. Weeks, of Guy's Hospital, in certain cases of fever. In a clinical lecture delivered by him² he reminds his youthful auditors of what they had themselves witnessed, viz., that fevers will do well without alcoholic stimulants. "Of course," he said, "stimulants are often needed, but young persons with typhus and typhoid fevers do better, I believe, without them." The lecturer adds: "That they make good recoveries on a simple milk diet is a fact which my hospital cases prove, and which no arguments can gainsay; and, on the other hand, I have seen a marked improvement take place in some cases where a stimulus has been left off." The same thing occurs in bronchitis and in regard to heart disease—rather a

¹ Pennsylvania Hospital Reports, 1868.

² In Lancet, 1867.

vague term. Dr. Weeks is convinced that the amount of mischief done by stimulants is immense. A constant stimulation by alcohol of a diseased and weak heart adds greatly to the trouble.

Worthy of commendation are the views on the treatment of typhus fever inculcated by Dr. Chambers (*Lect. VI.*). As to the use of alcohol in fevers, he is guided almost entirely by the condition of the nervous system. If there is very complete prostration and delirium of a low muttering character, it is required. A tremulous state of the muscles, marked especially by a quivering of the hands and fingers, is a good test of the necessity for it, and so is a sharp, weak, unequal action of the heart. All these indicate that the nervous system is feeling very sensitively the destructive metamorphosis going on, and has its power lowered by its sensitiveness. "Then is the opportunity for the powerful anæsthetic alcohol which in severe cases you see me order without scruple, but which I do not rank as part of the necessary *methodus medendi* of fever, and have not yet ordered it for the boy we have been prescribing for. Above all, I would caution you against employing it as a substitute for the treatment which I have been describing. Wine may be useful as an adjunct, but never must it take the place of the true restoratives." One cannot but admire the wise caution and well-timed rebuke, in these remarks, against making the occasional and admittedly serviceable use of alcohol in fever, a foundation for a system of large, continued, and exclusively alcoholic treatment of this disease. Dr. Chambers regards the alcoholic as an exceptional mode of treatment, just as he does the local abstraction of blood, of which, in treating this fever, he gives examples. The case of a girl, with typhus fever, is given, who complained much of pain in the right iliac fossa, which was treated by leeches and mercury, with immediate relief. Justice cannot be done to the subject, nor to the lecturer in regard to his views of the proper places of alcohol in continued fever, unless we follow him in the successive division of the means which he recommends to combat the disease. The once popular practice of giving an emetic at the beginning of fever is renewed by Dr. Chambers, with results which he regards as very satisfactory. He inclines to an opinion of the etiology of typhus which was taught half a century ago by Dr. Chapman, of the University of Pennsylvania, viz., that the most usual path of ingress of the febrile poison is the digestive canal. The English lecturer tells us of several instances of the success of the emetic treatment which removes an essential part of the disease. Wine

and emetics were given in both classes of continued fevers; the wine, as usual, in accordance with the patient's age and the condition of the nervous system, and emetics whenever the history we could elicit made us conjecture that the fever was in its first week.

Following the emetic will be sponging the whole person of the patient three or four times a day with tepid water, to which the nurses more generally add some distilled vinegar to make it more agreeable. Cold affusion is sometimes resorted to with benefit; but it should be withheld where pneumonia is present, or where the patient has recently had an attack of acute rheumatism. The most important indication in the treatment of the low forms of fever, is to give a large supply of nitrogenous material which had been wasted and carried away by destructive metamorphosis. "The suitablest food," says Dr. Chambers, "is that which is naturally supplied to the weakest stomach. The feeble digestive organs of babies can assimilate milk, and milk forms the most appropriate nourishment for the debilitated viscera of the fever patient. By giving two or three ounces every hour, you may get down a quart and a half *per diem*. But in ordinary instances every two hours is often enough, and that period is adopted for the boy before us. If there is sufficient acid left in the stomach to coagulate the casein into clots, and cheesy lumps are rejected by vomiting, as happens sometimes in milder cases, you may guard against this by adding *liquor calcis* or soda water to the milk, or you may replace it by beef-tea." Lumping of the cheese into solid masses, not acidification, is to be avoided. "Sour buttermilk is by no means to be despised as a food." It is quite a relief to those who look for the natural means of restoration in exhausted states of the system, to find a true nutrient recommended, as in the case of milk, without the equivocal but among a large number of practitioners the almost inevitable addition of alcohol. Better by far to give the two separately, and not be prevented from continuing the milk because the alcoholic fluid—whiskey or brandy—disturbs and disagrees. The former will be administered without interruption at short intervals; the latter, if at all, at longer periods. The milk is urgently wanted to fill up the bloodvessels; the alcohol is at times serviceable to soothe the nervous system, but it makes no blood, nor helps to make any. Eggs are universally admitted to be a highly nutritious food; "if taken raw and diluted with milk or water, they are quickly absorbed. But should they be delayed and putrefy, the products of their decomposition are particularly

injurious; the sulphuretted hydrogen and ammonia are poisons to the intestines. I should recommend you," continues Dr. Chambers, "to avoid eggs till convalescence has restored the gastric powers. The same objection does not lie against milk, the lactic acid arising from whose decomposition assists in the solution of the casein."

The means which Dr. Chambers recommends to combat typhus fever are—1st, an emetic; 2d, repeated sponging the entire surface of the body with warm water; 3d, the free use of nitrogenous material for nutriment, to supply the large waste by the fever; and 4th, remedies drawn from the pharmacopœia. Of these, the first in the order of therapeutic value, as accredited by Dr. Chambers, is hydrochloric acid diluted, in a dose of twenty minims with water and syrup every two hours, as in the following prescription: R.—*Acidi hydrochlorici* ℥xx, *syrupi* ℥j, *aquæ* ℥j, *alterna quâque horâ sumat*. The acid, on somewhat theoretical grounds, is prescribed in low fevers in which there is supposed to be a super-alkaline condition of the fluids, according to Dr. Richardson, or a sub-acid, as suggested by Dr. Chambers. This gentleman asks: "What blood when analyzed comes nearest in its altered proportions to the blood in low fevers? Is it not that of scurvy and purpura? There is the same excess of blackened (melanosed) blood disks, the same deficiency of neutral salts and organizable (coagulable) lymph. Everybody treats these chronic affections with acids, and why not also an acute affection which corresponds with them on one point at any rate? As to the particular acid employed, muriatic certainly deserves to be tried before others—first, because it is such a large constituent of the body that it might almost be called a food instead of a medicine; and secondly, because it is such a powerful arrester of the decomposition of animal matters." Dr. Chambers presents the therapeutical statistics of two classes of patients with typhus fever. The first, numbering 109, were treated on what may be called "general principles," leaving a mortality of 23; the second, in number 121, were treated by continuous nutriment and hydrochloric acid, with a loss by death of only 4. Both series were spread over a considerable number of years, so that they include sporadic cases as well as the produce of epidemics. "They were all treated by the same physician in the same wards of a general hospital (where the cases are usually more severe than in special fever hospitals), and they nearly all came from the same group of districts, of which our hospital is the centre." The treatment in the second series, addi-

tional to the use of the hydrochloric acid, consisted in sponging the body two or three times daily with tepid water when the skin was hot and dry, and, in a few instances, in leeches or cupping applied to the exterior of inflamed localities in the abdomen or chest. The difference in the result of the two methods of treatment in the two series of cases is very striking; the deaths in the former were $19\frac{1}{2}$ per cent., or nearly 1 in 5, and in the latter $2\frac{1}{2}$ per cent., or only 1 in 40. The continuous liquid nutriment, given every two hours in the last series of cases, consisted of strong beef-tea and milk, of which, together, about six pints were administered in the twenty-four hours. Dr. Henderson, writing from Shanghai (China), states that the employment of the hydrochloric acid there diminished the mortality of continued fever from 20 per cent. to 7 per cent., certainly a very marked decrease, and in a totally different climate from that of England. It is after giving the above *methodus medendi* in fever, that Dr. Chambers introduces alcohol to notice as a secondary and exceptional though at times an efficient remedy, in the terms which have been previously cited.

Counter testimony to the alleged febrifuge virtue of alcohol is offered by Pucinotti, an Italian writer, who attributes the severity of the fevers, with which the country around Rome is afflicted, to the use of spirits and other stimulants used by some as preventives. He relates the case of an old man who had come from Romagna every second year to labor, during the harvest, in the Campagna of Rome, and who never had the fever. His beverage in the morning and through the day was *cold water with a little lemon-juice*. This practice his father had adopted before him, and with the same happy result; but his two sons, who would use *spirit* (brandy), and even mixed with it at one time *gunpowder*, and at another *cayenne pepper*, both fell victims to the fever.

The alcoholic treatment of *delirium tremens* still has its advocates, and, if received, would constitute an exception to all medical experience in other diseases, viz., that the marked and extreme effects of a poison should be removed by large and repeated doses of the same poison; that alcohol should be both bane and antidote, a cause and a cure of delirium tremens, giving rise to fatty degeneration of the blood and removing it at the same time. The medical skeptic might ask whether the patient with this disease gets well on account of or in despite of the alcohol used. At any rate, if we admit that the disease is cured by any drug, as in Dr. Joseph Klapp's successful cases after the administration of an emetic, those

with the like results after the use of opium by many practitioners, and the numerous cases treated by Dr. Dunglison at the Philadelphia Hospital (Blockley) on the expectant and eclectic plan, but without a drop of alcohol, and with entire success, and the equally successful but contrasted practice of free alcoholic stimulation in 160 cases in the above hospital, it is very evident that the disease will disappear under opposite and neutral modes of treatment. Dr. Bennett thinks that nutritive stimulants will for the most part suffice, as far as relates to internal means. One thing is clear, that, if it can possibly be avoided, the doctor ought not to leave his patient, after an attack of delirium tremens, a drunkard as much as he found him one, and as liable as ever to continue to be a drunkard. When the poor creature is told that although alcohol made him ill, alcohol also made him well, he will exclaim, Hurrah for alcohol, and a fig for water-drinkers and total abstinence! Dr. Handfield Jones, in his *Clinical Observations on Functional Nervous Disorders*, makes some instructive statements on the pathology and treatment of delirium tremens. He cites the views entertained by different writers, that the disease presents itself under two states, which are sometimes so many stages, viz., one of inflammation and high irritation of the brain and its meninges, and the other of exhausted nervous energy or collapse. A similar division is made of traumatic delirium. There should also be a separation of cases where the symptoms ensue immediately after casual alcoholic excess from those in which this is not the case. Dr. Peddre tells of his having treated eighty cases of delirium tremens successfully by tartar emetic, in doses of a quarter to half a grain in simple solution, every two hours, or at shorter intervals, according to the degree of excitement and irritability. The action of the antimony seems to be chiefly sedative, or, to use the language of the Italian school, contra-stimulant. Dr. Ware points out the natural termination of the disease by sleep in sixty to seventy hours, dating from the time when the state of entire watchfulness and delirium commences. The mere expectant treatment, he tells us, gave but one death in twenty-nine cases; while out of fifteen cases treated with opium, in small or large doses, six died, two of them being complicated. In the Edinburgh Infirmary, where for many years the disease seems to have been treated with laudanum and whisky in a very careless manner, the mortality is stated to have been 35 per cent., and in St. George's Hospital 14.6 per cent.; in the infantry regiments 17.6 per cent., and in the cavalry 13.8 per cent. On the

other hand, Dr. Gairdner's experience at Edinburgh is of one death among thirty cases "treated in an extremely simple and natural manner:" Laycock has treated sixty-eight cases of delirium tremens without opium or stimulants, and has had only two deaths. This writer assigns six days as that of the self-limitation of the disease. A safer sedative than opium is the extract of hyoscyamus in doses of ten to fifteen grains, or of a drachm of the tincture, repeated at intervals. Tincture of digitalis, in a dose of half an ounce, has often a very soothing effect. Eight ounces have been given in a period of a few hours. In the English hospitals we find that Dr. Fincham of the Westminster, Dr. Maclean of the Netley, Dr. Fleming of the Queen's, Birmingham, cut off at once all alcoholic stimulants and rely on pure air, quiet, seclusion, and nourishing and palatable food, supplied at short intervals. The treatment pursued by Dr. Goodfellow of the Middlesex, and Dr. Harvey of the Aberdeen Royal Infirmary, is mainly expectant and dietetic, abundance of nourishing food being allowed.¹

In the *phlegmasiæ* generally the stimulating is replacing the depleting and reducing treatment—a bound from one extreme to the other. Dr. Anstie reports a case of double pneumonia in a man aged twenty-four years, who for ten days lived on nothing but brandy and a little water. In the first part of this time he took twelve ounces of the liquor daily, and ultimately twice this quantity. In a month from the day of the doctor's first visit the man was well enough to resume his work. Dr. Bennett adopted with great success in this disease what he terms his treatment by restoration, directed to further the natural progress of the disease and to support the vital strength. During the period of febrile excitement he contented himself with giving salines in small doses, with a view of diminishing the viscosity of the blood. At the beginning of the treatment he ordered as much beef-tea as could be taken; and as soon as the pulse became soft, nutrients and from four to eight ounces of wine daily. As the period of crisis approached, he gave a diuretic consisting of half a drachm of nitric ether, and sometimes ten minims of colchicum wine three times daily, to favor excretion of urates. But when crisis occurred by sweat or stool, he took care not to check it in any way. Of 129 cases of acute pneumonia treated by Dr. Bennett in the wards of the Edinburgh Infirmary, during a period of six and a half years'

¹ British Medical Journal, July, 1869.

service, the deaths numbered only 4, or 1 in $32\frac{3}{4}$ cases; and of all the cases of uncomplicated pneumonia, 105 in number, not one died—a most extraordinary result, when it is remembered that in other places, under different modes of treatment, the mortality was from 1 in 4 to 1 in $9\frac{1}{2}$ cases. It is to be feared that there is great lack of precision of statement, and too rapid, if not vague, generalization, in speaking of the treatment of pneumonia, and, indeed, of inflammations in general. One of the worst epidemics, and one attended by disastrous results, is that affecting the minds of physicians, so that the fears and prejudices, the isolated and exceptional experience of a few, are communicated to the profession at large, and received by it as a body of well-established and coherent facts. In some cases of pneumonia, bloodletting has been found unsuccessful; in others, injurious. A specification of the true character of these cases, not only of the extent of the organic lesions of the lungs, but the associated circumstances of age and habits of the patients, complications with other diseases—typhoid and typhus fevers, measles, scarlatina, phthisis—is necessary to enable us to form a judgment of the effects of treatment. These effects in one case constitute no absolute guide, and scarcely a strong probability in another case; and hence to tell, without suitable specification, that we depleted freely or stimulated largely in pneumonia, conveys no definite information. Of one thing we may be very sure, that the out-and-out course of treatment, whichever it may be, is wrong, if not mischievous. It is misleading, also, to make the predominant feature represent the entire treatment, which is, or ought to be, different in the different stages of the disease. The time has probably passed forever when physicians will follow the practice of the last of the Gregorys in the Edinburgh University, who used to say in his lectures that, provided he was called early in pneumonia, he would be contented to dispense with all other aids than those of the lancet and water-gruel. The time will also pass when alcoholic stimulants will be regarded as the sole or even the best remedies in pneumonia. Dr. Gregory had, no doubt, cases in his mind to justify his language of faith in the lancet; and Dr. Anstie gives us cases in equal justification of his free recourse to the brandy-bottle in prescribing for his pneumonic patients. The results of the extreme, if not exclusively, stimulating treatment in this disease are not calculated to win confidence and secure general imitation. There are still judicious practitioners who bleed in pneumonia, to the great relief of their patients, and who do not deem it inconsistent

practice to stimulate at the same time, and in this way bring about a cure. They do not pledge themselves to bleed; they certainly do not stimulate in every case, to the exclusion of a modified treatment. Sound conservative medicine is, we believe, fairly represented on this point in the lecture (XX.) of Dr. Chambers on "Pneumonia." It begins by relating three cases of the disease.

1. Frank, uncomplicated double pneumonia in a temperate man with excessive dyspnœa. Cured with venesection, jacket-poultice, continuous feeding, and wine.
2. Pneumonia of upper and lower lobes of one lung, very slight in the other lung, in a broken-down old man. Cured with cupping, jacket-poultice, continuous feeding, and wine.
3. Congestive pneumonia of lower lobe in typh-fever. Cured with half-jacket poultice, cupping beneath scapula, continuous feeding, wine, and bark.

Dr. Chambers describes the symptoms of the first case. Age of the patient, 21 years; lips and tongue livid; pulse very quick and small, but the heart beat strongly, in spite of its great rapidity. The expectoration was copious and glairy, of a deep tawny color, and with a few small striæ of blood in it. The state of the lungs, ascertained by auscultation and percussion, is given. "It was obvious that active inflammation raged throughout nearly the whole (if not quite the whole) of the right lung, and in the lower lobe of the left, and that it was most advanced in the back part of the right side. At most, a third of the pulmonary tissue was in working condition, so no wonder that exaggerated puerile breathing was heard in that third, and the ribs were heaved in an extraordinary manner when heaved at all." This man was brought to the hospital six days after his seizure, his case marked by severe rigors, followed by a dull pain in the side, and cough. The treatment after his reception is thus described: "The patient was bled to three-quarters of a pint from the arm, took eight ounces of port wine during the twenty-four hours and beef-tea every two hours, and had his chest completely enveloped in a thick, hot linseed-meal poultice. He was ordered, also, three effervescent draughts of citrate of ammonia daily." Relief began immediately after the venesection. The treatment was completed by the administration, from the eighth day, of decoction of bark. The second case was that of a man sixty-three years of age, suspected of "petty tippling." His pulse was large, short, and empty. His tongue was thickly furred and clammy, his hands tremulous, and his manner excited. There was also occasional delirium. On the fourth day of the disease he was sent to the hospital, where he

received the following treatment: "He was cupped that day to six ounces on the cardiac region, and on the morrow to the same amount beneath the right clavicle. The chest was completely enveloped in a jacket of linseed poultice. He was ordered eight ounces of port wine every two hours, and three effervescing draughts daily of carbonate of ammonia and tartaric acid. After a fortnight's stay in the hospital, he began to take bark and ammonia. The third case was that of a youth aged seventeen years, who, on the third day from his seizure, presented the most unfavorable appearances—complete prostration and constant delirium; tongue clammy and tremulous, protruded with great difficulty from the dry lips; the pulse 120 and small; the skin hot and dry; the eyes were bloodshot, and on the front of the body were from thirty to forty fever-spots of various hues, some slightly raised and inclining to rose-color, some livid, some completely purpuric, and not changed by pressure. He was treated," says Dr. Chambers, "in my usual way, with hydrochloric acid and tepid sponging, and was going on as usual very well till May 3, the tenth day of the disease, when some fine crepitation and dulness on percussion were found in the lower lobe of the right lung, accompanied by slight cough, but without expectoration. On the 4th he was cupped beneath the right scapula to four ounces, a poultice was applied over that part, and he was directed to be kept turned on the left side." On the 7th the percussion was normal, and the breath-sounds, for the most part, healthy. The convalescence was rapid under bark and wine.

In farther remarks on bloodletting in pneumonia, Dr. C. states that the best guide for its necessity is dyspnoea, and we are told to be careful to supply material in the place of that which we take away by this operation. "Let the patients be fed with beef-tea or milk every two hours, just as if we had typh-fever. This is to be done in all severe cases, irrespective of other treatment." Alcohol, we are told on the same authority, especially in the form of port wine, is very useful in treating pneumonia. "Even to hearty temperate persons, when we are going to bleed, it is desirable to give a little wine, as was done in Case I. A glass of hot negus before the operation makes it safer." Whenever the nervous system is becoming prostrate we may give a little wine from time to time. Old persons, especially of the wealthier classes, who have indulged freely in alcoholic liquors, may begin wine immediately. "Children, on the other hand, get well quicker without it." In the

administration of alcohol under any form, a rule directly opposite to that which governs the giving of nutritious food should be observed. The frequent repetition of small doses is specially and repeatedly objected to by Dr. Chambers. He always prefers two or three doses a day, enough at once to produce a decided effect. In the case of a young girl aged sixteen, taken with typh-fever and supervening pneumonia, the only additions to the usual treatment of the former disease were six leeches beneath the shoulder blade, a jacket-poultice, and ten grains of compound kino powder, three times a day during the first day, to check diarrhœa. The combination of alcohol and opium, with local detraction of blood, and nutrients, was successful in the case of a laborer, twenty-eight years, seized with pneumonia. Six leeches to the side one day, and sixteen more on the next, with a jacket-poultice, was followed by the use of ten minims of laudanum every four hours, six ounces of port wine daily, and a teacup of beef-tea hourly. Dr. Chambers thinks the opiate treatment of pneumonia is especially suited to cases where there is evidence of deficient power in the nervous system—great prostration, or tremor of the hand and tongue. He gives it, also, where the tongue has a smooth, whitey-brown, paper-colored coat, and where there is diarrhœa, or even tendency to diarrhœa, such as two fluid motions daily, for, in pneumonia, “of all unfortunate complications there is none so bad as looseness of bowels; those patients always do best who are constipated either naturally or artificially.” As farther illustrating the good effects of local bloodletting with the use of laudanum, is another case related by the same author, of a young girl who had just reached the age of puberty. “On admission, the breathing was very labored, and she raised the *alæ nasi* in inspiration. The respirations were forty-four in the minute, and the pulse one hundred and forty-four. There was bronchial breathing and whistling rales all over the chest. The whole of the right lower lobe was dull on percussion. No stitch in the side, or pain on pressure. She was cupped to $\bar{\text{z}}\text{iv}$ between the shoulders, eight leeches were applied beneath the shoulder blades, and the chest was enveloped in a jacket-poultice. I also ordered her ten minims of laudanum every three hours, and teacup diet.” In a case of pneumonia occurring in a muscular laborer, aged thirty-two years, who had been a hard drinker, and had had several attacks of delirium tremens, and on his admission exhibited a pulse of one hundred and forty, and respirations sixty in the minute, cupping to the extent of $\bar{\text{z}}\text{viiij}$ was practised beneath

the shoulder blades, a jacket-poultice was applied, and twenty minims of laudanum every four hours, and a teacup diet every two hours. In reference to the convalescence in this case, the lecturer points out the fact of the gradual progress of textural change in the lungs in pneumonia, and the gradual recession in its disappearance.

It has been seen that an almost uniform part of the treatment of pneumonia by Dr. Chambers consists in his directing the use of a warm thick linseed poultice, to be applied around the chest as a kind of jacket. He says, this is "another direct restorative, about the use of which also any when and any where you need have no manner of hesitation. You can always, without any exception of age, sex, condition, cause, or complication, follow a treatment to which I attribute more power of saving the lives of pneumonic patients than to any other, and which you see me apply in all cases." Under the use of the linseed poultice the dyspnoea is diminished, the breath being easily drawn in spite of the weight of the poultice; the hot fevered skin becomes moist and active, and soon the ribs begin to move again and air is admitted into the hitherto paralyzed lung-tissue. To the infant who cannot afford much loss of blood, this remedy is the really safe and invariably necessary one.

"The poultice is best made of linseed meal, because that keeps moist the longest. It should be spread half an inch thick on a cloth or flannel as broad as the circumference of the thorax. If any portion of the upper lobes be inflamed, it is essential, and if even only the lower lobes are inflamed, it is prudent that the poultice should be deep enough to cover the whole chest from the collar bones to the hypochondria. Lay the patient in it on his back, and fold it across the front till it meets. In adults it will usually keep its place of its own accord; but in children you should have a tape stitched on in front and a tape behind, which you can tie over the shoulder in the manner of a shoulder strap; otherwise the little prisoners wriggle out of their soft breast-plates. When once you have got this jacket poultice *in situ*, keep it there, and desire the nurse, on pain of dismissal, never to take it off till another hot one is ready to go on. The poultice in low fever often takes the place of sponging by its softening and suffusing with a gentle perspiration the whole body."

Dr. Chambers, in referring to his refusing the very urgent request of a patient laboring under *emphysema of the lung*, for beer,

adds: "I hope, if probable, to break him of the habit, for nothing is so injurious to regenerative tendencies as alcohol, and no form of alcohol liquid so bad as beer." But he corrects himself by making "one exception to the bad pre-eminence of alcohol, that is, mercury. Avoid mercury in these cases as you would a poison. Avoid also purgatives."

A case of *pericarditis* occurring in the course of acute rheumatism—quite a common event—was treated by Dr. Anstie as follows: The patient, aged eighteen years, had been in homœopathic hands for four days. He took one grain of morphia every four hours throughout the persistence of the chest symptoms, and for seven days twelve ounces of gin each day, and about an equal quantity of water, two drachms of the gin being given every half hour. For a while gin and water was the only thing the stomach did not absolutely reject at once. "Recovery in this case was very rapid, for the man was able to get about in a month." Dr. A. generally recommends in this disease repeated small doses of alcohol. Dr. Bennett treats acute pericarditis according to the general and, as seems to us, rational principles which govern him in prescribing for other phlegmasiæ and fevers. During the acute febrile symptoms, salines and quietude. If there be much local pain, leeches and local warmth. If there be excited action and dyspnœa, ether and morphia, and, as early as possible, nutrients and wine to support the vital changes which it is necessary for the exudation to go through, so as to favor absorption. Active purgatives should be avoided; and blisters are thought to be of doubtful value. Dr. Chambers, in prescribing for pericarditis, makes no mention of alcohol. His chief reliance is on leeching early and repeating opium and poultices. He speaks highly of enveloping the patient in blankets. As a palliative to relieve some of the many unpleasant and often very painful symptoms in chronic pericarditis, alcohol is frequently given. Of its curative power nothing can be said, especially when occurring, as it so often does, after Bright's disease, a product of alcoholism. Dr. Stokes¹ thinks that our great reliance must be on the free use of wine or brandy in confirmed cases of *fatty degeneration of the heart*, where the patients have always been temperate, and, above all, where the pulse is slow, with tendency to faintness or to attacks of pseudo-apoplexy. By such a course alone can we hope, in the opinion of the author, to

¹ Diseases of the Heart and Aorta.

preserve or prolong the patient's life. "Cardiac suffering" from the use of tobacco and excessive drinking of green tea is relieved by similar means. The same remark is made to apply to the treatment of *hypertrophy of the heart*, with passive enlargement of the organ, or with permanently patent aortic valves. It must be borne in mind, however, as we have already stated, that fatty degeneration of the heart will probably acknowledge the large use of alcohol for its chief cause, although the disease may, as in the cases specified by Dr. Stokes, occur in a temperate person. Dr. Chambers, with his usual discrimination, says in reference to the treatment of "disease of the heart" (Lect. XXV.): "While you bid your patients live generously you must take care to disabuse them of the notion that the advice includes excess in alcohol. Alcohol is really the most ungenerous diet that there is. It impoverishes the blood, and there is no surer road to that degeneration of the muscular fibre which is so much to be feared. And in heart disease it is more especially hurtful, by quickening the beat, causing capillary congestion and irregular circulation, and thus mechanically inducing dilatation of the cavities. Let the alcoholic drink be limited to that quantity which increases the appetite. In a great many instances this quantity may be very shortly written down—0."

The *convulsions of teething* are arrested by the use of alcohol in a remarkable manner, according to Dr. Anstie. He has found no other plan of treatment so beneficial. "There is not," he says, "the least necessity for intoxicating the little patients; a minute dose of wine or brandy (for young infants a few drops at a time in a little water) is amply sufficient for any good purpose that can be effected." Many will ask whether a better purpose would not be effected by a substitute for a remedy which is so liable to be abused and made a source of such great and abiding mischief. The mother, let us suppose, finds alcohol good in the convulsions of her child from teething; she will be very apt to give it to allay the irritation and restlessness accompanying this process. An occasional starting in sleep will alarm her, and for fear of convulsions she will give her child alcohol, and if she has any hysterical twitches herself she will believe that alcohol, even without the thoughtless advice of a physician, may be of service to her also. In fine, if alcohol finds a recognized place in the nursery dispensary, the foundation for a love of it on the part of the poor infant is laid, which grows with its growth and strengthens with its strength. This is no imaginary fear. There are safer and better anæsthetics in infantine convul-

sions than alcohol in any shape. Excellent results are claimed by Dr. Anstie for alcohol in some cases of *tetanus*. This treatment is familiar to every physician, and has long enjoyed a certain amount of vogue. Alcohol has, also, been given in *hydrophobia* and in *snake poisoning* in large and intoxicating doses with, in some cases, satisfactory effects.

In the *exhaustion and syncope from hemorrhage* recourse is had to brandy and kindred liquors in large doses, and often without due discrimination. When the hemorrhage has ceased, or in cases of exhaustion termed shock, from external injury or from mental cause, the desired reaction is obtained by a moderate quantity of strong alcoholic liquor. Dr. Young contests the propriety of giving alcohol under such circumstances, on the ground that this substance is not a stimulant to the heart, but rather an enfeebling agent and one that diminishes animal heat, as shown by the experiments of Dr. N. S. Davis, of Chicago, and others previously named. Dr. Young from his own extensive experience, as surgeon in the army and in private practice, is led to believe that alcoholic liquors retard the reaction and increase depression, and he has, in consequence, long since avoided their administration. He substitutes for them hot coffee, hot teas, and hot broth, when obtainable, and he has been much better pleased with the effects of these beverages. For the long list of disorders of the digestive organs and those of the nervous system so often associated with and resulting from them, alcohol is freely prescribed, often thoughtlessly by the physician, and still more freely drunk, for the most part with appetite, but in ignorance, by the patient. The most obvious and abiding consequences of this extensive and uncalled-for practice are often aggravation of the disorders which it was meant to remove, and often, O how often, habits of intemperance in its varied and distressing varieties, of which so many persons of all ages, ranks, and professions, and both sexes have been the victims. Many a drunkard, says Dr. Wood,¹ owed a miserable death to the inconsiderate recommendation of a little brandy in dyspepsia. Whence, we would ask, comes the advice? where rests the responsibility? The evils are the more deplorable as they might easily have been prevented, for, it may be safely and truly said, that in all dyspeptic and nervous troubles there is not a pain or an ache or an unpleasant sensation, or depression of spirits, or wakefulness, that cannot be

¹ Therapeutics and Pharmacology, vol. i. 671-2.

relieved by other remedies and agents than alcohol, and their recurrence prevented by an amended system of dietetics, in which alcohol finds no place. A reform in this matter requires on the part of physicians when they become advisers the exercise of thought, patience, firmness, knowledge, and sound ethics, which look to the consequences of an indulgence beyond the hour of its gratification. Medical men will be slow to admit that they are wanting in these requisites, for the exercise of which every community must look hopefully to them more than to any other class. Ingenious paradox must yield to a plain statement of facts. Dr. Rush, speaking from his own extensive observation and experience, gives his warning when he tells us that "valetudinarians, especially those who labor under disorders of the stomach and bowels, are very apt to fly to spirits for relief. Let such people be cautious how they repeat this dangerous remedy. I have known many men and women of excellent character and principles who have been betrayed by occasional doses of gin or brandy to ease the colic, into a love of spirituous liquors, insomuch that they have afterwards fallen sacrifices to their fatal effects. The different preparations of opium are a thousand times more safe and innocent in all spasmodic affections of the stomach and bowels. So apprehensive am I of the danger of contracting a love for spirituous liquors, by accustoming the stomach to their stimulus, that I think the fewer medicines we exhibit in spirituous liquors the better." Brandy, says Dr. Chambers in commending the remedies for eructation and vomiting, useful in teaspoonful doses in acute cases, is obviously not adapted for chronic disease. In our medical studies and reading we are too apt to skip the beginning in our eagerness to reach the great object before us, viz., the cure of disease. We are not fully aware of the fact, that it is of far more importance to know how to prevent than how to cure a disease, even had we the power of always curing instead of being so often baffled in our attempts in this way. Prevention works on a large scale, therapeutics act on a limited number of individual cases. A careful study of the *Materia Alimentaria* ought to precede that of *Materia Medica*, and in that case the student would learn what are real alimentary principles and what are fictitious ones. He would see that water is a true primary alimentary and vital principle, indispensable in health and a safe ally in disease; it is restorative, exhilarating, strengthening, forming the larger part of the blood and other fluids and the tissues, entering freely into the organism and escaping as

freely, and not like alcohol which is introduced as an admitted stranger and hurried out like a smuggled article as rapidly as possible, and leaving behind it a very equivocal reputation if not positive proofs of its disorderly and destructive nature. Dr. Anstie, in the work already quoted, relates several cases of persons of both sexes who lived for a length of time on alcoholic drink, chiefly distilled spirits with a very slight addition of real solid food. One old man, eighty-three years of age, it is stated, had taken nothing for a number of years but gin to the amount of a bottle a day, with water and a small finger length of bread. The chief witness of the truth of the story in this case was the old man's daughter, and we may be allowed to doubt its literal accuracy. No notice is taken of the quantity of water he was in the practice of drinking between his gin potations; and it must be remembered that absolute alcohol could not be drunk at all without the addition to it of water, as we meet it in distilled spirits; it is still alcoholized water that is taken, for in its pure state alcohol could not enter the circulation without its causing acute poisoning. It is to be deeply regretted that our profession at large is not more thoroughly imbued with the truth of the fact, acknowledged by some of the greatest names in medicine, that water is the most salutary and sustaining drink in health, and among the foremost remedies in disease. The "watery regimen," which includes both the internal and external use of water, would furnish a theme for investigation by the American Medical Association most prolific of instruction in a hygienical as well as therapeutical point of view, and would prove the best corrective of alcoholic drinking that could be devised. The materials for the purpose are abundant. When a more active medicinal agency is required it will be readily found in the varied sanitary and curative constituents of the waters of mineral springs, combined in nature's laboratory by nature's pharmacy, and enabling us to meet nearly every indication for the cure of disease in every form.¹

¹ The writer of the present report, at the approaching termination of a long life of professional and literary toil, may hope to escape the imputation of obtrusive vanity of authorship, if he refer now to some of his contributions to these subjects, as, for example, on Baths and the Watery Regimen, on Mineral Springs, etc. The *British and Foreign Medico-Chirurgical Review*, never lavish of its praise, said, soon after the first appearance of the volume on Baths, etc.: "The work by Dr. Bell is the most complete monograph, we do not hesitate to say, ever issued from the press, and should find a place as a work of reference in the library of every practitioner."

Little can be said in favor of alcohol in the treatment of chronic diseases. Too much is of necessity forced on our notice of its deleterious agency in the production of many diseases of this class, as we have had occasion to indicate in this report, to allow of our putting any faith in its curative power under these circumstances. Some physicians have been sanguine enough, of late years, to believe that an exception favorable to alcohol will be found in its use in pulmonary consumption. It could hardly have been supposed on any theoretical or indeed pathological grounds that a degradation of tissues and exhaustion from impeded and imperfect nutrition so often caused by alcohol, would be any protection against the formation of tubercle, or a means of restraining its growth in a subsequent stage. But such would seem in some cases to be the fact, looking at the not unfrequent exemption of drunkards from phthisis. It is going too far, however, to convert this escape into a general proposition. Every practitioner must have met with consumptive drunkards; and it remains to be seen how far drunkards by their original constitution and temperament, and descent from non-phthisical parents might expect to escape from this disease, even while indulging in habits calculated to bring it on. For the present we believe that the profession must accept the conclusions reached by Dr. John Bell of New York in his elaborate Fiske Prize Essay.¹ They are—

1. That alcoholic drinks have a marked influence in preventing the deposit of tubercle, is destitute of any solid foundation.

2. On the contrary, their use appears rather to predispose to tubercular deposition.

3. When tubercle already exists, alcohol has no obvious effect in modifying the usual course run by that substance.

4. Neither does it mitigate in any considerable degree the morbid effects of tubercle upon the system in any stage of disease.

Professor Davis' observations have led him to a disbelief of the prophylactic power of alcohol to ward off phthisis. Apposite to the present argument, and in favor of the negative side, is the result of observations made by Dr. Marcet, of 695 out-door hospital patients to ascertain the extent of the predisposition to diseases from alcohol. We made free use of this writer's paper under our head of etiology, and among others of his conclusions which pointed to the fact of drinkers being much more predisposed to diseases of the

¹ Published in Am. Journ. Med. Sciences, 1859.

respiratory organs than those who are sober, and that this predisposition was still greater in laryngitis. We may now add, in reference to particular employments, that drinking shop-keepers are much more predisposed to pulmonary affections than sober shop-keepers. A similar difference was observed between drinking engineers and sober engineers.

Doctor Chambers holds the opinion (Lect. XXIII.) that alcohol is not only useless but injurious to the consumptive, excepting for its beneficial action upon the mucous membrane, as when added to cod-liver oil to enable this latter to be absorbed more rapidly. Alcohol, continues the lecturer, "arrests and obstructs the vigor of vital action; by it growth is checked, as we see in animals artificially kept small by dosing with alcohol in youth, without a sufficient supply of food, and in men who have early in life habitually indulged in ardent spirits. Under its use renewal goes on slower, as we know by the diminished excretion of urea, water, bile, etc. (see Dr. Boecker's Experiments and Lecture L. in this volume), and we can hardly therefore expect it to be advantageous where the continual renewal of vital powers is our primary object!" Sometimes where the alcohol, acting as an anæsthetic, seems to check the disease and relieve the symptoms, it "has acted merely as a mask behind which the evil has gone on unawares." The lightening of the symptoms "is merely a misty cloud of anæsthesia which stands between the patient and his pain, and I doubt if life is prolonged." How universally applicable are these remarks to the delusive action of alcohol in all chronic diseases!

RECAPITULATION.

It is very evident from the preceding statements, enforced as they are by diversified trials and experiments, that the habitual use of alcohol, in its various combinations of distilled and fermented liquors, is opposed to individual comfort and health, as well as to social order and progress, and is the fruitful source of a long list of diseases and crimes.

The drinking of alcoholic or intoxicating liquors, so far from being followed by increased activity of respiration and increase of animal heat, has a directly contrary effect, by disturbing the respiration and diminishing the temperature of the human body, and rendering it less able to bear the extremes of cold. This fact is proved by the unanimous experience of all Arctic explorers and

navigators, and of those persons who, as soldiers, travellers, and workmen, have been exposed to great and continued cold and vicissitudes of temperature.

Fatigue and hardships of every kind, in all the varieties of season and climate, are better encountered by the drinkers of water alone than by the drinkers of any kind of alcoholic liquor, and especially of ardent spirits.

The fervid heats of summer in our own climate and of the tropical regions are best borne and fewer diseases incurred by those who follow out the watery regimen, to the exclusion of alcohol in any form.

Alcohol interrupts digestion by precipitating and coagulating pepsin. It is in no sense a food or a condiment; it forms no element or constituent of the blood or tissues; it is an alien in the healthy living body, and to be eliminated as soon as possible; or, if retained, it becomes a source of textural degeneration and disease.

A search for the oxides of alcohol must be entirely recommenced, and we are wanting in the very first principles necessary for a scientific theory of the metamorphosis of matter in the animal organism.

Alcohol interferes with the processes of digestion and nutrition, and causes febrile disturbances in those who take their ordinary allowance of food, and in those also who indulge in excessive repletion. The young are the greatest sufferers in this way.

Danger to valetudinarians who make use of alcoholic drinks or tinctures, as pointed out by Dr. Rush.

Acetic acid, not alcohol, an aid to digestion.

Common salt the universal condiment.

Danger to youth in acquiring a habit of using intoxicating drinks. Protection, for life, by total abstinence. No man safe against the consequences of the habitual use of alcohol.

Fallacy of regarding alcohol as accessory food. Alcohol produces the greatest amount of harm when taken in small divided drams, and particularly when these are begun early in the day.

The combination of alcohol in wine has little to recommend it over that in distilled spirits. Intemperance prevails to a great extent in wine countries. Danger to the youth of both sexes from drinking wine. Pictures of drunkenness from wine in France, by French writers. Great adulterations of wines of all kinds. Wine largely used for being distilled into brandy. Vineyards may still be encouraged for their supply of grapes, as an agreeable and

somewhat nutritive fruit. Their large and increasing use. Conversion into raisins. Vinegar the natural product of fermentation of the grape. Its sanitary uses as a condiment, and, when diluted, as a drink.

Malt liquors convey very little nutriment, are adulterated largely in Great Britain, by the addition of many poisonous substances, the chief of which is *Cocculus Indicus*.—Franklin's experience.

Cider, an intoxicant, often causes colic and otherwise disturbed digestion; is mischievous by its being made to yield ardent spirits by distillation.

Examples of the pernicious effects of alcohol, in those who drink it being less able to resist cold, and of the comparative immunity of water drinkers under such exposure.

Alcohol shown to be equally powerless against heat.

Proofs adduced by eminent medical men in the military service in the East and West Indies.

Better health and discipline, and greater efficiency of sailors who abstain from alcohol. Always danger when it is used on board ship—case related by the reporter.

Greater endurance of heat and fatigue by abstainers from alcohol who work in foundries, glass-blowing establishments, and the like.

So it is with agricultural laborers.

Alcohol imparts no bodily strength or mental vigor; training of the athletes and pugilists; injunction by the angel on the mother of Samson, that she, when pregnant, should abstain from wine and all strong drink; the practice of the Roman legionaries, and of the Mohammedan conquerors.

The brain, the organ of the mind, cannot perform its functions fully and regularly when poisoned by alcohol, even in small quantity, from day to day; Newton a water-drinker; other great names on the same list; testimony from personal experience in favor of total abstinence from alcohol, by the Rev. Sydney Smith, Dr. Miller, Princeton, and Professor Silliman.

Immediate abstinence from alcohol safe.

Social pleasures marred by alcohol, and increased by its disuse. Holidays, instead of being times of relaxation and enjoyment, are too often commemorative of disorder, tumult, and violence, under the influence of alcohol.

ETIOLOGY.—*Alcohol as a Cause of Disease*.—Alcohol is not a nutritive food; it contributes nothing towards the formation of

blood, and is in its nature always a poison. Gluttony is a vice, but it furnishes no excuse for drunkenness.

Immense consumption of intoxicating liquors in the United States, and in Great Britain and Ireland. Loss of life and property, diseases, and loss of time and interruption to industrial pursuits in consequence.

Alcohol shortens life; examples. Increased longevity by total abstinence.

Organic lesions caused by alcohol, and its use predisposing to attacks of epidemic disease, and, also, of hereditary diseases.

Alcohol acts on the stomach, alters its tissue, and interrupts its function. The brain is among the first of the suffering organs from the ingestion of alcohol. This fluid found in its substance, and in that of the other nervous centres. Diseases of the respiratory organs and of the liver are numerous from the use of alcohol. The same is to be said of the heart, which, like the liver, is changed by fatty degeneration. Textural changes in the kidneys from the use of alcohol—Bright's disease.

Dropsy, a common attendant on organic lesions of the heart, liver, or kidneys.

Alcohol in the blood, poisoning the liver and kidneys. It increases the amount of fat in the blood, which is diminished in plastic material in delirium tremens, and contains at this time six to eight times more than common of fatty matter.

Hæmorrhoids always aggravated by the use of alcoholic liquors.

Diseases enumerated by Dr. Rush as the result of drinking spirituous liquors.

Albuminuria (Bright's disease) a most impressive warning against the use of ardent spirits.

The temperate soon becomes the intemperate use of alcoholic drinks.

Diseases caused by wine—numerous and complicated—gout, rheumatism, cerebral disorders, gravel, and painful eruptions and boils of the skin. Promptly injurious effects in remote parts, produced by drinking a fermented liquor. Cases by Mr. Crampton and Sir Anthony Carlisle. Entire disuse of distilled and fermented liquors.

Gout, an effect of drinking fermented liquors, and especially wine. Great eating alone will not bring it on. In a person with gouty diathesis, the *use* of these liquors is an *abuse*. Beer will bring on gout, and it ranks next to wine in this respect—cider acts

also as a predisponent to the disease—Butler's verses on wine—Insanity in France from the large use of wine—Juvenal's satire.

Diseases caused by beer—plethora and obesity, fatty degeneration. Malt-liquor drunkards in seven cases out of ten die of apoplexy or palsy; escaping these, they perish of dropsy or diseased liver. Inordinate quantity of malt liquor consumed.

Alcoholic stimulants excite more readily the people of the United States than Europeans. The air itself more exciting, the Americans more mercurial and excitable. Observations of travellers on this point. Contrasted features of the gin and the beer drunkard, as painted by Hogarth.

Colica pictonum caused by cider.

All distilled spirits bad. No ground for the selection of one over another for drinking.

Roesch of Urach denounces brandy as pernicious, both physically and morally. Wherein are other liquors of the distilled class any better?

Rheumatism caused by alcohol in distilled spirits and in fermented liquors—alcoholic rheumatism described by Higginbottom. Cases.

A day of a genteel tippler, who is always alcoholized but never drunk.

Colica pictonum from the use of distilled spirits. *Delirium tremens*, the most exact of all the alcoholimeters; ebrious ferocity; ebrious moroseness; ebrious hallucinations; dipsomania; mania crapulosa *vel* ebriosa, or oinomania, showing itself often in an irresistible craving for alcoholic drinks. Chronic alcoholism.

Proportion of the insane from alcoholic drink to the insane from all causes, in the Pennsylvania Hospital and in English asylums.

Inherited insanity from drunken parents.

Examples of hereditary degeneration.

Alcohol an inciter to vice. Illustrations: fallen women.

Results of observations by Dr. Marcet, showing the predisposition to a large number of diseases of different kinds caused by the habitual use of alcohol; by some to the extent of merely exhilarating, by others to cause drunkenness.—Inferences to be drawn for the prevention of diseases.

THERAPEUTICS.—Obstacles to a correct knowledge of the therapeutical value of alcohol.—Misplaced association between debility and stimulus, and preconceived notions of the action and effects of alcohol in health.

Different hypotheses under which alcohol has been prescribed in disease, and especially in fever.

Alcohol acts as a stimulus, a sedative, and a narcotic, according to the dose and the time that elapses after its ingestion, as well as the state of the system for which it is administered.

Dr. Anstie's views on stimulants and narcotics.

His wise caution to prevent the prescription of alcohol in disease being made a reason or pretext for its being taken in health.

Neither alcohol nor any medicinal stimulus can give power, or increase the *vis vitæ*.—The excitement or reaction resulting from its use, if long kept up, exhausts rather than strengthens.—The restoration of power can only be brought about by means of the vital stimuli—food, air, water, and heat.

Alcohol still occupies the foremost place in the opinion of many practitioners at the present time, in their treatment of fever.

The practice of giving large doses of alcohol in continued fevers—typhus and typhoid—by Anstie.—His test of its injurious or narcotic effects, where the dose has been beyond the wants of the case.

Dr. Hughes Bennett's treatment of fever, eclectic and moderately alcoholic.

Dr. Wood recommends our beginning with the mildest form of alcoholic stimulants, such as wine whey, then wine, and have recourse to the strongest as increasing debility may seem to require.

Alcoholic liquors useful in scarlatina, diphtheria, smallpox, and erysipelatous fever, when typhoid symptoms prevail, and in the advanced stage of inflammation.

Dr. Gerhard has sometimes used stimulants in large doses in typhoid fever, but in many instances he considers them totally unnecessary.—In typhus fever some will require large doses; others will get well on small portions.

Dr. J. F. Meigs has prescribed milk punch with benefit in severe and malignant remittent fever.

Dr. Weeks, of Guy's Hospital, says that fevers will do well without alcoholic stimulants. This is more particularly the case with young persons. They make good recoveries in the hospital on a simple milk diet.

Immense amount of mischief done by stimulants, in the opinion of Dr. Weeks.

Dr. Chambers uses alcohol under certain well-defined conditions, but does not think this article should rank as a part of the neces-

sary *methodus medendi* of fever.—Wine must never take the place of true restoratives.—Dr. Chambers regards the alcoholic as an exceptional mode of treatment in typhus fever, just as he does the local abstraction of blood.

Dr. Chambers's plan of treating fever—properly eclectic—depleting while stimulating and nourishing.

Alleged febrifuge virtue of alcohol erroneous.

Delirium tremens—variety of modes of treatment.

Preference given to that which begins by an entire abstraction of alcohol from the patient.

Alcohol in the phlegmasiæ.—Large doses in pneumonia given by Dr. Anstie.—Dr. Bennett's very successful treatment by "restoration."—Contrasted modes of practice between that of the past and of the present generation in pneumonia.

Dr. Chambers directs in pneumonia, cupping or leeching, a nutrient diet, and wine or other alcoholic at long intervals, as twice or thrice in the course of the day, and finally a jacket-poultice of linseed meal. He thinks no form of alcohol liquid so bad as beer. Pericarditis is treated by Dr. Anstie with repeated small doses of alcohol. Dr. Bennett treats his patients according to general principles, the same as when he prescribes for fevers and other phlegmasiæ. Dr. Stokes relies on the free use of wine and brandy in fatty degeneration of the heart.

Dr. Chambers' judicious advice on the treatment of diseases of the heart.

In epileptiform convulsions, and in the convulsions of teething, and in neuralgia, Dr. Anstie extols the use of alcohol. Risk from the use of this liquor becoming a habit with child and mother.

Exhaustion from hemorrhage generally believed to call for the free use of alcohol. Dr. Young contests the propriety of this practice.

Little can be said in favor of alcohol in chronic diseases.

Alcohol gives no protection to drunkards or the drinkers of intoxicating liquors against pulmonary consumption. Conclusions of Dr. John Bell, of New York, on this subject. Similar adverse opinion of Dr. Chambers.

Danger of habits of intemperance being formed by the frequent use of alcohol in dyspepsia, and other disorders of the digestive system. Dr. Rush's admonitions on this point.

More important to know how to prevent than how to cure a disease. Value of the watery regimen. Reference to works on this subject by the reporter.

MEDICAL JURISPRUDENCE.

In its Relations to Alcohol.—Alcohol introduces its customers to a great variety of places and company which are far from being of the most agreeable kind. It brings some to the station-house or lock-up, to spend the remainder of the night; some to the almshouse or to the prison, to spend there the remainder of their days; others are carried to the hospital; and others, again, to a lunatic asylum. Some it introduces into courts of law, to have it determined how far a thoroughly alcoholized man is capable of continuing to take charge of his property, or is responsible for acts of fraud, or of violence on his fellow-creatures. These are questions for medico-legal investigation, into which we cannot be expected to engage on the present occasion beyond a mention of some leading points. For a regular array of arguments and applied cases, we would refer to the standard works on the subject.¹

As regards a drunkard's tenure of property, reference may be made to a case cited by Lord Eldon, where a commission of lunacy was supported against a person who, when sober, was a very sensible man, but, being in a continual state of intoxication, he was incapable of managing his property. By the Roman law a notorious spendthrift was put under guardianship; and by the law of Scotland, a man who from drunkenness, facility of temper, or any other cause, is liable to be stripped of his property by the necessities or designing, has the power of putting *himself* under trustees, without whose sanction no act of his can be valid. This is technically called *inhibiting one's self*. In the State of New York there is a statute which places the property of habitual drunkards under the care of the Chancellor, in the same manner as that of lunatics.² Any deed or agreement made by a party while drunk is not invalidated by the English law.

Drunkenness is not held to be an excuse for homicide; or, stated in other words, "insanity immediately produced by intoxication does not destroy responsibility where the patient, when

¹ Medical Jurisprudence of Insanity, by I. Ray, M. D.; Elements of Medical Jurisprudence, by Theodorie Romeyn Beck, M. D., and John B. Beck, M. D., revised by C. R. Gilman, M. D.; Treatise on Medical Jurisprudence, by Francis Wharton and Moreton Stillé, M. D., medical part revised and corrected by Alfred Stillé, M. D.; Medical Jurisprudence, by Alfred Taylor, M. D., with Notes and References by Clement B. Penrose.

² A similar law was passed in Pennsylvania in 1819, and in New Hampshire in 1822.

sane and responsible, made himself voluntarily intoxicated." Drunkenness, so long as it does not prostrate the faculties, cannot be distinguished from any other kind of passion. There is still less excuse for the former state than the latter, inasmuch as in many, if not in all cases of murder committed by a drunkard, the guilty man wrought himself up to a state of mind to make him dare to do the deed by previous drinking to the extent of producing partial if not complete intoxication. The tenor of common and civil law to this effect is clear. Sir E. Coke most emphatically declares, that, "as for a drunkard, who is *voluntarius demon*, he hath, as been said, no privilege thereby; but what hurt or ill soever he doeth, his drunkenness doth aggravate it." In our own day, Judge Parke, a very authoritative crown judge, said to a jury in 1833: "I must also tell you, if a man makes himself voluntarily drunk, it is no excuse for any crime he may commit while he is so; he takes the consequences of his own voluntary act, or most crimes would go unpunished." The law in our own country is that drunkenness is no defence to the fact of guilt; the only point about which there has been any fluctuation of opinion being the extent to which evidence of drunkenness is receivable to determine the exactness of the intent, or the extent of deliberation. A person laboring under *delirium tremens* is declared to be irresponsible, as in this case drunkenness is the remote cause of what may be considered actual insanity. When delirium tremens is set up as a defence, the prisoner must show that he was under a delirium at the time the act was perpetrated. Judge Story has said: "The law looks to the immediate, and not the cause which remotely produced it. Many species of insanity arise remotely from what, in a moral point of view, is a criminal neglect or fault of the party; as from religious melancholy, undue exposure, extravagant pride, ambition, etc.; yet such insanity has always been deemed a sufficient excuse for any crime done under its influence." The state of mind here represented must not for a moment be confounded with drunkenness *per se*. The same enlightened and learned judge just quoted tells us that insanity is not a competent excuse for crime, if it be committed "while the party is in a fit of intoxication, and while it lasts." Involuntary drunkenness, as where a person is ignorant of the readiness with which it may occur, or the mental disorder produced by it, or where he is made drunk by his companions, will be received as an excuse or in mitigation of criminal acts committed in this state. An irresistible propensity to exces-

sive drinking is to be regarded with some indulgence, and as not so much a cause of insanity as one of the first or precluding symptoms of this disease. This propensity shows itself, and seeks for its indulgence at intervals, and in the paroxysms of drunkenness thus brought on, Esquirol looks on the person at the time as a true monomaniac, and not morally responsible. Crimes committed in the lucid intervals between these paroxysms, or of attacks of delirium tremens, do not stand excused on account of the state of mind of the prisoner during the actual disease. The following case in one of the New York courts bears on this point. Thomas Harty, the prisoner, was addicted to drinking spirituous liquors. He resided in Albany during the winter of 1832-3, and while there had several paroxysms of delirium tremens, which were of short duration. In the spring he removed to Troy. On the 31st of August he murdered his wife by a blow with an axe. He had for three weeks previous to this period exhibited no marks of insanity. Some ten days previous to the homicide he had ill-treated his wife, and for a few days she refused to live with him; but at length returned home. After the deed was done, his actions and conversation induced some persons to think he was insane. But the most intelligent individuals, who conversed with him, did not consider him so. And there was no proof of insanity or delirium tremens either on the morning on which he killed his wife or for several months before. He was executed for murder.

The light in which the English law regards drunkenness, in relation to responsibility for crime, is shown in the legal admissibility of confessions made in this state. In a particular case, the prisoner confessed, while drunk, that he had committed a robbery and murder, which had taken place some time before, but of which he had not been suspected. He mentioned a spot where the property of the murdered person had been concealed by him, and the whole of the circumstances of the murder. The property was found as he had described, and the case clearly brought home to him, chiefly by collateral evidence from his own confession. He was convicted.

We have yet much to learn respecting the psychology of alcoholism, of which drunkenness is made the chief feature, but it is not always the most characteristic one. There is a condition of the nervous system, and a corresponding frame of mind, especially of the affective faculties in the habitual drinker, preceding and following a paroxysm, as it may be called, of drunkenness, which, if it does not bode mischief as much as this latter, is, notwithstanding, a

perilous one both for its possessor and for other persons with whom he is brought in contact. Destructiveness and combativeness are more roused in a fit of drunkenness than at other times; but the darker and more malignant passions of hatred, envy, revenge, cool and collected cruelty, and treachery, with an exalted but perverted imagination, are at work under alcoholic promptings and poisoning, in a less demonstrative but more determined and persistent manner. In this poisoned and perverted state of feeling the most horrid crimes are committed; their perpetrators not requiring to be worked up to the pitch of intoxication, but impelled by some alleged mysterious influence—"a voice from heaven," "a spirit whispering to them," etc. In their intercourse with those around them they are moody, sullen, and morose in manner, and scant in speech, as if absorbed in meditation. They are, in fact, less of free agents than the boisterous drunkard, and require as careful watching as the more distinctly recognized insane.

JOHN BELL,

Chairman of Committee and Reporter.

April 27th, 1868.

NOTE.—With the abundant supply of matter and copious references, together with previous handling of the subject committed to him and his associates by the Association, the author, although going over much of the same ground with Dr. Carpenter, in his excellent Prize Essay on the "Use and Abuse of Alcoholic Liquors in Health and Disease," has not found it necessary to make the use of this work which, with more space at his disposal, he would otherwise have done. More than thirty-eight years have elapsed since the author first gave his own creed of total abstinence from all intoxicating liquors, and adduced a large body of evidence in its favor in the Anniversary Report which he prepared and read for the Managers of the *Pennsylvania Temperance Society*, May 27th, 1831. From this document he has drawn freely on the present occasion. He has to regret not to have seen Dr. Wilson's valuable work on the "Pathology of Drunkenness." The author has been allowed to introduce some additional facts into the report since it was first presented to the Association, at its meeting in New Orleans. Room could not be found in the volume of the *Transactions* for the Recapitulation, introduced in the extra copies of the Report.