MARTHA ALLEN

ALCOHOL: A DANGEROUS AND UNNECESSARY MEDICINE, HOW AND WHY

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Содержание

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INTRODUCTION

This book is the outcome of many years of study. With the exception of a few quotations, none of the material has ever before appeared in any book. The writer has been indebted for years past to many of the physicians mentioned in the following pages for copies of pamphlets and magazines, and for newspaper articles, bearing upon the medical study of alcohol. Indeed, had it not been for the kindly counsels and hearty co-operation of physicians, she could never have accomplished all that was laid upon her to do as a state and national superintendent of Medical Temperance for the Woman's Christian Temperance Union. She is also under obligation for helps received from the secretaries of several State Boards of Health, and from eminent chemists and pharmacists.

The object of the book is to put into the hands of the people a statement of the views regarding the medical properties of alcohol held by those physicians who make little, or no use of this drug. In most cases their views are given in their own language, so that the book is, of necessity, largely a compilation.

It is hoped that while the laity may be glad to peruse these pages because of the very useful and interesting information to be obtained from them, the medical profession, also, may be pleased to find, in brief form, the teachings of some of their most distinguished brethren upon a question now frequently up for discussion in society meetings.

The writer does not presume to set forth her own opinions upon a question which is still a subject of dispute among the members of a learned profession; she simply culls from the writings of those members of that profession who, having made thorough examination of the claims of alcohol, have decided that this drug, as ordinarily used, is more harmful than beneficial, and that medical practice would be upon a higher plane, were it driven entirely from the pharmacopœia.

PREFACE TO SECOND EDITION

When the first edition of this book was published in 1900, there were only a few leading physicians either in Europe or America who were ready to condemn the medical use of alcohol. Sir Benjamin Ward Richardson, Sims Woodhead, and a few others in England; Forel, Kassowitz and one or two more on the Continent, and Nathan S. Davis, T. D. Crothers and J. H. Kellogg, in America, were about all that could be quoted largely as opposed to alcoholic liquors as remedies in disease. Whisky was then looked upon as necessary in the treatment of consumption and diphtheria. Ten years have brought about a great change. There are many American physicians now willing to admit that they have very little or no use for alcoholic liquors as remedial agents, and now, instead of recommending whisky for consumption anti-tuberculosis literature almost everywhere warns against the use of intoxicating drinks. The use of anti-toxin in diphtheria has driven out whisky treatment in that disease with markedly favorable results. Under the whisky treatment death-rates ran up to fifty-five and sixty per cent.; now the diphtheria death-rate is very low. Ten years ago many good authorities still ranked alcohol as a stimulant; now, almost all rank it as a depressant. In England, leading physicians and surgeons have spoken so strongly against alcohol in the last few years that the London *Times*, England's leading newspaper, said:

"According to recent developments of scientific opinion, it is not impossible that a belief in the strengthening and supporting qualities of alcohol will eventually become as obsolete as a belief in witchcraft."

So far as the writer can learn from replies sent to her inquiries by teachers of medicine, and by study of text-books on medicine, and articles in good medical journals, alcohol now has only a very limited use in medicine with the great majority of successful physicians. Some recommend wine in *diabetes mellitus*, saying that it acts less like a poison and more like a food in that disease than in any other. Some use alcoholic liquors in fevers as a food "to save the burning of tissue," but an article on "Therapeutics" in the *Journal of the American Medical Association*, for November 6, 1909, page 1564, says that sugar would probably have equal value in such case. The same article says that hot baths, with hot lemonade, and a quickly acting cathartic, will abort a cold without any need of recourse to alcohol.

The writer wishes here to make grateful acknowledgment of courtesies received from busy physicians who have aided materially in her work by answering personal letters of inquiry, also letters published in the *Journal of the American Medical Association*, by kindness of the editor. Especially would she thank those professors of medicine and superintendents of large hospitals, who so courteously aided her in preparing a paper for the International Congress on Alcoholism, held in London, July, 1909, to which she was a delegate, representing the United States

government. A few of the replies received at that time are given in this book. There was not room for all.

She wishes also to acknowledge kindness and much help received from pharmacists and druggists in the fight against dangerous patent medicines and drug drinks sold at soda fountains. The *Druggists' Circular*, of New York, deserves special mention in this connection.

It has been necessary to make many changes in this edition because of the changing views on alcohol and the publicity on patent medicines. Physicians will find Chapter XVI entirely new, and of great interest.

M. M. A.

CHAPTER I.
HISTORY OF THE STUDY OF ALCOHOL

The only intoxicating drinks known to the ancients were wines and beers. That these were used for medicinal as well as beverage purposes is evident from sacred and secular history. About the tenth century of the Christian era, an Arabian alchemist discovered the art of distillation, by which the active principle of fermented liquors could be drawn off and separated. To the spirit thus produced the name alcohol was given. A plausible reason cited for this name is that the Arabian for evil spirit is *Al ghole*, and the effects of the mysterious liquid upon men suggested demoniacal possession.

Medical knowledge at this time was very limited: there was no accurate way of determining the real nature of the new substance, nor its action upon the human system. It could be judged only by its *seeming* effects. As these were pleasing, it was supposed that a great medical discovery had been made. The alchemists had been seeking a panacea for all the ills to which flesh is heir, indeed for something which would enable men even to defy Death, and the subtle new spirit was eagerly proclaimed as the long-looked-for cure-all, if not the very *aqua vitæ* itself. Physicians introduced it to their patients, and were lavish in their praises of its curative

powers. The following is quoted from the writings of Theoricus, a prominent German of the sixteenth century, as an example of medical opinion of alcohol in his day: —

> "It sloweth age, it strengtheneth youth, it helpeth digestion, it cutteth phlegme, it cureth the hydropsia, it healeth the strangurie, it pounces the stone, it expelleth gravel, it keepeth the head from whirling, the teeth from chattering, and the throat from rattling; it keepeth the weasen from stiffling, the stomach from wambling, and the heart from swelling; it keepeth the hands from shivering, the sinews from shrinking, the veins from crumbling, the bones from aching, and the marrow from soaking."

Being a medicine, which very rapidly creates a craving for itself, the demand for it became enormous, and, as time advanced, people began prescribing it for themselves, until its use both as medicine and beverage became almost general.

If the medical profession is responsible for the wide-spread belief that alcoholics are of service to mankind both as food and medicine, it should not be forgotten that it is to members of the same profession the world is indebted for the correction of these errors. All down through the centuries there have been physicians who doubted and opposed its claims to merit. It remained for the medical science of the latter half of the nineteenth century to clearly demonstrate with nicely adjusted chemical apparatus and appliances the wisdom of these doubts.

The scientific study of the effects of alcohol upon the

human body began about sixty years ago. The first American investigator was Dr. Nathan S. Davis, of Chicago, who was the founder of the American Medical Association. During the months of May, June, July, September and October, 1848, Dr. Davis published in the *Annalist*, a monthly medical journal of New York City, a series of articles controverting the universal opinion that alcoholic drinks are warming, strengthening and nourishing. In 1850 he executed an extensive series of experiments to determine the effects of a diet exclusively carbonaceous (starch), one exclusively nitrogenous (albumen), and alcohol (brandy and wine), on the temperature of the living body; on the quantity of carbonic acid exhaled; and on the circulation of the blood. The results of these investigations were embodied in a paper read before the American Medical Association in May, 1851. They showed that alcohol, instead of increasing animal heat, and promoting nutrition and strength, actually produced directly opposite effects, reducing temperature, the amount of carbonic acid exhaled, and the muscular strength. So opposed were these conclusions to the generally accepted teachings of the day that the Association did not refer the paper to the committee of publication. It was published later in the *Northwestern Medical and Surgical Journal*.

In 1854 Dr. Davis published one of the most remarkable of the numerous works which have come from his prolific pen; it was entitled, "A Lecture on the Effects of Alcoholic

Drinks on the Human System, and the Duty of Medical Men in Relation Thereto." This lecture was delivered in Rush Medical College, Chicago, on Christmas, 1854. An appendix to the work contained a full account of the series of original experiments which the author had been conducting in relation to the effect of alcohol upon respiration and animal heat, and gave the same conclusions as those presented before the A. M. A. several years previously. These experiments laid the foundation for the scientific study of the physiological effects of alcohol; and their bearing upon the study of the temperance question can even yet scarcely be appreciated. They were the first experiments which showed conclusively that the effect of alcohol is not that of a stimulant, but the opposite.

In 1855 Prof. R. D. Mussey, of Vermont, read an able paper before the American Medical Association upon "The Effects of Alcohol in Health and Disease," in which he said, "So long as alcohol retains its place among sick patients, so long will there be drunkards."

In England as early as 1802, Dr. Beddoes pointed out the dangers attendant upon the social and medical use of intoxicating drinks, laying stress upon "The enfeebling power of small portions of wine regularly drunk." In 1829 Dr. John Cheyne, Physician General to the forces in Ireland said: —

> "The benefits which have been supposed from their liberal use in medicine, and especially in those diseases which are vulgarly supposed to depend upon mere

> weakness, have invested these agents with attributes to which they have no claim, and hence, as we physicians no longer employ them as we were wont to do, we ought not to rest satisfied with the mere acknowledgment of error, but we ought also to make every retribution in our power for having so long upheld one of the most fatal delusions that ever took possession of the human mind."

Dr. Higginbotham, F. R. S., of Nottingham, a keen and able clinical practitioner, abandoned the prescription of alcohol in 1832, saying: —

> "I have amply tried both ways. I gave alcohol in my practice for twenty years, and have now practiced without it for the last thirty years or more. My experience is, that acute disease is more readily cured without it, and chronic diseases much more manageable. I have not found a single patient injured by the disuse of alcohol, or a constitution requiring it; indeed, to find either, although I am in my seventy-seventh year, I would walk fifty miles to see such an unnatural phenomenon. If I ordered or allowed alcohol in any form, either as food or as medicine, to a patient, I should certainly do it with a felonious intent." —*Ipswich Tracts. No. 346.*

In 1839 Dr. Julius Jeffreys drew up a medical declaration which was signed by seventy-eight leaders of medicine and surgery. This document declared the opinion to be erroneous that wine, beer or spirit was beneficial to health; that even in the most moderate doses, alcoholic drinks did no good. This, of course,

dealt only with the beverage use of alcoholics. In 1847 a second declaration was originated, signed by over two thousand of the most eminent physicians and surgeons. This also referred only to liquor as a beverage. In 1871 a third declaration, signed by two hundred and sixty-nine of the leading members of the medical profession was published in the London *Times*.

This declaration was in part as follows: -

> "As it is believed that the inconsiderate prescription of large quantities of alcoholic liquids by medical men for their patients has given rise, in many instances, to the formation of intemperate habits, the undersigned, while unable to abandon the use of alcohol in the treatment of certain cases of disease, are yet of opinion that no medical practitioner should prescribe it without a sense of grave responsibility.
>
> "They are also of opinion that many people immensely exaggerate the value of alcohol as an article of diet, and they hold that every medical practitioner is bound to exert his utmost influence to inculcate habits of great moderation in the use of alcoholic liquids."

In the same year the American Medical Association passed a resolution that "alcohol should be classed with other powerful drugs, and when prescribed medically, it should be done with conscientious caution, and a sense of great responsibility."

The physicians of New York, Brooklyn and vicinity not long afterward published a declaration practically the same as that of the A. M. A., adding: "We are of opinion that the use of alcoholic liquor as a beverage is productive of a large amount of physical

disease."

The publication of these later declarations was the beginning of a marked change in the medical use of alcohol.

In England the scientific temperance movement began with Dr. B. W. Richardson, afterwards knighted by Queen Victoria for his great services to humanity as a medical philanthropist. Dr. Richardson's success in bringing before physicians the remarkable medicinal agent known as nitrite of amyl, led to a request from the British Association for the Advancement of Science that he investigate other chemical substances. The result was that several years of study, beginning with 1863, were given to the physiological effects of various alcohols, ethylic alcohol, which is the active principle in wines, beers and other intoxicating drinks, receiving special attention.

The following is taken from his "Results of Researches on Alcohol": —

> "In my hands ethylic alcohol and other bodies of the same group; viz. methylic, propylic, butylic, and amylic alcohols were tested purely from the physiological point of view. They were tested exclusively as chemical substances apart from any question as to their general use and employment, and free from all bias for or against their influence on mankind for good or for evil.
>
> "The method of research that was pursued was the same that had been followed in respect to nitrite of amyl, chloroform, ether, and other chemical substances, and it was in the following order: First, the mode in which living bodies

would take up or absorb the substance was considered. This settled, the quantity necessary to produce a decided physiological change was ascertained, and was estimated in relation to the weight of the living body on which the observation was made. After these facts were ascertained the special action of the agent was investigated on the blood, on the motion of the heart, on the respiration, on the minute circulation of the blood, on the digestive organs, on the secreting and excreting organs, on the nervous system and brain, on the animal temperature and on the muscular activity. By these processes of inquiry, each specially carried out, I was enabled to test fairly the action of the different chemical agents that came before me. * * * * *

"The results of these researches were that I learned purely by experimental observation that, in its action on the living body, alcohol deranges the constitution of the blood; unduly excites the heart and respiration; paralyzes the minute blood-vessels; disturbs the regularity of nervous action; lowers the animal temperature, and lessens the muscular power.

"Such, independent of any prejudice of party or influence of sentiment, are the unanswerable teachings of the sternest of all evidences, the evidences of experiment, of natural fact revealed to man by testing of natural phenomena."

When Dr. Richardson reported to the Association for the Advancement of Science the results of his researches so at variance with commonly accepted ideas, the Association was as

incredulous as the American Medical Association had been in 1851 when Dr. Davis gave a similar report, and Dr. Richardson's paper was returned to him for correction.

It should be stated here that Dr. Richardson was not a total abstainer when he began his study of the effects of alcohol, but became an ardent and enthusiastic advocate of total abstinence, and later of non-alcoholic medication, because of what he learned by his experiments with this drug. He was the first to suggest that scientific temperance be taught in the public schools, and he prepared the first text-book ever published for this purpose. In 1874 he delivered his famous "Cantor Lectures on Alcohol," by request of the Society of Arts. This series of lectures created a sensation, being attended by crowds of people, as it was the first time that any physician of eminence had spoken from experimental evidence in favor of total abstinence.

The agitation begotten in medical circles by the discussion of Dr. Richardson's researches upon alcohol led to extensive experimenting upon the same line by scientists of England, Continental Europe and America. The efforts of the National Woman's Christian Temperance Union of the United States, led by that intrepid woman, Mrs. Mary H. Hunt, to introduce scientific temperance instruction into public schools gave impetus to the study in this country. The call for text-books caused publishers to request professors in medical colleges to make minute research into the nature and effects of alcohol, that the demands of the new educational law might be met.

The bitter opposition to these temperance education laws was a great stimulant to the scientific study of alcohol, for it was hoped by many that the teachings regarding the deleterious effects of alcohol might be proved incorrect. Unfortunately for the lovers of the bibulous, the proof was all the other way; great medical men could not be *bought* by distillers or brewers to tell anything but the truth, and the truth of experimental research was all against alcohol. The text-books endorsed by Mrs. Hunt and her advisory committee being assailed again and again as containing erroneous teaching, were finally, in 1897, submitted to an examining committee of medical experts, nearly all of whom were connected with medical colleges. This committee consisted of Dr. N. S. Davis, Sr., of Chicago, Ill.; Dr. Leartus Connor, of Detroit, Michigan; Dr. Henry Q. Marcy, of Boston, Mass.; Dr. E. E. Montgomery, of Philadelphia, Pa.; Dr. Henry D. Holton, of Brattleboro, Vt.; and Dr. George F. Shrady, of New York City. From their reports upon the books the following is culled: —

> "I find no errors in the teaching of any of them on this subject."
>
> "No statement was found at variance with the most reliable studies of especially competent investigators."
>
> "I was asked to point out any errors in these books which need correcting. I find no such errors."
>
> "I find their teaching completely in accordance with the facts determined through scientific experimentation and investigation."

> "I find them to be in substantial accord with the results of the latest scientific investigations."

Dr. Baer, of Berlin, Germany, the foremost European specialist on the subject treated in these text-books, has recently subjected the books to rigid examination. He says in his report upon them: —

> "On the basis of the examination I have made I can assert that the above mentioned school text-books, (the endorsed physiologies), in respect to their statements regarding alcoholic drinks contain no teachings which are not in harmony with the attitude of strict science."

Still the opposers of the text-books were not satisfied, and a self constituted Committee of Fifty undertook an investigation. Men of unquestioned ability were chosen to make researches, but the result of their investigations was so different from what was looked for, that, with the exception of Professor Atwater's contention for the food value of alcohol, the report of the Committee of Fifty did not stir up much controversy.

The school text-books deal exclusively with the effects of alcohol used as a beverage; for obvious reasons this is all they can do. But as intoxicating drinks have been generally supposed to contain great virtue as remedial agents, this phase of their nature and effects has not been overlooked by those pursuing inquiries concerning them. While full agreement has not yet been reached by experts as to the value of alcoholic liquids as medicines, it is noteworthy that some of the most eminent investigators were

led to drop alcohol from their pharmaceutical outfit, and the remainder to admit that its sphere of usefulness is extremely limited.

There are now medical colleges of high standing where students are advised against the use of alcohol as a remedy; hospitals are gradually using it less and less, some entirely discarding it; and many progressive physicians, while saying nothing as to their position upon the alcohol question, yet show their lack of faith in this drug by ignoring it unless patients or their friends desire it.

CHAPTER II.
THE WOMAN'S CHRISTIAN TEMPERANCE UNION IN OPPOSITION TO ALCOHOL AS MEDICINE

When the W. C. T. U. was first organized there was no thought among its members of antagonizing the use of alcohol in medicine. One almost immediate result of the organization, however, was that the women began to study the causes of inebriety, and prominent among the prevailing influences leading to drunkenness they found the medical use of alcoholics. The early efforts of these women were chiefly in rescue work through Gospel temperance meetings, and visitations of jails and poor-houses. By reason of this contact with the effects of inebriety they learned many sad tales of ruined lives, blighted homes and lost souls, through the appetite for strong drink created, or aroused, by alcoholic prescription. They saw, as time passed, that some of the drunkards reclaimed through their influence lapsed again into their evil habits because a little beer, or wine, "for the stomach's sake," or some other sake, had been advised them. Some of the workers had this trouble in their own homes, husband, son or other relative enslaved to alcohol

through prescription in disease. Is it any wonder that women of the spirit of the Crusaders, having once had their attention thoroughly aroused to the danger of alcohol in medicine, should begin to examine this stronghold of the enemy to discover, if possible, whether or not, his fortress, the medicine-chest, was impregnable? Greatly to their joy they found that the medical profession was not a unit in commending alcoholics as remedial agencies, that all along since alcohol came into common use there have been physicians who distrusted, and opposed it. They learned, too, that some of the most distinguished physicians of America and of England were using little or no alcohol in their practice, and that a hospital had been established in London, England, which was clearly demonstrating the superiority of non-alcoholic medication by its small death-rate in comparison with hospitals using alcohol.

This knowledge encouraged those possessing it so that they began to refuse alcoholics as remedies in their own households, and rarely did they find physicians unwilling or unable to supply another agent when asked to do so, and thousands of women can now testify to the fact of having recovered from ill health without the wine, beer or brandy they were advised to take. So the W. C. T. U. discovered several good reasons for opposing alcohol in medicine.

1. Its liability to create or revive an uncontrollable appetite.
2. A considerable number of the leading physicians of

America and of Great Britain discard it from their list of remedies, considering it harmful rather than helpful.

3. The lessened mortality consequent upon its entire disuse demonstrated by the London Temperance Hospital.

4. By their own experience they knew that alcohol is not necessary to the restoration of health, nor to the upbuilding of strength.

The first active work touching the medical use of alcohol was a memorial from the National W. C. T. U. to the International Medical Congress of 1876, which met in Washington, D. C. This memorial was suggested by Miss Frances E. Willard, and co-operated in by the National Temperance Society. It asked for a deliverance from the Congress upon alcohol as a food and as a medicine.

The Congress was divided into sections for the more thorough discussion of the various topics. Upon the program was a paper on "The Therapeutic Value of Alcohol as Food, and as a Medicine," by Ezra M. Hunt, M. D., delegate from the New Jersey Medical Society. This paper was read before the "Section on Medicine," and, after earnest discussion, the conclusions of the author were adopted "quite unanimously" as the sentiments of the Section on Medicine. As such they were reported for acceptance to the General Congress, and by it ordered to be transmitted as a reply to the memorialists.

The report was published in full by the National Temperance Society, and may be obtained from it in paper binding for twenty-

five cents. As it makes a book of 137 pages the conclusions only will be quoted here. They are as follows: —

> 1. "Alcohol is not shown to have a definite food value by any of the usual methods of chemical analysis or physiological investigation.
>
> 2. "Its use as a medicine is chiefly that of a cardiac stimulant, and often admits of substitution.
>
> 3. "As a medicine it is not well fitted for self-prescription by the laity, and the medical profession is not accountable for such administration, or for the enormous evil arising therefrom.
>
> 4. "The purity of alcoholic liquors is in general not as well assured as that of articles used for medicine should be. The various mixtures when used as medicine should have definite and known composition, and should not be interchanged promiscuously."

It is matter for sincere regret that this deliverance was not, in some way, brought prominently before every physician in the land. There are, doubtless, thousands of physicians who never heard of it, and, consequently have never been influenced by it to doubt the utility of the popular brandy bottle.

In 1883 Mrs. Mary Towne Burt, President of New York State W. C. T. U., in her annual address, suggested that a department of work be created to endeavor to induce physicians to not prescribe alcohol, unless in such cases as allowed of the use of no other agent. Mrs. (Rev.) J. Butler, of Fairport, was the first superintendent of this department, which was

named, "Influencing Physicians to not Prescribe Alcoholics as Medicines." The National W. C. T. U. adopted the department in 1883, but soon dropped it. In 1895 it was reinstated and Mrs. Martha M. Allen, New York's superintendent, was made national superintendent. In 1905 the name of the department was changed from Non-Alcoholic Medication, which it had borne for fifteen years, to Medical Temperance.

The objects of this department of work are:

1. To inform the public of the objections to the medical use of alcoholic drinks now held by many successful physicians.

2. To show the dangers in the home-prescription of alcohol and other powerful drugs.

3. To expose fraudulent and dangerous proprietary and "patent" medicines and liquid "foods," the main ingredients of which are alcohol and morphine.

4. To use persuasion with publishers of newspapers and magazines against fraudulent medical advertising. Also to seek legislation which shall hinder such advertising.

5. To endeavor to win the attention of physicians who prescribe alcoholic liquors to the teachings of great leaders in their profession who have abandoned such practice.

6. To bring to the attention of nurses the same teachings, and to seek their co-operation in education against the self-prescription of alcohol.

7. To work for legislation which shall correct the evils of the whisky drug-store, the whisky-prescribing doctor, and the

dangerous "patent" medicine.

8. To gather the opinions upon alcohol of well-known physicians who do not use it, and publish them.

This department originated the public agitation against injurious and fraudulent "patent" medicines which later was so ably carried on by *Collier's Weekly*, and the *Ladies' Home Journal*. That its early work in this direction was not better known to the general public was due to the fact that religious as well as secular papers were reaping large revenues from the advertising of these nostrums, and consequently refused to publish anything which might injure the trade. Indeed, in accepting some of this advertising, newspaper managers had to sign a contract that they would not publish any reading matter opposed to the nostrum business.

The *Christian Advocate* of New York city deserves special mention for having published in 1898 two articles written by Mrs. Allen under the caption, "The Danger and Harmfulness of Patent Medicines." These were in the fall of that year published in pamphlet form, and a copy sent to every local W. C. T. U. in the United States for study. Tens of thousands of copies of this and other leaflets on that theme were distributed within a few years, some local unions placing them in every home in their community. Medical journals took note of this work and commended it highly. When Mr. Bok began his campaign of education in the *Ladies' Home Journal*, for which he deserves lasting gratitude, the *American Druggist* said he was "bowing to

the clamor of the W. C. T. U."

This department which began in weakness, and was for years regarded as fanatical even by many members of the W. C. T. U. has entered upon an era of victories. The National Pure Food Law requires the percentage of alcohol in patent medicines, and the presence of different dangerous drugs, to be stated upon the label. The prohibition law of Georgia forbids physicians to prescribe alcoholic beverages, absolute alcohol only being permitted. Kansas has amended her law so that whisky drug-stores are eliminated. If physicians prescribe alcohol the law forbids charge for it. Alabama forbids the sale of liquor for everything but the communion. The Internal Revenue Department has examined a large number of "patent" medicines and has listed them as intoxicating beverages. Two state medical societies and some county societies in 1908 passed resolutions to discourage the medical use of alcoholic liquors. Two national societies of druggists and pharmacists in 1908 passed resolutions against whiskey drug-stores.

These are some of the results of Medical Temperance agitation. Much more may be expected in the next decade if the work is as faithfully and fearlessly carried on as in the past.

This book contains much of the teachings of the department of Medical Temperance. When these views are generally accepted the liquor-problem will be well-nigh solved.

CHAPTER III.
ALCOHOL AS A PRODUCER OF DISEASE

That alcohol is a poison is attested by all chemists and other scientific men; taken undiluted it destroys the vitality of the tissues of the body with which it comes in contact as readily as creosote, or pure carbolic acid. The term *intoxicating* applied to beverages containing it refers to its poisonous nature, the word being derived from the Greek *toxicon*, which signifies a *bow* or an *arrow*; the barbarians poisoned their arrows, hence, *toxicum* in Latin was used to signify poison; from this comes the English term *toxicology*, which is the science treating of *poisons*. Druggists in selling proof spirits usually label the bottle, "Poison." Apart from the testimony of science in regard to its poisonous nature, it is commonly known that large doses of brandy or whisky will speedily cause death, particularly in those unaccustomed to their use. The newspapers frequently contain items regarding the death of children who have had access to whisky, and drunk freely of it. Cases are reported, too, of men, habituated to drink, who after tossing off several glasses of brandy at the bar of a saloon have suddenly dropped dead.

Dr. Mussey says: —

"A poison is that substance, in whatever form it may be, which, when applied to a living surface, disconcerts and disturbs life's healthy movements. It is altogether distinct from substances which are in their nature nutritious. It is not capable of being converted into food, and becoming a part of the living organs. We all know that proper food is wrought into our bodies; the action of animal life occasions a constant waste, and new matter has to be taken in, which, after digestion, is carried into the blood, and then changed; but poison is incapable of this. It may indeed be mixed with nutritious substances, but if it goes into the blood, it is thrown off as soon as the system can accomplish its deliverance, if it has not been too far enfeebled by the influence of the poison. Such a poison is alcohol – such in all its forms mix it with what you may."

Dr. Nathan S. Davis said in an address given in 1891: —

"When largely diluted with water, as it is in all the varieties of fermented and distilled liquids, and taken into the stomach, it is rapidly imbibed, or taken up by the capillary vessels and carried into the venous blood, without having undergone any digestion or change in the stomach. With the blood it is carried to every part, and made to penetrate every tissue of the living body, where it has been detected by proper chemical tests as unchanged alcohol, until it has been removed through the natural process of elimination, or lost its identity by molecular combination with the albuminous elements of the blood and tissues, for which it has a strong affinity.

"The most varied and painstaking experiments of chemists and physiologists, both in this country and Europe, have shown conclusively that the presence of alcohol in the blood diminishes the amount of oxygen taken up through the air-cells of the lungs; retards the molecular and metabolic changes of both nutrition and waste throughout the system and diminishes the sensibility and action of the nervous structures in direct proportion to the quantity of alcohol present. By its stronger affinity for water and albumen, with which it readily unites in all proportions, it so alters the hemaglobin of the blood as to lessen its power to take the oxygen from the air-cells of the lungs and carry it as oxyhemaglobia to all the tissues of the body; and by the same affinity it retards all atomic or molecular changes in the muscular, secretory and nervous structures; and in the same ratio it diminishes the elimination of carbon-dioxide, phosphates, heat and nerve force. In other words, its presence diminishes all the physical phenomena of life.

"I say, then, that from the facts hitherto adduced, whether from accurate experimental investigations in different countries, from the pathological results developed in the most scientific societies, from the most reliable statistics of sickness and mortality, as influenced by occupations and social habits, or from the life insurance records kept on a uniform basis through periods of ten, twenty, thirty or even forty years, it is clearly shown that alcohol when taken into the human system not only acts upon the nervous system, perverting its sensibility, and, if increased in quantity, causing intoxication or

insensibility, but it also, *even in small quantities*, lessens the oxygenation and decarbonization of the blood and retards the molecular changes in the structures of the body. When these effects are continued through months and years, as in the most temperate class of drinkers, *they lead to permanent structural changes, most prominently in the liver, kidneys, stomach, heart, blood-vessels and nerve structures, and lessen the natural duration of life in the aggregate from ten to fifteen years*. Consequently there is no greater, nor more destructive error existing in the public mind than the belief that the use of fermented and distilled drinks does no harm so long as they do not intoxicate.

"Another popular error is the opinion that the substitution of the different varieties of beer and wine in the place of distilled liquors promotes temperance, and lessens the evil effects of alcohol on the health and morals of those who use them. Accurate investigations show that beer and wine drinkers generally consume more alcohol per man than the spirit drinkers; and while they are not as often intoxicated, they suffer fully as much from diseases and premature death as do those who use distilled spirits. Again, the beer drinker drinks more nearly every day, and thereby keeps some alcohol in his blood more constantly; while a large percentage of spirit drinkers drink only periodically, leaving considerable intervals of abstinence, during which the tissues regain nearly their natural condition. The more constant and persistent is the presence of alcohol in the blood and the tissues, even in moderate quantity, the more certainly does it lead to perverted and degenerative

changes in the tissues, *ending in renal* (kidney) *and hepatic* (liver)*dropsies, cardiac* (heart) *failures, gout, apoplexy and paralysis*."

Sir B. W. Richardson says: —

"Alcohol produces many diseases; and it constantly happens that persons die of diseases which have their origin solely in the drinking of alcohol, while the cause itself is never for a moment suspected. A man may say quite truthfully that he never was tipsy in the whole course of his life; and yet it is quite possible that such a man may die of disease caused by the alcohol he has taken, and by no other cause whatever. This is one of the most dreadful evils of alcohol, that it kills insidiously, as if it were doing no harm, or as if it were doing good, while it is destroying life. Another great evil of it is that it assails so many different parts of the body. It hardly seems credible at first sight that the same agent can give rise to the many different kinds of diseases it does give rise to. In fact, the universality of its action has blinded even learned men as to its potency for destruction.

"Step by step, however, we have now discovered that its modes of action are all very simple, and are all the same in character; and that the differences that have been and are seen in different persons under its influence are due mainly to the organs, or organ, which first give way under it. Thus, if the stomach gives way first, we say that the person has indigestion or dyspepsia, or failure of the stomach; if the brain gives way first, we say the person has paralysis, or

apoplexy, or brain disease; if the liver gives way first, we say the man has liver disease, and so on.

"All persons who indulge much in any form of alcoholic drink are troubled with indigestion. When they wake in the morning they find their mouth dry, their tongue coated, and their appetite bad. In course of time they become confirmed 'dyspeptics,' and as many of them find a temporary relief from the distress at the stomach, and the deficient appetite from which they suffer by taking more liquor, they increase the quantity taken, and so make matters much worse. * * * * *

"There are a great number of diseases caused by alcohol, some of which are known by terms that do not convey to the mind what really has been the cause of the diseases." They are:

(*a*) Diseases of the brain and nervous system: indicated by such names as apoplexy, epilepsy, paralysis, vertigo, softening of the brain, delirium tremens, loss of memory and that general failure of the mental power called dementia. (*b*) Diseases of the lungs: one form of consumption, congestion and subsequent bronchitis. (*c*) Diseases of the heart: irregular beat, feebleness of the muscular walls, dilation, disease of the valves. (*d*) Diseases of the blood: scurvy, dropsy, separation of fibrine. (*e*) Diseases of the stomach: feebleness of the stomach and indigestion, flatulency, irritation and sometimes inflammation. (*f*) Diseases of the bowels: relaxation or purging, irritation. (*g*) Diseases of the liver: congestion, hardening and shrinking cirrhosis. (*h*)

Diseases of the kidneys: change of structure into fatty or waxy-like condition and other changes leading to dropsy. (*i*) Diseases of the muscles: fatty changes in the muscles, by which they lose their power for proper active contraction. (*j*) Diseases of the membranes of the body: thickening and loss of elasticity, by which the parts wrapped up in the membrane are impaired for use, and premature decay is induced.

But it constantly happens that when deaths from these diseases are recorded and alcohol has been the primary cause, some other cause is believed to have been at work.

While drinking parents by virtue of a strong constitution sometimes escape the penalty of their bibulous habit, it is not uncommon to see their children suffering from some disease or nervous weakness such as is caused by alcohol, "the sins of the father being visited upon the children."

Erasmus Darwin says upon this point: —

> "It is remarkable that all the diseases from drinking spirituous or fermented liquors are liable to become hereditary, even to the third generation, gradually increasing, if the cause be continued, till the family become extinct."

Prof. Christison, of Edinburgh, in answer to inquiries from the Massachusetts State Board of Health, says of general diseases due to alcohol: —

> "I recognize certain diseases which originate in the vice of drunkenness alone, which are *delirium tremens*, cirrhosis

of the liver, many cases of Bright's disease of the kidneys, and dipsomania, or insane drunkenness.

"Then I recognize many other diseases in regard to which excess in alcoholics acts as a powerful predisposing cause, such as gout, gravel, aneurism, paralysis, apoplexy, epilepsy, cystitis, premature incontinence of urine, erysipelas, spreading cellular inflammation, tendency of wounds and sores to gangrene, inability of the constitution to resist the attacks of epidemics. I have had a fearful amount of experience of continued fever in our infirmary during many epidemics, and in all my experience I have only once known an intemperate man of forty and upwards to recover."

Professor Christison also claims that three-fourths, or even four-fifths, of Bright's disease in Scotland is produced by alcohol.

Dr. C. Murchison, in speaking of alcohol as a preventive of disease, says: —

"There is no greater error than to imagine that a liberal allowance of alcoholic liquids fortifies the system against contagious diseases."

In a paper read before the Royal Medical and Chirurgical Society, Oct. 22, 1872, Dr. W. Dickinson gave the following conclusions: —

"Alcohol causes fatty infiltration and fibrous encroachments; it engenders tubercles; encourages suppuration, and retards healing; it produces untimely atheroma (a form of fatty degeneration of the inner coats

of the arteries), invites hemorrhage, and anticipates old age. The most constant fatty changes, replacement by oil of the material of epithelial cells and muscular fibres, though probably nearly universal, is most noticeable in the liver, the heart and the kidneys. *Drink causes tuberculosis*, which is evident not only in the lungs, but in every amenable organ."

Dr. William Hargreaves says: —

"Brandy is not a prophylactic. To the temperate it is an active, exciting cause. It is well known that a single act of intemperance during the prevalence of cholera, will often produce a fatal attack. The sense of warmth and irritation (called stimulation) produced by alcoholic liquors, has led to the erroneous notion that they may prevent cholera. But the contrary we have seen is the truth, for the effects of alcoholics are to reduce the temperature of the body, and instead of stimulating, they narcotize, and reduce the life-forces, and predispose the system to all kinds of disease."

The following testimonies are culled from the writings of eminent physicians: —

Sir Andrew Clark, M. D., F. R. C. P., London, Physician in Ordinary to the Queen, Senior Physician at the London Hospital: "As I looked at the hospital wards to-day, and saw that seven out of ten owed their diseases to alcohol, I could but lament that the teaching about this question is not more direct, more decisive and more home-thrusting. * * * * * Can I say to you any words stronger than these of the terrible effects of alcohol? When I think of this I am disposed to

give up my profession, and go forth upon a holy crusade, preaching to all men —*Beware of this enemy of the race.*"

Sir William Gull, F. R. S. (late Physician to her Majesty): "I should say, from my experience, that alcohol is the most destructive agent that we are aware of in this country. I would like to say that a very large number of people in society are dying day by day, poisoned by alcohol, but not supposed to be poisoned by it."

Dr. Abernethy: "If people will leave off drinking alcohol, live plainly, and take very little medicine they will find that many disorders will be relieved by this treatment alone."

Dr. Forel, of the University of Zurich, Switzerland: "Life is considerably shortened by the use of alcohol in large quantities. But a moderate consumption of the same also shortens life by an average of five to six years. This is consistently and unequivocally seen in the statistics kept for thirty years by English insurance companies, with special sections for abstainers. They give a large discount, and still make more profit, as not nearly so many deaths occur as might be expected under the usual calculations. According to federal statistics in the fifteen largest towns of Switzerland, over ten per cent. of the men over twenty years of age die solely, or partly of alcoholism."

Dr. J. H. Kellogg, Battle Creek, Mich.: "Every organ feels the effect of the abuse through indulgence in alcohol, and no function is left undisturbed. By degrees, disordered function, through long continuance of the disturbance, induces tissue change. The most common form of organic or structural disease due to alcohol is fatty degeneration,

which may effect almost every organ in the body. * * * * * No class of persons are so subject to nervous diseases due to degeneration of nerves and nerve-centres as drinkers. Partial or general paralysis, locomotor ataxia, epilepsy and a host of other nervous disorders, are directly traceable to the use of alcohol."

One of the visiting physicians of Bellevue Hospital, New York, states that at least two-thirds of all the diseases treated there originated in drink.

Dr. W. A. Hammond: "It is of all causes most prolific in exciting derangements of the brain, the spinal cord, and the nerves."

CHAPTER IV.
TEMPERANCE HOSPITALS

THE LONDON TEMPERANCE HOSPITAL

In 1865 Dr. S. Nicholls, medical officer of the Longford Poor-law Union, published a report of the results of non-alcoholic treatment of disease as practiced by him for sixteen years in the institutions under his control. The figures for 1865 were: —

	ADMITTED.	RECOVERED.	DIED.
Fever,	142	135	7
Scarlatina,	33	30	3
Small-pox,	48	47	1
Measles,	8 —	8 —	0 —
	231	220	11

The treatment was altogether without wines, spirits or alcohol in any form.

The death-rate reported by Dr. Nicholls was so small that some of the more observing and progressive physicians were led by it to begin similar experiments in the disuse of alcohol in other hospitals. Among these was Dr. James Edmunds, senior

physician at the Lying-In Hospital, London. The experiments continued a year with a reduced death-rate among both mothers and children. But the great brewers of London, who contributed largely to the support of this hospital raised such a storm of opposition to the discontinuance of alcoholic liquors that the experiments had to be abandoned.

The establishment of a temperance hospital was now suggested, and in October, 1873, a temporary institution was opened in Gower Street, accommodating only seventeen in-patients at one time. Later a fine site was secured on Hampstead Road, and in 1881 the east wing and centre were opened by the Lord Mayor of London. In 1885 the west wing was finished, and the opening ceremonies conducted by the Bishop of London.

At the time of the launching of this enterprise, wine and spirits were literally "poured into" sick persons, with frightful results. Death-rates were enormous. The success of the Temperance Hospital has no doubt had much to do in modifying this abuse. Its death-rate, on an average, has been only 6 per cent. throughout the years since its beginning. This is lower than that of any other general hospital in London, and certainly proves conclusively that alcohol is not necessary in the treatment of disease. The physicians connected with it have been men of eminence in the profession, such as Dr. James Edmunds, Dr. J. J. Ridge and Sir B. W. Richardson.

The visiting staff is not compelled to pledge disuse of alcohol, but is required to report if it is used. During all these years it has

been given only seventeen times, then almost entirely in surgical cases, and in nearly all of these a fatal result proved it to be useless. The patients who are restored to health leave without having had aroused or implanted in them a desire for alcoholic liquors, neither have they been taught to regard them as valuable aids to the recovery of health and strength. On the contrary, there have been many who have come in, suffering from this delusion, who have had it thoroughly dispelled, both by their own experience and the experience of their fellow patients.

Sir B. W. Richardson took charge of this hospital from 1892 until his death in 1897. In his report in 1893 he said: —

> "I remember quite well when according to custom, I should have prescribed alcohol in all those cases that were not actually inflammatory (speaking of diseases of the alimentary system); but I never remember having seen such quick and sound recoveries as those which have followed the non-alcoholic method."

The following selection showing points of practice in this hospital is taken from the same report:

> "For medicinal purposes, we are as free as possible from all complexity. We use glycerine for making what may be called our tinctures, and in my clinique I am introducing a series of 'waters' – aqua ferri, aqua chloroformi, aqua opii, aqua quinæ, and so on – to form the menstruums of other active drugs when they are called for. I also follow the plan of having the medicines administered with a free quantity of water, and with as accurate a dosage as can be

obtained, for I agree with Mr. Spender's original proposition that the administration of medicines in comparatively small and frequent doses is more effective and useful than the more common plan of large doses given at long intervals.

"I treat many cases by inhalation, and for this end I use oxygen in a new and, I hope, efficient manner. I make oxygen gas a medium for carrying other volatile substances that admit of being inhaled with it. The mode is very simple. * * * * * In the pneumonic and bronchial cases the treatment has been of the simple and sustaining kind. The medicines that have been given during the acute febrile stages have been chiefly liquor ammoniæ acetatis and carbonate of ammonia in small and frequently repeated doses. The patients have all been well and carefully fed on the milk and middle diet until convalescence was declared. In some of the more extreme instances, where there was fear of collapse from separation of fibrine in the heart or pulmonary artery, ammonia has been given freely according to the method I have for so many years inculcated. I have also in cases of depression under which fibrinous separation is so easily developed, lighted on a mode of administering ammonia which combines feeding with the medicine. I direct that a three or five-grain tabloid of bicarbonate of ammonia shall be dissolved in a cup of coffee or of coffee with milk, and be taken by the patient in that manner. The coffee can be sweetened with sugar if that is desired by the patient, and the ammonia can be so administered without any objectionable taste to the beverage. After what is called the crisis in acute pneumonia, I administer very

little medicine of any kind; I trust rather to careful feeding with an occasional alterative or expectorant, as may be required. * * * * * I am satisfied that no aid I could have derived from alcoholic stimulants, as they are called, could have bettered my results. I feel sure any candid medical brother who will have the steady courage to put aside many old and unproven, though much-practiced, methods, based only on unquestioning and unquestioned experience, and to move into these new fields of observation and experience, will, in the end, find no fault with me for leaving a track which, though it be beaten very firmly and be very wide and smooth to traverse, may not, after all, be the surest and soundest path to the golden gate of cure."

THE FRANCES E. WILLARD NATIONAL TEMPERANCE HOSPITAL

This hospital is situated at 343-349 South Lincoln Street, Chicago, in a handsome and well-equipped building. It is connected with a medical school. The history of its origin is best told in the words of the woman to whom the conception of such an institution first came, Dr. Mary Weeks Burnett, for several years the physician in charge: —

"In the fall of 1883 there came to a few of us the thought that there was a point of weakness in the temperance pledge. It reads, 'We promise to abstain from all liquors —*as a beverage*.' We had found in many instances in

reform work that pledging to abstain from liquor 'as a beverage,' and leaving the victim to the unlimited use of it in physicians' prescriptions, was simply a skirmish with the devil's outposts, that the conflict, based upon these grounds, was short, and defeat almost sure; and the great fact remained that the innermost recesses of evil force and power were by this pledge still left unassailed. We found that this power of evil had largely entered the homes of our land through the family physicians, and that willingly or not, the physicians were being used to bring in even our innocent children as recruits to this unrighteous warfare.

"Now, how could we hope to eliminate those three little words 'as a beverage' from our pledge?

"In some way we must bring about an arrest of thought in the minds of 100,000 men and women physicians whose medical education warranted them in supposing that they knew that of alcohol which justified them in its full and free use in medical practice. Nothing short of a great national object lesson could ever convict and convert this broad constituency through which the power of darkness is doing his deadliest work.

"In January, 1884, four of us met and organized under the name of the National Temperance Hospital. To have our sick properly cared for in our hospital we found that we should be obliged to train our own nurses. The nurse who has always been accustomed to administering alcohol under the physician's prescription at all times and under all circumstances, and to administering it herself at her own discretion if the physician is not at hand, is a terror to

the temperance physician. So we included in our charter a Training School for Nurses. It is now open, and we expect, as the years go by, to send out armed with our training school diplomas, grand, noble women and men thoroughly trained in true temperance methods for relieving the sick.

"Our organization lived on paper, and was sustained in purpose by prayer and planning for two years. In September, 1885, Mr. R. G. Peters, of Manistee, Michigan, signified to us his intention to give $50,000 toward our buildings whenever we had satisfactorily materialized. About the same time a good old gentleman in Michigan placed in his will for us $2,500. The dear man is still living, and we hope will live many years. Even the money when it comes can never be of greater service to us than was the knowledge at that time that the Lord was our leader and was raising up helpers in the work.

"In January, 1886, we found, according to the law under which our charter was obtained, that we must commence active operations at once, or obtain a new charter. After a blessed season of prayer and counseling together in the board meeting held January 29, there being present only the members of the board at that time, Mrs. Plumb offered to advance $3,500, if necessary, toward the expenses for the first year. We accepted it with great thankfulness, rented a building the 15th of March, 1886, and formally opened the National Temperance Hospital on the 4th of May, 1886.

"In April, 1886, we took a firm stand upon the alcohol question, and decided to eliminate it entirely from our list of therapeutics, as we had become convinced that there were

better and more reliable remedies as stimulants and tonics.

"In September, 1886, at our annual meeting, we reaffirmed this decision, and we now have the following as one of the articles of our constitution: 'All medicines used in the hospital must be prepared without alcohol, and all physicians accepting positions on the medical staff of the hospital or dispensary must pledge themselves not to administer alcohol in any form to any patient in hospital or dispensary, nor to call in counsel for such patients any physician who will advise the use of alcohol.

"Any physician of pure character, and in good standing, who is a total abstainer from liquor and tobacco can, by subscribing to this pledge, become a member of our physicians' association, and if so desired, be placed upon the visiting and consulting staff of the hospital.

"The cases treated in the hospital include many of the serious medical and surgical maladies. In no case has any particle of alcohol been used, and the usual inflammatory secondary symptoms resulting when alcohol is used have been entirely avoided.

"Our course of building-up treatment is, we believe, unique in hospital practice. It consists of treatment by massage, heat, rest, passive exercise, etc., together with proper medication and a thoroughly nutritious diet adapted to the individual needs of the patient.

"To alleviate, and, if possible, cure disease, is the design of all hospital treatment. In our hospital we seek to gain this result by means which the highest science of the day approves, and in addition to this we have especially at

heart the advancement of the temperance reform. There are, we believe, thousands of temperance adherents, who do not yet fully apprehend the importance of this hospital to the permanent extension and progress of temperance principles. Although prohibition as a *principle* has been accepted by many, yet in its *practical application* in the home in serious illness, it is still feared by the immense majority of even our strongest prohibitionists. We are organized upon the basis *no alcohol in medicine*, and we are preparing to demonstrate fully and scientifically, so he who runs may read, that as in health, so in disease and accident, alcohol in any form works to the hindrance and injury of the vital forces, and prevents the establishment and advancement of health processes in the system."

At the opening of the hospital, May 4, 1886, Miss Frances E. Willard, the president of the National W. C. T. U., gave the following address:

"Nothing is changeless except change. The conservatives of one epoch are the madmen of the next, even as the radicals of to-day would have been the lunatics of yesterday. To prove this, just imagine the founders of this hospital declaring to my great-grandfather that because he had taken a cold was no reason why he should take a toddy; and *per contra*, imagine my great-grandfather's doctor marching into our presence here and now, with saddle-bags on arm, and after treating us each to a glass of grog for our stomach's sake, giving us a scientific disquisition on the sovereign virtues of the blue pill, and informing us that bleeding,

cupping and starvation were the surest methods of cure!

"That the story of Evolution is true I am by no means certain, but that 'We, Us, and Company,' are 'evoluting' with electric speed ourselves it is useless to deny. This very hospital is the latest mile-stone on the highway of progress in the American temperance reform. The conditions that have made its existence possible have developed in this country within about twelve years.

"Public opinion, that mightiest of magicians, has within that time been educated up to this level and has said in its omnipotence: 'Hospital, be!' and, behold, the hospital *is*.

"When I joined the ranks of temperance workers in 1874, a thought so adventurous as that alcoholics in relation to medicine were a curse and not a blessing had never lodged within my cranium. But, as in duty bound, I studied the subject from the practical, which is the nineteenth century standpoint.

"I investigated the cause of inebriety, and found the medical use of alcoholic stimulants a prominent factor in this horrible result; I sought for expert testimony, and found Dr. N. S. Davis, ex-President American Medical Association, saying 'that in his ample clinical practice he had for over thirty years tested the medical uses of alcoholics, and had *found no case of disease and no emergency arising from accident that he could not treat more successfully without any form of fermented or distilled liquors than with*'; found Dr. James R. Nichols, of Boston, so long editor of *The Journal of Chemistry*, declaring as his deliberate scientific opinion that the entire banishment of

these liquors 'would not deprive us of a single one of the indispensable agents which modern civilization demands'; found Dr. Green, of Boston, saying before the physicians of that city that it is upon the members of the medical profession and the exceptional laws which it has always demanded, that the whole liquor fraternity depends more than upon anything else to screen it from opprobrium and just punishment for the evils it entails, and that after thirty years of professional experience he felt assured that alcoholic stimulants are not required as medicines, and that many, if not a majority of the best physicians, now believe them *to be worse than useless*. Meanwhile I learned that across the sea such great physicians as Dr. Benjamin Ward Richardson, Sir Andrew Clark, Sir Henry Thompson and Sir William Gull held views which for their latitude were almost equally radical; and Dr. James Edmunds, founder of the London Temperance Hospital had demonstrated publicly and on a grand scale the more excellent way, his hospital having 4½ per cent. fewer deaths than any other in London, taking the same run of cases, and that the Royal Infirmary at Manchester reported the medicinal use of alcohol fallen off 87 per cent. in recent years, with a decrease in its death-rate of over one-third. Besides all this, and independent of any such investigation, the 'intuitions' of our most earnest women were leading them out of the wilderness. As is their custom, they determined to put this matter to the test of that 'experience which one experiences when he experiences his own experience,' and a whole body of divinity upon the advantages of non-alcoholic treatment

could be furnished from their evidence. I was not able personally to pursue this method, my own condition of good health having become chronic. Away back in 1875, in executive committee, one of our leading officers was stricken with *angina pectoris*. A physician was promptly summoned. 'Give her brandy,' he said, and insisted so stoutly upon it as vital to her recovery that we should probably have sent for it, but the dear woman gasped out faintly, 'I can die, but I can't touch brandy.' She is alive and flourishing to-day. Another national officer absolutely refused whisky for a violent attack of a very different character, the physician telling her that she could not live through the night without it; but she is still an active worker – a living witness that doctors are not infallible. Instances like these have multiplied by hundreds and thousands in our Woman's Christian Unions and Bands of Hope. 'No, mamma I can't touch liquor; I've signed the pledge,' is a protest 'familiar as household words.' Meanwhile, I beg you to contemplate something else that has happened. Behold, our own beloved beverage itself,

'Sparkling and bright,
In its liquid light,'

has come grandly to our rescue in this crusade against alcohol in the sick room. Water has become a favorite – nay, even a fashionable – medicine! The most conservative physicians freely prescribe it in the very cases where some

form of alcohol was the specific so long. To be sure, they give it hot, but we do not object to that, since 'water hot ne'er made a sot,' and it cures dyspepsia and all forms of indigestion as whisky never did, but only made believe to; while its external use as a fomentation is banishing alcohol even for old folks' 'rheumatiz' where, as a remedy, it would be likely to make its final stand.

"Farewell, thou cloven-foot, Alcohol! Thou canst no longer hide away in the home-like old camphor bottle, paregoric bottle, peppermint bottle or Jamaica-ginger bottle; and a tender good-by, Mrs. Winslow's Soothing Syrup, for be it known to you that the wonderful discovery stumbled over for six thousand years has in our day been made, namely, that hot water will soothe the baby's stomach-aches and the grown people's pains, and drive out a cold when all else fails. *Jubilate!* Clear out the cupboard and top shelf of the closet now that the sideboard has gone. Let great Nature have a glance to 'mother up' humanity with the medicine, as well as the beverage, brewed in Heaven."

THE RED CROSS HOSPITAL

A philanthropic young woman, Miss Bettina A. Hofker, entered Mount Sinai Training School for Nurses in 1891. Her desire was to fit herself as a nurse for the poor. After her graduation in 1893, she met Mrs. Charles A. Raymond, a benevolent lady, who offered her pecuniary assistance in her

work. Miss Hofker suggested that she would like to institute a Red Cross Hospital and Training School for Nurses. Mrs. Raymond succeeded in interesting others in the proposition. The name of Red Cross however could not be used without permission of the officers of the society bearing that name, but after consultation with Miss Barton, permission was granted. Several years previous to this, Dr. A. Monæ Lesser, Dr. Thomas McNicholl and Dr. Gottlieb Steger had opened a small hospital under the name of St. John's Institute. This was now amalgamated with the Red Cross, and Dr. George F. Shrady and Dr. T. Gaillard Thomas, two of New York's leading physicians, were requested to act as consulting physicians.

The hospital does not confine itself to service in its building alone, but sends its workers wherever called, to mansion or tenement. The "Sisters" are trained for field service or for any national calamity such as floods, earthquakes, forest fires, epidemics, etc. When neither war nor calamities require their presence, they devote themselves to the service of the needy poor, or wait upon the rich, if called. The heroic service rendered by the surgeons and nurses from this hospital in the Cuban War, brought their work into great prominence.

At the suggestion of Miss Barton, the medical department of the hospital was commissioned to treat diseases without the use of alcoholic liquids.

Dr. Lesser, the executive surgeon, is a German, and of German education, having received his medical education in the

Universities of Berlin and Leipsic. In a conversation with a press representative, Dr. Lesser said some time ago: —

"We have been convinced that the use of alcohol can be entirely eliminated from our medical practice, and this has been practically accomplished at the Red Cross Hospital. We find that where stimulants are required, such remedies as caffeine, nitro-glycerine and kolafra take the place of alcohol, and are even more satisfactory. The main use of alcohol is to stimulate the action of the heart in various ailments. The blood is thus forced to the remote parts of the system, and poisonous substances carried away. But, besides serving this good purpose, the drug tears down and ultimately destroys the cellular tissues of the body. A relapse is certain to follow the application. The drugs that I have mentioned serve exactly the same purpose without the disastrous results. We are proving this every day at the Red Cross Hospital.

"Only a few days ago a boy was brought in, apparently at the point of death. He was put into bed and watched by the nurse. After a little ammonia had been given to him as a stimulant, he unconsciously expressed himself to the effect that it was not the same as they gave him in another place, and gradually when it dawned upon him that no alcohol was administered by the Red Cross, he said, 'Gin has allers made me better.' The doctor in charge, who already suspected that the boy was pretending illness for the sake of the drink, was not surprised an hour or two afterwards to learn that he had demanded his clothes, dressed himself, and left the hospital

most ungratefully, but apparently quite well."

Dr. George F. Shrady, one of the consulting physicians, is famous as having been in attendance upon both President Garfield and President Grant. He is the editor of the *Medical Record*, one of the most important medical journals published in America. While not a non-alcoholic physician, he says of the medical use of intoxicants: —

> "There is altogether too much looseness among physicians in prescribing alcohol. It is a dangerous drug. There is much more alcohol used by physicians than is necessary, and it does great harm. Whisky is not a preventive; it prevents no disease whatever, contrary to a current notion. Another thing, we physicians get blamed wrongfully in many cases. People who want to drink, and do drink, often lay it on to the physician who prescribed it. * * * * * I think that in most cases where alcohol is now used, other drugs with which we are familiar could be used with far better effect, and with no harmful results."

Dr. Steger, another physician of the staff, says: —

> "I don't use alcohol at all in my practice. I used to use it, but my observation has been that other drugs do the same work without the harmful results. Alcohol over-stimulates the heart, and tears down the cellular tissues of the system, besides causing other deleterious effects. The use of alcohol is simply a superstition among physicians. They have used it so long that they think they always must. I am not a total abstainer, but that only shows that I take better care of my

patients than I do of myself. It is not good for a healthy man to drink, but sometimes folks like myself do things which had better be left undone. I have seen patients in hospitals made absolutely drunk by their physicians."

The following interesting items in regard to practice in this hospital are culled from the report of 1897: —

"Temperature was never reduced by active drugs known as antipyretics.

"Water was allowed freely after all kinds of surgical operations and in fevers.

"Alcohol was never used as an internal medicine.

"The free use of water in saline solutions directly injected into the tissues was found of great service. Quarts have been injected that way with most satisfactory results.

"Antipyretics were altogether discarded as it is well known that their action diminishes the tone of the heart. Artificial reduction of temperature only deludes one into the belief that the drug has improved the condition of the patient, while in reality, it has no beneficial influence on the disease, and has reduced the vital resistance of the patient. In no case has high temperature harmed a patient and there was every evidence that in some instances a high temperature was preferable to a low one.

"Special attention has been given to the use of alcohol in disease, not with any desire to approve or disapprove it, but solely for the purpose of discovering the truth, for nothing seems of greater public interest from a medical standpoint than the truth regarding a subject for which so

many virtues are claimed on the one hand, and so many destructive elements proven on the other. * * * * *

"We criticise the treatment of no institution, antagonize no school of medicine, claim no unusual or peculiar scientific virtue, but what we do maintain and insist upon is this: that the human body may be ever so afflicted, ever so reduced, the heart ever so feeble, and the spark of life ever so dim, the conscientious student of medicine can secure as good results without as with administration of antipyretics, sparkling wines, beers or liquors.

"Experience teaches that true science does not antagonize nature. In surgical cases, in septicæmia, in pneumonia, or in any of the fevers, water freely administered has proven to be a real source of comfort, and an aid to recovery. It is amazing how favorably diseases terminate under this beneficent beverage. The withholding of food does not retard, but rather hastens convalescence.

"In the conduct of our Red Cross patients, irrespective of their condition when admitted, it can be truly said that after treatment began, delirium has not been witnessed in a single instance, and as our hospital reports indicate, our mortality has been unusually small.

"Alcohol has not figured as a life-saver in our institution. Cases of extreme collapse following major operations, cases of pneumonia, where the pulse ranged from 160 to 220, patients suffering from pernicious anæmia, septicæmia, pyæmia, cholera infantum and typhoid fever, some of whom when first seen were in the worst stages of delirium and collapse have without alcohol regained consciousness,

overcome delirium and made excellent recoveries.

"The following cases very forcibly illustrate the results of non-alcoholic treatment: —

"Case No. 1. A child, aged nine months, under treatment for six days for pneumonia, came under our notice on the seventh day. The temperature was 106 5-10; pulse was 220; respirations 90. Whisky, which had been given previously to the extent of two ounces daily, was stopped. Carbonate of ammonia, caffeine salicylate, nitro-glycerine and 1-10 of a drop of aconite were given internally; camphorated lard applied externally; with the result that on the ninth day temperature stood 99; pulse 100; respiration 20. The child made a complete recovery.

"Case No. 2. L. was a child aged eight months, suffering from a very violent attack of entero-colitis. For three weeks previous to coming under our notice the patient received brandy, stimulating foods and alkaline mixtures. Fearfully emaciated, temperature 106, feeble pulse 182, frequent bloody discharges from the bowels, numbering as much as thirty in a day and constant vomiting, the child was considered beyond hope. Under these circumstances, and at this time we first saw her. Brandy and all foods were stopped; bowel flushings were given, 1-12 of a drop of tincture of aconite was administered every half hour and salicylate of caffeine every two hours. In twenty-four hours the temperature was 105 and the pulse 160. In two days, temperature was 102 and the pulse 140. In one week, temperature was 99 5-10, pulse 110. In three weeks, the

patient was discharged cured.

"Case No. 3. Mrs. C., aged forty-three, who had been under treatment for seven weeks for metrorrhagia, nietortes and peritonitis came under our notice. Brandy which had been previously given in large quantities had proved of no avail and the patient was considered beyond recovery. We found her completely prostrated, temperature 102, pulse 170, and unconscious. The heart very weak and irregular. The brandy was discontinued, salicylate of caffeine and nitrate of strychnia were given with the result that in a short time the patient was convalescent and finally recovered.

"Each case in our hospital is an additional proof that whether found in wines, spirits or beers, alcohol can claim no right as an indispensable medicine."

Dr. Lesser, who was Surgeon-General of the American Red Cross in the Cuban War said after his return from his first visit to Cuba that four out of six of his patients, to whom he allowed liquor to be given as a concession to the popular idea that it was necessary, died; while subsequently in treating absolutely without alcohol sixty-three similar cases, only one died, and he upon the day on which he was received at the hospital.

ALCOHOL IN OTHER HOSPITALS

In the spring of 1909 a circular letter was sent to some of the best known hospitals throughout the country asking if the use of alcoholic liquors had decreased in those institutions during the

past ten years. From the replies received the following statements are taken:

Cook County Hospital, Chicago, sent figures for two years only, 1907, and 1908. With 28,932 patients treated in 1907, the bill for wines and liquors amounted to only $719.40. In 1908 with 31,202 patients the bill for liquors amounted to $970.65. This makes a *per capita* expenditure for liquors for 1907 of .024 cents, and for 1908 a *per capita* expenditure of .031 cents. The *per capita* expenditure for liquors during the same years in Bellevue and Allied Hospitals of New York city, with from 30,000 to 40,000 patients treated was .0246 and .029. Two or three cents as the yearly *per capita* expenditure for alcoholic liquors in the two largest hospitals in America is striking evidence that the physicians practicing there have not large faith in whisky, or other alcoholic liquors as remedial agents.

Long Island, N. Y., State Hospital: – "We are not using more than half the amount of alcohol we used ten years ago."

Manhattan State Hospital, Ward's Island, New York City: – "Our patient population has averaged nearly 4,500 the last four years, and we have had about 750 employees, many of whom are prescribed for by institution physicians. The *per capita* cost of distilled liquors for the last fiscal year was .0273 at this hospital."

Milwaukee City Hospital: – "No alcoholic liquors are used to any extent in this hospital, or prescribed by the staff. I know of no move against such use of liquors, but venture the assertion that the physicians believe they have more reliable agents at their

command for most cases."

Pennsylvania Hospital, Philadelphia: – "We are now using about one-third the amount of liquor that was used in the Pennsylvania Hospital ten years ago."

The Presbyterian Hospital of Philadelphia sent figures for the years from 1900 to 1908. Those for 1900 show the cost of liquors to be $774.20 and for 1908 only $331.48. The number of patients was not given.

Grady Hospital, Atlanta, Georgia: – "That less liquor is now used than formerly is a fact well known to all connected with the institution."

Garfield Memorial, Washington, D. C., sent figures for ten years. For 1899 the cost of liquors was $490.08, with a steady decrease to 1908 when the cost was $274.58. Number of patients in 1899 was 1,171; in 1908, 1,898 patients. The *per capita* for 1908 was .144 cents.

University Hospital, Ann Arbor, Michigan: – "Very little alcohol is prescribed in this hospital."

Maine General Hospital, Portland: – "Comparatively speaking, we use but little alcohol for the reason that we now have many remedies which, especially for continued use, are superior to alcohol, which twenty years ago we did not have. For the conditions or emergencies in which we think alcohol has a value it is used when required or deemed best."

Buffalo, New York, State Hospital sent figures for six years which include cost of alcohol used in the manufacture of

pharmaceutical preparations, which, of course, makes a very decided difference. *Per capita* for 1903 was 22 cents; for 1908 it was 18 cents.

Buffalo, New York, General Hospital: – "The use of alcohol as a drug in this hospital has diminished about one-third in the past ten years, but I wish to add in this connection that the use of all drugs has diminished in this hospital, and to the best of my knowledge in other institutions of a like character. The use of the microscope, and other studies have advanced the science of medicine the same as all other branches of learning, and other methods are coming to be used beside the use of drugs."

Mount Sinai, New York City: – "The use of alcoholic beverages here for medical purposes is the exception rather than the rule. The majority of our cases are surgical cases, and in these alcoholic liquors are rarely prescribed for any purpose whatsoever."

Massachusetts Homeopathic Hospital, Boston, sent figures for five years. For 1904 the cost of alcoholic liquors was $197.69 with 3,720 patients; for 1908, the cost was $69.82 with 4,543 patients. The *per capita* cost for the five years is as follows: 1904, cost .0531 cents; 1905, cost .0474; 1906, cost .034; 1907, cost .0171; 1908, cost .0153.

In the *Boston Medical and Surgical Journal* of April 15, 1909, Dr. Richard C. Cabot gave a table showing the decrease in the use of alcoholic liquors, and of other drugs in Massachusetts General Hospital, Boston.

The following is his table:

	1898	1899	1900	1901	1902
Ale and Beer	$759.00	$793.90	$1,062.00	$723.00	$605.00
Wines and liquors,	1,563.00 —	2,209.00 —	1,348.00 —	1,063.00 —	799.00 —
Total for alcoholic drinks,	$2,321.00	$3,002.00	$2,410.00	$1,786.00	$1,404.00
Total for other medicines,	$8,424.00	$10,013.00	$10,132.00	$9,168.00	$9,772.00
Number of patients,	5,005	5,203	5,012	5,495	5,342
Cost of alcohol per patient,	$0.46	$0.57	$0.48	$0.32	$0.26
Cost of medicine per patient,	1.68	1.92	2.02	1.66	1.88

	1903	1904	1905	1906	1907
Ale and Beer	$338.00	$431.00	$301.00	$192.00	$203.00
Wines and liquors,	688.00 —	904.00 —	144.00 —	546.00 —	610.00
Total for alcoholic drinks,	$1,026.00	$1,335.00	$445.00	$738.00	$813.00
Total for other medicines,	$7,815.00	$9,162.00	$7,018.00	$5,981.00	$5,492.00
Number of patients,	5,429	5,709	5,531	5,513	5,966
Cost of alcohol per patient,	$0.19	$0.23	$0.09	$0.13	$0.13
Cost of medicine per patient,	1.43	1.60	1.26	1.00	0.92

Dr. Cabot says: —

> "Since there has been no fall in the price of stimulants or medicine, the diminished expenditure corresponds to a diminution in the number of doses of medicine and stimulants, and indicates a rapid and striking change of view among the members of the staff of the hospital, especially in the past five years, when it has become generally known that alcohol is not a stimulant but a narcotic and that drugs can

cure only about half a dozen of the diseases against which we are contending.

"There has been during this period no increase in the proportion of surgical cases among the whole number treated, so that the decreased use of medicines and alcoholic beverages has not resulted from an increased resort to surgical remedies. On the other hand, there has been a great increase in the utilization of baths (hydrotherapeutics), of massage, of mechanical treatment and of psychical treatment, all of which accounts no doubt for part of the falling off in the use of alcohol and drugs."

CHAPTER V.
THE EFFECTS OF ALCOHOL UPON THE HUMAN BODY

The body is made up mainly of cells, fibres and fluids. The cell is the most important structure in the living body. Life resides in the cell, and every animal may be considered a mass of cells, each of which is alive, and each of which has its own work to accomplish in the building up of the body.

The matter which forms the mass of a cell is called protoplasm, or bioplasm. It resembles somewhat the white of a raw egg, which is almost pure albumen. Cells make up the body, and do its work. Some are employed to construct the skeleton, others are used to form the organs which move the body; liver-cells secrete bile, and the cells in the kidneys separate poisonous matters from the blood in order that they may be expelled from the system.

These cells, composing the mass of the body, being very delicate, are easily acted upon by substances coming into contact with them. If substances other than natural foods or drinks are introduced into the body, the cells are injuriously affected. Alcohol is especially injurious to cells, "retarding the changes in their interior, hindering their appropriation of food, and elimination of waste matters, and therefore preventing their

proper development and growth."

"Bioplasm is living matter; it is structureless, semi-fluid, transparent and colorless. It is the only matter that can grow, move, divide itself and multiply, the only matter that can take up pabulum (food) and convert it into its own substance; and is the only matter that can be nourished. The bioplasm in the cell gets its nourishment by drawing in of the pabulum through the cell wall, and in that way building up the formed material while it is being disintegrated on the outer surface. This process is continually being carried on, and is what is meant by nutrition. Disintegration of the formed material is as essential as the building up of it. All organic structure is the result of change taking place in bioplasm. These small cell-like bioplasts are the workmen of the organism. All wounds are repaired by them, all fractures are united, and all diseased tissues brought back to their normal and healthy condition, unless there is not vitality enough to overcome disease, or they have been injured or killed by poisonous material. The body is kept in repair by this living matter, and all the functions of the body are but the result of its action. We may examine, watch and study bioplasm under the microscope; we see it take up pabulum and convert that which is adapted to itself into its own substance, while all other substances are rejected. We take a solution of what we call a stimulant and immerse the bioplasm in it, and we find that it increases its activity, moves faster, takes up more pabulum, and divides more rapidly than in the unstimulated condition. We next add an astringent, and it begins to move more slowly, and soon

contracts into a spherical shape and remains contracted, or may move slowly to a limited extent, depending on the strength of the solution. We next take a relaxant, and gradually the living matter begins to spread in all directions, in a laxy-like manner, and becomes so thin as to be almost undiscernible, and takes up very little, if any, pabulum. If sufficiently relaxed or astringed, the movements may entirely cease so as to appear lifeless, but when a stimulant is again added the same result is obtained as before – it begins to move, and acts as vigorous as ever, which shows that it was not injured in the least by the agents used. Alcohol is called a stimulant. We take a weak solution of alcohol and try it in the same way; but we find that almost instantly the living matter contracts into a ball-like mass. Now, we may through ignorance suppose that alcohol acts as an astringent, and so we try to stimulate it with the same harmless agent before used, but no impression is made on it; it does not move; it is dead matter. These are demonstrable facts, and lie at the foundation of physiology, pathology and the practice of medicine. Alcohol destroys the very life force that alone keeps the body in repair. For a more simple experiment as to the action of alcohol, take the white of an egg (which consists of albumen, and is very similar to bioplasm), put it into alcohol, and notice it turn white, coagulate and harden. The same experiment can be made with blood with the same result – killing the blood bioplasts. Raw meat will turn white and harden in alcohol. Alcohol acts the same on food in the stomach as it does on the same substances before introduced into the stomach, and acts just

the same on blood and all the living tissues in the system as out of it; and this alone is enough to condemn its use as a medicine." From *Alcohol, Is It a Medicine?* by W. F. Pechuman, M. D., of Detroit, Michigan.

ALCOHOL AND STOMACH DIGESTION

The nitrogenous portions of the food are the only ones digested in the stomach. The oily and fatty, as well as the starchy portions, are digested in the small intestines.

Very little was known about digestion until 1833, when Dr. Beaumont published the results of his investigations upon the stomach of Alexis St. Martin. St. Martin received a severe wound in the left side from a shot-gun. The wound in healing left an opening into the stomach about ⅘ of an inch in diameter, closed on the inside by a flap of mucous membrane. Through this opening the interior of the stomach could be thoroughly examined. Dr. Beaumont made hundreds of observations upon this young man, who was in his home several years. He says: —

> "In a feverish condition, from whatever cause, obstructed perspiration, *excitement by alcoholic liquors*, overloading the stomach with food, fear, anger or whatever depresses or disturbs the nervous system, the lining of the stomach becomes somewhat red and dry, at other times pale and moist, and loses its smooth and healthy appearance, the secretions become vitiated, greatly diminished or entirely

suppressed."

One day after giving St. Martin a good wholesome dinner, digestion of which was going on in regular order, Dr. Beaumont gave him a glass of gin. The digestive process was at once arrested, and did not begin again until after the absorption of the spirit, after which it was slowly renewed, and tardily finished.

Gluzinski made some conclusive experiments with a syphon. He drew off the contents of the stomach at various times with and without liquor. He concluded that alcohol entirely suspends the transformation of food while it remains in the stomach.

Dr. Figg, of Edinburgh, fed two dogs with roast mutton; to one of them he gave 1½ounces of spirit. Three hours later he killed both dogs. The dog without liquor had digested the mutton; the other had not digested his at all. Similar experiments have been made repeatedly with like result.

The elements of our food which the stomach can digest depend upon the pepsin of the gastric juice for their transformation. Alcohol diminishes the secretions of the gastric juice, unless given in very minute quantities, and kills and precipitates its pepsin. It also coagulates both albumen and fibrine, converting them into a solid substance, thus rendering them unfit for the action of the solvent principles of the gastric juice. Hence, any considerable quantity of alcohol taken into the stomach must for the time retard the function of digestion.

Many experiments have been made with gastric juice in vials, one, having alcohol added, the other, not having alcohol. The

meat in the vials without alcohol, in time dissolved till it bore the appearance of soup; in the vials to which alcohol was added the meat remained practically unchanged. In the latter a deposit of pepsin was found at the bottom, the alcohol having precipitated it. Dr. Henry Munroe, of England, one of the experimenters in this line of research, says: —

> "Alcohol, even in a diluted form, has the peculiar power of interfering with the ordinary process of digestion.
>
> "As long as alcohol remains in the stomach in any degree of concentration, the process of digestion is arrested, and is not continued until enough gastric juice is thrown out to overcome its effects." —*Tracy's Physiology*, page 90.

In *The Human Body*, Dr. Newell Martin says: —

> "A vast number of persons suffer from alcoholic dyspepsia without knowing its cause; people who were never drunk in their lives and consider themselves very temperate. Abstinence from alcohol, the cause of the trouble, is the true remedy."

Sir B. W. Richardson: —

> "The common idea that alcohol acts as an aid to digestion is without foundation. Experiments on the artificial digestion of food, in which the natural process is closely imitated, show that the presence of alcohol in the solvents employed interferes with and weakens the efficacy of the solvents. It is also one of the most definite of facts that persons who indulge even in what is called the moderate

use of alcohol suffer often from dyspepsia from this cause alone. In fact, it leads to the symptoms which, under the varied names of biliousness, nervousness, lassitude and indigestion, are so well and extensively known.

"From the paralysis of the minute blood-vessels which is induced by alcohol, there occurs, when alcohol is introduced into the stomach, injection of the vessels and redness of the mucous lining of the stomach. This is attended by the subjective feeling of a warmth or glow within the body, and according to some, with an increased secretion of the gastric fluids. It is urged by the advocates of alcohol that this action of alcohol on the stomach is a reason for its employment as an aid to digestion, especially when the digestive powers are feeble. At best this argument suggests only an artificial aid, which it cannot be sound practice to make permanent in place of the natural process of digestion. In truth, the artificial stimulation, if it be resorted to even moderately, is in time deleterious. It excites a morbid habitual craving, and in the end leads to weakened contractile power of the vessels of the stomach, to consequent deficiency of control of those vessels over the current of blood, to organic impairment of function, and to confirmed indigestion. Lastly, it is a matter of experience with me, that in nine cases out of ten, the sense of the necessity, on which so much is urged, is removed in the readiest manner, by the simple plan of total abstinence, without any other remedy or method."

In *Medicinal Drinking*, by John Kirk, M. D., this passage

occurs: —

"Especially in the matter of support, it is essential to our inquiry to examine fully into alcoholic influence on the change by which food introduced into the stomach becomes capable of passing into the circulation and constituent elements of the living frame. It may be best to suppose a case for illustration. Here, then, is a child of, say, six or seven years of age. This child is of the slenderer sex and has been brought into a state of extreme weakness as the consequence of fever. The fury of the disease is expended, but it has, as nearly as may be, extinguished life. The medical man's one hope for saving this child is now concentrated in what he fancies to be 'support.' Beef-tea, arrowroot and *port wine* are prescribed. Let it be kept in mind that the pure wine of the grape is discarded in favor of alcoholic wine. Our question is, What effect will the alcohol in this wine have on that process by which the food is to prove really nourishing, and so to be that support which is the only hope for this child? Will it help her? or will it so hinder the necessary change in the food as to kill her, unless she has sufficient strength left to get above its influence? These are surely important questions. Neither of them can be set at rest by the fact that she recovers; for she *may* have strength enough, as many have had, to survive even a serious error in her treatment.

"What light, then, does true science throw on these important questions? All who know anything on the subject are aware that alcohol, instead of dissolving *food*, or aiding in its dissolution, is one of the most powerful agents in

preventing that dissolution. On what principle, then, is it possible that its being mixed with the materials of food, in this case, can aid in their dissolution, so that they may more easily be changed into the fresh blood required to sustain and recover life in this child?"

He then refers to the experiments with gastric juice in vials, and proceeds: —

> "Here, then, is indisputable evidence that alcohol effectually *prevents* that process which is known as digestion, and which is essential to food's being of any use to support life in man. On what principle can the physician explain his introduction of it into the stomach of a child whose thread of life is attenuated to the slenderest hair?
>
> "We urge the chemical truth that the alcohol, given to promote support, is of such a nature as to prevent that which would nourish, from effecting the end so much to be desired, and for which true food is adapted."

The pure, unfermented juice of the grape, free from chemical preservatives, is now used by many physicians where the miserable concoction of drugs and alcohol, known as port wine, was once considered essential. Unfermented grape juice contains all the nutriment of the grape, without any of the poison, alcohol. After being opened it should be kept in a cool place, or it will ferment and produce alcohol. Fruit juices are very grateful to a fever patient, and should not be withheld as they are in so many cases. Dr. J. H. Kellogg, and other non-alcoholic physicians, recommend them highly. They are better than milk, as milk

frequently produces "feverishness," while fruit juices allay it.

For those who think beer or ale an incentive to appetite, Dr. N. S. Davis, and others, recommend an infusion of hops, made fresh each day. It is the bitter which promotes appetite, not the alcohol. For the sake of the little bitter in beer, it is not wise to vitiate the tone of the stomach with the alcohol it contains, and which is its active principle. Many mothers have become drunkards, secret drunkards, possibly, through the use of beer as a fancied aid to digestion. Multitudes of men suffer untold horrors from dyspepsia, caused by the beer which they mistakenly suppose to be a friend to their stomach.

EFFECTS OF ALCOHOL UPON THE BLOOD

"The blood is a thick, opaque fluid, varying in color in different parts of the body from a bright scarlet to a dark purple, or even almost black." If a drop of blood be placed under a microscope, immense numbers of small bodies will be seen. These are called blood-globules, or corpuscles, or discs. There are both red, and white or colorless, corpuscles. Each red corpuscle is soft and jelly-like. Its chief constituent, besides water, is a substance called hemoglobin, which has the power of combining with oxygen when in a place where that gas is plentiful, and of giving it off again in a region where oxygen is absent, or present only in small quantity. Hence, as the blood flows through the lungs, which are constantly supplied with fresh

air, its corpuscles take up oxygen, which, as it flows on, is carried by them to distant parts of the body where oxygen is deficient, and there given up to the tissues. This oxygen-carrying is the function of the red corpuscles.

Hemoglobin, as the coloring-matter of the blood is called, is dark purplish-red in color; combined with oxygen it is bright "scarlet red." Accordingly, the blood which flows to the lungs after giving up its oxygen is dark red in color, its dark color being due to the impurities it contains; and that which, having received a fresh supply of oxygen, flows away from the lungs is bright scarlet – having been cleansed of its impurities. The bright red blood is called *arterial*, and the dark red *venous*.

The work assigned to the blood in the economy of the human system is: first, to pick up nutriment in its course through the walls of the alimentary canal, and oxygen, as it flows through the lungs, and convey these to all other parts of the body. Second, to act as a sort of sewage stream that drains off waste matter, and to carry this to the organs of excretion by which waste is expelled from the body.

> "The blood is the great circulating market of the body, in which all the things that are wanted by all parts, by the muscles, the brain, the skin, the lungs, liver and kidneys, are bought and sold. What the muscles want they buy from the blood; what they have done with, they sell back to the blood; and so with every other organ and part. As long as life lasts this buying and selling is forever going on, and this is why the blood is forever on the move, sweeping restlessly

from place to place, bringing to each part the thing it wants, and carrying away those with which it has done. When the blood ceases to move, the market is blocked, the buying and selling cease, and all the organs die, starved for lack of the things they want, choked by the abundance of things for which they have no longer any need." – Foster.

This is one way of saying that the processes of repair and waste are constantly going on in the body. Every action of the body, every impulse of the mind uses up some cell-matter, which must then be passed from the body as waste. This is called tissue disintegration. New cells to repair tissue waste are built up from the nutriment which the blood carries from the alimentary canal after the process of food digestion is accomplished. This is called tissue construction, or the process of assimilation. Technically, these are the metabolic, or destructive and constructive processes. Both are essential to health and life. Any substance taken into the body, which will interfere with these processes of nutrition and waste is inimical to health, and in time of disease, dangerous to life.

Alcohol is such a substance.

The cells and tissues of the body which are touched by alcohol are more or less hardened and injured by it, hence are less perfectly nourished than they are when alcohol is not present in the blood. Even a teaspoonful of alcohol to a ½ gallon of water hinders natural growth. If liquor is given to puppies it keeps them small. Young growing-cells are most affected by it, because they

are most tender. There are growing-cells in adults as well as in children, for people are growing and changing all through their lives.

Hence, when alcohol is administered in sickness the cells are hindered in the full performance of their function of taking up food for the building up of tissue, and as a consequence, the patient's body is really robbed of nutriment by the agent which is supposed to be "keeping up his strength." Truly, "Wine is a *mocker*, strong drink is raging, and whosoever is *deceived* thereby is not wise."

That alcohol interferes with the passage of waste matter from the body is generally conceded. Indeed this is claimed by the advocates of its medicinal use as one of its virtues: the fact that less waste passes from the body being urged as evidence that there is less waste, that in some way alcohol preserves tissue from being used up in the natural way. Those who speak thus seem to think that they know better than the Creator how the body should be treated. He made the body so that in health, work, waste and repair should be equal to one another.

Dr. Ezra M. Hunt says in *Alcohol as a Food and as a Medicine*: —

> "We believe that any one who will candidly review the claims put forth for alcohol, in that it delays in any of these hypothetical ways, tissue-change, will conclude that it has no such power *in a salutary sense*, and that it is unwarrantably assumed that to retard tissue metamorphosis

(change) is equivalent to tissue nutrition."

Dr. N. S. Davis says: —

> "It seems hardly possible that men of eminent attainments in the profession should so far forget one of the most fundamental and universally recognized laws of organic life as to promulgate the fallacy here stated. The fundamental law to which we refer is, that all vital phenomena are accompanied by, and dependent upon, molecular or atomic changes; and whatever retards these retards the phenomena of life; whatever suspends these suspends life. Hence, to say that an agent which retards tissue metamorphosis is in any sense a food, is simply to pervert and misapply terms."

Non-alcoholic physicians unite in declaring that the retention of waste matter in the system, caused by alcohol, invites disease, and tends to inflammatory action; and in illness retards, and frequently prevents, recovery, for the germs of disease remain longer in the body than they would were it not for the delay in the passage of effete matter.

Alcohol not only hinders the blood in its work of tissue nutrition; it also prevents the full oxidation of the blood in the lungs.

> "In order that a steam engine may work and keep warm it is not merely necessary that it have plenty of coal, but it must also have a draft of air through its furnace. Chemistry teaches us that the burning in this case consists in the combination of a gas called oxygen, taken from the air, with other things in the coals; when this combination takes place

a great deal of heat is given off. The same thing is true of our bodies; in order that food matters may be burnt in them and enable us to work and keep warm, they must be supplied with oxygen; this they get from the air by breathing. We all know that if his supply of air be cut off a man will die in a few minutes. His food is no use to him unless he gets oxygen from the air to combine with it; while he usually has stored up in his body an excess of food matters which will keep him alive for some time if he gets a supply of oxygen, he has not stored up in him any reserve, or, if any, but a very small one, of oxygen, and so he dies very rapidly if his breathing be prevented. In ordinary language we do not call oxygen a food, but restrict that name to the solids and liquids which we swallow; but inasmuch as it is a material which we must take from the external universe into our bodies in order to keep us alive, oxygen is really a food as much as any of the other substances which we take into our bodies from outside, in order to keep them alive and at work. *Suffocation*, as death from deficient air supply is named, is really death from oxygen-starvation." – Martin's *Human Body*.

Much of the food taken into the body is burned to supply energy and heat. This burning is called oxidation. When food is burned, or oxidized, either in the body, or out of it, three things are produced, carbon dioxide (*carbonic acid gas*), water and ashes. These are waste matters, and must be expelled from the body, or they will clog up the various organs, as the ashes and smoke of an engine would soon put its fire out if they were

allowed to accumulate in the furnace. It is the duty of the lungs to pass the carbon dioxide out to the air. With every breath exhaled, this poison gas, generated in the body through the oxidation of food, passes from the system. With every breath inhaled the life-giving oxygen is taken into the body; providing that the person is not in a close room from which the fresh air is excluded.

Any substance taken into the body which interferes with the reception of oxygen into the blood, and with the giving off of carbon dioxide from the same is a dangerous substance.

Alcohol is such a substance.

It has already been stated that it is the duty of the little red corpuscles in the blood to take up oxygen in the lungs, and carry it to every part of the body, and upon the return passage to the lungs to convey the *débris*, or used-up material, from the tissues, called carbon dioxide gas. A little vapor and ammonia accompany this gas. The action of alcohol upon these little corpuscles, or carriers of the blood, is to somewhat harden and shrivel them, so that they are unable to take up and carry as much oxygen as they can when no injurious substance is present in the blood. In consequence of this, the blood can never be so pure when alcohol is present, as it may be in the absence of this agent.

The following is taken from *The Temperance Lesson Book*, by B. W. Richardson, M. D.: —

> "When the blood in the veins is floating toward the right side of the heart, which communicates with the lungs, it carries with it the carbonic acid (*carbon dioxide*), and, as

I have found by experiment, a great part of this gas is condensed in these little bodies, the corpuscles. Arrived at the lungs, the blood comes into such contact with the air we breathe, that the oxygen gas in the air is freely absorbed by the little corpuscles, while the carbonic acid is given up into the air-passages of the lungs, and is thrown off with every breath we throw out. In this process the blood changes in color. It comes into the lungs of a dark color; it goes out of them a bright red. * * * * * The parts of the blood on which alcohol acts injuriously are the corpuscles and the fibrine. The red corpuscles are most distinctly affected. They undergo a peculiar process of shrinking from extraction of water from them. They also lose some of their power to absorb oxygen from the air. In confirmed spirit-drinkers the face and hands are often seen of dark mottled color, and in very bad specimens of the kind, the face is sometimes seen to be quite dark. This is because the blood cannot take up the vital air in the natural degree. * * * * *

"If anything whatever interferes with the proper reception of oxygen by the blood, the blood is not properly oxidized, the animal warmth is not sufficiently maintained, and life is reduced in activity. If for a brief interval of time the process of breathing is stopped in a living person, we see quickly developed the signs of difficulty, and we say the person is being suffocated. We observe that the face becomes dark, the lips blue, the surface cold. Should the process of arrest or stoppage of the breathing be long continued the person will become unconscious, will stagger and fall, and should relief not be at hand, he will in a very

few minutes die.

"I found by experiment that in presence of alcohol in blood the process of absorption of oxygen was directly checked, and that even so minute a quantity as one part of alcohol in five hundred of blood proved an obstacle to the perfect reception of oxygen by the blood. The corpuscles are reduced in size, when large quantities of alcohol are taken, and become irregular in shape."

Dr. J. J. Ridge says in *Addresses on the Physiological Action of Alcohol*: —

"It has been found by experiment that, when alcohol is taken, less carbonic acid comes away in the breath than when it is not. This is partly because the blood-corpuscles cannot carry so much, and partly because so much is not produced, because there is less oxygen to join with the food and produce it. Just as burning paper smokes when it does not get enough oxygen, so other things are formed and get into the blood when there is not enough oxygen to make carbonic acid. These things make the blood impure, and cause extra work and trouble to get rid of them. This is why persons who drink alcohol are more liable to have gout and other diseases, than total abstainers."

Dr. Alfred Carpenter, formerly president of the Council of the British Medical Association, says in *Alcoholic Drinks*: —

"A blood corpuscle cannot come into direct contact with an atom of alcohol, without the function of the former being spoiled, and not only is it spoiled, but the effete matter

which it has within its capsule cannot be exchanged for the necessary oxygen. The breath of the drunken man does not give out the quantity of carbonic acid which that of the healthy man does, and the ammoniacal compounds are in a great measure absent. Some of the carbon and effete nitrogenous matter is kept back. The retention of these poisonous matters within the body is highly injurious. Let the drinker suffer from any wound or injury and this effete matter in his blood is ready at a moment's notice to prepare and set up actions called inflammatory or erysipelatous, or some other kind; by means of which too often the drinker is hurried into eternity, although, perhaps, he may have been regarded as a perfectly sober man, and have never been drunk in his life."

In the light of these scientific facts, what can appear more utterly foolish than the swallowing of alcoholic patent medicines which are widely advertised as "Blood Purifiers"? That they will render the blood impure is only too evident in the light of scientific truth.

Dr. Nathan S. Davis has written much in disapproval of the use of alcohol in fevers, pneumonia and diphtheria, putting stress upon the fact that these diseases, of themselves, interfere with the reception of oxygen into the blood, and hence the use of all remedies that notably diminish the internal distribution of oxygen, or impair the corpuscles of the blood, should be avoided. Not only is alcohol of such a nature, but all the coal-tar series of antipyretics also. Since the internal distribution of oxygen,

and the processes of tissue change are essential to the repair of the body, and alcohol hinders the blood in the full performance of its duties in these respects, it certainly seems clear that those physicians, who are extremely cautious in the use of this drug, or who do not use it at all, are more likely to be successful in saving their patients than are those who use it freely. Death-rates, with and without alcohol, show conclusively the superiority of the latter treatment.

ALCOHOL AND THE HEART

The organs of circulation are the heart and the blood-vessels. The blood-vessels are of three kinds, arteries, capillaries and veins. The arteries carry blood from the heart to the capillaries; the veins collect it from the capillaries and return it to the heart. There are two distinct sets of blood-vessels in the body, both connected with the heart; one set carries blood to, through and from the lungs, the other guides its flow through all the remaining organs; the former are known as the *pulmonary*, the latter as the *systemic* blood-vessels.

The smallest arteries pass into the *capillaries*, which have very thin walls, and form very close networks in nearly all parts of the body; their immense number compensating for their small size. It is while flowing in these delicate tubes that the blood does its nutritive work, the arteries being merely supply-tubes for the capillaries, through whose delicate walls liquid containing

nourishment exudes from the blood to bathe the various tissues.

The quantity of blood in any part of the body at any given time is dependent upon certain relations which exist between the blood-vessels and the nervous system. The walls of the arteries are abundantly supplied with involuntary muscular fibres, which have the power of contraction and relaxation. This power of contraction and relaxation is controlled by certain nerves called *vasomotor* nerves, because they cause or control motion in the vessels to which they are attached. When arteries supplying blood to any particular part of the body contract, the supply of blood to that part will be diminished in proportion to the amount of contraction. If the nervous control be altogether withdrawn, the arterial walls will completely relax, and the amount of blood in the part affected will be increased correspondingly.

Alcohol, even in moderate doses, paralyzes the *vasomotor* nerves which control the minute blood-vessels, thus allowing these vessels to become dilated with the flowing blood.

> "With the disturbance of power in the extreme vessels, more disturbance is set up in other organs, and the first organ that shares in it is the heart. With each beat of the heart a certain degree of resistance is offered by the vessels when their nervous supply is perfect, and the stroke of the heart is moderate in respect both to tension and to time. But when the vessels are rendered relaxed, the resistance is removed, the heart begins to run quicker like a clock from which the pendulum has been removed, and the heart-stroke is greatly increased in frequency. It is easy to account

in this manner for the quickened heart and pulse which accompany the first stage of deranged action from alcohol." – Richardson.

Dr. Parkes of England, assisted by Count Wollowicz, conducted inquiries upon the effects of alcohol upon the heart, with a young and healthy man. At first they made accurate count of the heart beats during periods when the young man drank water only; then of the beats during successive periods in which alcohol was taken in increasing quantities. Thus step by step they measured the precise action of alcohol on the heart, and thereby the precise primary influence induced by alcohol. Their results are stated by themselves as follows: —

"The average number of beats of the heart in 24 hours (as calculated from eight observations made in 14 hours), during the first, or water period, was 106,000; in the earlier alcoholic period it was 127,000, or about 21,000 more; and in the later period it was 131,000, or 25,000 more.

"The highest of the daily means of the pulse observed during the first, or water period, was 77.5; but on this day two observations are deficient. The next highest daily mean was 77 beats.

"If, instead of the mean of the eight days, or 73.57, we compare the mean of this one day; viz. 77 beats per minute, with the alcoholic days, so as to be sure not to over-estimate the action of the alcohol, we find: —

"On the 9th day, with one fluid ounce of alcohol, the heart beat 4,300 times more.

On the 10th day, with two fluid ounces, 8,172 times more.

On the 11th day, with four fluid ounces, 12,960 times more.

On the 12th day, with six fluid ounces, 20,672 times more.

On the 13th day, with eight fluid ounces, 23,904 times more.

On the 14th day, with eight fluid ounces, 25,488 times more.

But as there was ephemeral fever on the 12th day, it is right to make a deduction, and to estimate the number of beats in that day as midway between the 11th and 13th days, or 18,432. Adopting this, the mean daily excess of beats during the alcoholic days was 14,492, or an increase of rather more than 13 per cent.

The first day of alcohol gave an excess of 4 per cent., and the last of 23 per cent.; and the mean of these two gives almost the same percentage of excess as the mean of the six days.

Admitting that each beat of the heart was as strong during the alcoholic period as in the water period (and it was really more powerful), the heart on the last two days of alcohol was doing one-fifth more work.

"Adopting the lowest estimate which has been given of the daily work of the heart; viz. as equal to 12.2 tons lifted one foot, the heart during the alcoholic period, did daily work excess equal to lifting 15.8 tons one foot, and in the last two days did extra work to the amount of 24 tons lifted

as far.

"The period of rest for the heart was shortened, though, perhaps, not to such an extent as would be inferred from the number of beats, for each contraction was sooner over. The heart, on the fifth and sixth days after alcohol was left off, and, apparently at the time when the last traces of alcohol were eliminated, showed in the sphygmographic tracing signs of unusual feebleness; and, perhaps, in consequence of this, when the brandy quickened the heart again, the tracings showed a more rapid contraction of the ventricles, but less power than in the alcoholic period. The brandy acted, in fact, on a heart whose nutrition had not been perfectly restored."

Richardson quotes these experiments of Parkes and Wollowicz as if he agrees with them that increased heart-beat must of necessity mean increased work done by the heart. Dr. Nathan S. Davis, Dr. Newell Martin, Dr. A. B. Palmer, and some other investigators, show conclusively that mere increased frequency of beat above the natural standard is no evidence of increased force or efficiency in the circulation.

"The more frequent beats under the influence of alcohol constitute no exception to the general rule, for while the heart beats more frequently, its influence on the vasomotor nerves causes dilatation of the peripheral and systemic blood-vessels, as proved by the pulse-line written by the sphygmograph, which more than counterbalances the supposed increased action of the heart. The truth is, that under the influence of alcohol in the blood the

systolic action of the heart loses in sustained force in direct proportion to its increase in frequency, until, by simply increasing the proportion of alcohol, the heart stops in diastole, as perfectly paralyzed as are the coats of the smaller vessels throughout the system. This was clearly demonstrated by the experiments of Professor Martin of Johns Hopkins University, to determine the effects of different proportions of alcohol on the action of the heart of the dog; and those of Drs. Sidney Ringer and H. Sainsbury, to determine the relative strength of different alcohols as indicated by their influence on the heart of the frog. Professor Martin states that blood containing ¼ per cent. by volume of absolute alcohol, almost invariably diminishes, within a minute, the work done by the heart."

(This estimate would equal in an adult man an amount equal to the absolute alcohol in two or three ounces of whisky or brandy.)

"These investigations of Professor Martin, being directly corroborated by those of Drs. Ringer and Sainsbury, complete the series of demonstrations needed to show the actual effects of alcohol on the cardiac, as well as on the vasomotor, and also on the direct contractability of the muscular structure, when supplied with blood containing all gradations in the relative proportion of alcohol, leaving no longer any basis for the idea, popular both in and out of the profession, that alcohol in any of its forms is capable of increasing, even temporarily the force or efficiency of the heart's action." – Dr. N. S. Davis in *Influence of Alcohol On the Human System*.

The following letter will be of great interest to all students of the physiological effects of alcohol: —

"Chicago, Ill., March 3, 1899.
"To Mrs. Martha M. Allen,
"Syracuse, N. Y.,

"Madam: Your letter asking my attention to the apparent contradiction of authorities concerning the *work* done by the heart when influenced by alcohol was received yesterday.

"The explanation is not difficult. It depends entirely on the different views of what constitutes the *work* of the heart.

"One class of investigators, led by the original and valuable experiments of Parkes and Wollowicz base their estimate of the heart's work entirely on the *number of times it contracts or beats per minute*. Thus Dr. Parkes, finding that moderate doses of alcohol increased the number of contractions of the heart from three to six beats per minute more than natural, readily estimated the number of additional contractions that would occur in twenty-four hours, and thereby demonstrated a large amount of increased work done by the heart under the influence of alcohol. All writers who speak of 'stimulating' or increasing the action of the heart by alcohol follow this method of measuring the amount of *work* done. They generally add that it is like applying 'the whip to a tired horse.'

"The other class of investigators who claim that *alcohol* diminishes the actual *work* done by the heart base their estimates on the amount *of blood the heart passes through its cavities into the arteries in a given time*. This is the

physiological function of the heart; i.e. to aid in circulating the blood. Professor Martin's experiments were admirably contrived to determine, not how frequently the heart beat, but the amount of blood it delivered per minute under the influence of alcohol and without alcohol.

"He, and all others who take this basis of work, found that alcohol in any dose diminished the efficiency of the heart in circulating the blood in direct ratio to the quantity taken.

"My own original experiments, made fifty years ago, uniformly showed that alcohol quickly increased the number of heart beats per minute, but at the same time diminished the efficiency of the circulation generally. Every experienced practitioner knows that the weaker the *heart* becomes, the *faster* it beats. Consequently, the number of times the heart contracts per minute is no measure of the efficiency of its work in circulating the blood. Indeed the mechanism of the heart is such that there must be sufficient time between each of its contractions for its *cavities* to *fill*, or it is made to contract on an insufficient supply, and the efficiency of the circulation is diminished.

"Yours respectfully,
"N. S. Davis."

The International Medical Congress of 1876 adopted as its reply to the Memorial of the National Temperance Society, and of the National Woman's Christian Temperance Union respecting "Alcohol as a Food and as a Medicine," the paper by Dr. Ezra M. Hunt, one conclusion of which was, "Its use as a

medicine is chiefly that of a cardiac stimulant."

As experiments conducted since that time show that it is not a cardiac stimulant, but a direct cardiac paralyzant, what excuse is there for using it as a medicine now?

> "Whenever the heart is compelled to more rapid contraction than is natural, it has less time to rest. Although it seems to be constantly at work, it really rests more than half the time, so that, although the periods of relaxation are very short, they are so numerous that the aggregate amount of rest in a day is very great. Now, if the rapidity of the contractions is increased materially and continuously, although the aggregate amount of time for rest may be the same as before, yet the waste caused by the contractions is greater, while the time for rest after each one is shorter. This lack of rest produces exhaustion of the heart-muscle, ending in partial change of the muscular tissue into fat. The heart then becomes flabby and weak and its walls become thinner, a condition known to physicians as a 'fatty heart,' often resulting in sudden death." —*Tracy's Physiology*, page 158.

Dr. T. D. Crothers, of Hartford, Conn., has made many observations with the sphygmograph to learn the effects of alcohol upon the heart. He says: —

> "On general principles, and clinically, the increased activity and subsequent diminution of the heart's action brings no medicinal aid or strength to combat disease. This is simply a reckless waste of force for which there is no

compensation. Without any question or doubt the increased heart's action, extending over a long period, is dangerous.

"The medicinal damage done by alcohol does not fall exclusively upon the heart, although this organ may show it more permanently than others." —*Transactions of Second Annual Meeting of A. M. T. A.*

Dr. I. N. Quimby, of Jersey City, N. J., in an address before the American Medical Temperance Association, after describing two clinical cases which ended in death, made the following statement:

"There was nothing so strange about the death of these two patients, although they both died unexpectedly to the physician and their friends, but the declaration I am about to make may be somewhat new and startling, namely: That neither of these patients, in my candid judgment, died from the effect of disease, but rather from vasomotor paralysis of the heart, *superinduced by the administration of the alcohol*, which brought on a sudden and unexpected collapse and death."

Alcohol causes fatty degeneration of the heart and other muscular structures. Old age also causes these degenerations, hence alcohol is said to produce premature aging of the body.

"In fatty degeneration the cells and fibres of the body become more or less changed into fat. If a muscular fibre undergoes fatty degeneration, the particles of which it is made disappear one by one, and particles of oil or fatty matter take their place, so that the degree or amount of

degeneration varies according to the extent to which this change has gone on. When the fibres of which a muscle is composed have become thus altered by fatty degeneration they become softer according to the amount of it; they are more easily torn and may even tear across when the muscle is being used during life. The more a muscle is thus degenerated the weaker it is, because it contains less muscular substance and more fat. Not only do the heart and other voluntary muscles thus degenerate, but those of the arteries also.

"Fatty degeneration is promoted by alcohol because alcohol prevents the proper removal of fat, which has been seen to accumulate in the blood; alcohol prevents the proper oxidation or burning up of waste matters; growing cells which are affected by the chemical influence of alcohol are not quite natural or healthy, so are more liable to degeneration; alcohol hinders the proper removal of waste matter from individual cells and tissues." – Dr. J. J. Ridge, London.

Dr. Newell Martin says in *The Human Body*: —

"Although fatty degeneration of the heart may occur from other causes, alcoholic indulgence is the most frequent one. Fatty liver or fatty heart is rarely if ever curable; either will ultimately cause death."

Dr. Ridge says these degenerations occur in the tissues of thin people as well as in those of stout persons. In thin people they are usually in the fibres only, not between them.

It is because of this degeneration of the heart and other muscles caused by alcohol that athletes in training need to be so very careful to avoid the use of beer and other intoxicating drinks.

Diseases such as fevers, diphtheria, and pneumonia which interfere with the reception, and internal distribution of oxygen, favor granular and fatty degeneration of the heart and other structures of the body. Hence non-alcoholic physicians urge that alcohol and such other drugs, as have like action in hindering full oxidation of the blood, and causing fatty degenerations should be studiously avoided. These physicians attribute many of the deaths from heart-failure in such diseases to the combined action of the disease and the alcohol in exhausting the heart, and weakening its structure.

Comparative death-rates with and without alcohol show conclusively the superiority of the latter treatment.

EFFECTS OF ALCOHOL UPON THE LIVER

The liver is a very large organ, the largest and heaviest in the body, weighing in a healthy adult from three to four pounds. It secretes the bile. Its cells also store up, "in the form of a kind of animal starch called glycogen," excess of starchy or sugary food absorbed from the intestine during the digestion of a meal. This it gradually doles out to the blood for general use by the organs of the body until the next meal is eaten.

Dr. William Hargreaves says: —

> "The office of the liver is to take up new substances having not yet become blood, as well as the portions of integrated matter that can be worked over, and brought again into use. It is in fact the economist of the system. It excretes bile, and liver-sugar, and *renews* the *blood*. When the liver is disordered the whole body is more or less deranged and the proper nutrition of its parts arrested."

Dr. Alfred Carpenter says: —

> "The liver has to do several things; a considerable part of its duty is to purify the blood from *débris* (waste matter), to filter out some things, to break up and alter others, and to expel them from the body in the form of bile. There are certain diseases in which the liver suddenly declines to do any more work. Acute atrophy of the liver is the name of this condition, and when it arises death rapidly results from suppression of the secretion of bile. It brings about a state of things called *acholia*; the patient is actually poisoned by the non-removal of those ingredients from the blood which it is the duty of the liver to remove. This corresponds in effect to the condition which alcohol can bring about by slow degrees."

The liver is the first important organ, next to the stomach and bowels, to receive the poisonous influence of alcohol.

> "If alcohol is used habitually, though only in small quantities at a time, the liver may become the seat of serious changes. There may be a great increase of fat

deposited in the cells, producing what is called 'fatty liver,' or it may lead to a great increase of connective tissue (membrane) between the cells, and surrounding the blood-vessels. This newly-developed connective tissue gradually contracts, and in so doing crushes the cells and obstructs the blood-vessels, making the organ much smaller than natural, and causing the surface to be covered with little projecting knobs, consisting of portions of liver-tissue that have been less compressed than the part that separates them. The pressure upon the liver-cells and the destruction of many of them, prevents the proper formation of bile and liver-sugar. The contraction of the newly-developed tissue, by obstructing the blood-vessels, interferes with the circulation. Malt liquors seem to produce fatty degeneration, while the stronger liquors cause the development of connective tissue." —*Tracy's Physiology.*

Speaking of diseases of the liver, Dr. Trotter said in his *Essay on Drunkenness*: —

> "The chronic species is not a painful disease; it is slow in its progress, and frequently gives no alarm, till some incurable affection is the consequence. Hence, the fallacy and danger of judging merely by the feelings of the beneficial effects of the use of intoxicating drinks; for the liver and stomach may be seriously diseased, while a man imagines himself in moderate health."

Hardening of the liver, or "hob-nailed" liver, is said to be the result, largely, of taking liquor upon an empty stomach.

Dr. E. Chenery, of Boston, in his excellent book, *Facts for the Millions*, tells of a patient of his who was well up to the evening before, when he went out and drank with some companions, taking the liquor on an empty stomach. That night, vomiting and pain in the right side came on, with high fever. Headache began and increased, followed by delirium and a general jaundiced condition. He died as a result. The disease was acute inflammation of the liver, brought on by the one broadside of alcohol poured "point blank" into the organ.

Dr. Chenery says further on in the same book: —

> "There is another disorder of a very serious nature which science is now laying at the doors of the liver —*diabetes mellitus*, or sugar in the urine. Till quite recently, this formidable affection has been regarded as having its seat in the kidneys; and it is so classified in medical writings. Later researches, however, show that the sugar has been formed in the economy before it reaches the kidneys, and that these organs act only as strainers with respect to it, removing it from the blood as they remove salt and various other substances. In seeking for the fountain-head of diabetic sugar, it is found that the liver is the great glycogenic, or sugar-originating factory of the body. In an ordinary state of health this substance is produced in just the proper amount for the uses for which it is intended, so that it is all disposed of in the organism, and does not pass off by the kidneys. If any cause interrupts the processes by which the sugar is consumed, while its manufacture goes on normally, there will come to be an over-supply of sugar in the blood, which,

when it reaches 3 parts to 1,000 of the blood, will begin to pass off by the kidneys and appear in the urine. On the other hand, if an undue amount of it is formed, the consumption remaining normal, it will also accumulate in the circulation, and be eliminated by the kidneys. In either case we have diabetes, the sugar irritating and diseasing the kidneys as it passes."

Dr. Harley, of the Royal Society of London, has made the subject of alcohol and diabetes matter for considerable study. He says a small quantity only of alcohol injected into the portal (liver) circulation of healthy animals will cause diabetic urine.

"If any one doubt the truth of the assertion that alcohol causes diabetes, let him select a case of that form of the disease arising from excessive formation, and after having carefully estimated the daily amount of sugar eliminated by the patient, allow him to drink a few glasses of wine, and watch the result. He will soon find the ingestion of the liquor is followed by an increase of sugar. If alcoholics increase the amount of saccharine matter in the urine of the diabetic, we can easily understand how their excessive use may induce the disease in individuals *predisposed* to it." – Dr. Harley.

Some physicians claim that in jaundice and certain other bilious disorders even medicines prepared in alcohol are decidedly prejudicial and aggravating.

Dr. J. H. Kellogg, and other writers draw attention to the effects of alcohol in hindering the liver in its duty of destroying the toxic substances generated within the system of a sick person

by the specific microbes to which the disease owes its origin, saying that the activity of the liver in destroying these poisons is one of the physiologic processes which stand between the patient and death.

The more this question is studied the more apparent is it that, other things being equal, the sick person who is cared for by a non-alcoholic physician has a much better chance of recovery than the one dosed by "a brandy doctor."

EFFECTS OF ALCOHOL UPON THE KIDNEYS

"The kidneys, being the chief organs for the excretion of nitrogen waste, are among the most important organs of the body. Any defect in their healthy activity leads to serious interference with the working of many organs, due to the accumulation in the body of nitrogenous waste products. If both kidneys be cut out of an animal, it dies in a few hours from blood-poisoning, due to the accumulation of waste poisonous substances which the kidneys should have got rid of. Serious kidney-disease amounts to pretty much the same thing as cutting out the organs, since they are of little use if not healthy. It is always fatal if not checked, and often kills in a short time. The things which most frequently cause kidney disease are undue exposure to cold, and indulgence in alcoholic drinks." – Martin's *Human Body*.

"The kidneys are supplied with arterial blood, which, having given up water, urea, salt, and certain other

substances, either secreted or simply strained from it, returns to the kidneys nearly as bright and fresh as when it entered them. While the lungs are concerned in removing carbonic acid – the ashes of the furnace – it is the peculiar province of the kidneys to remove the products of the wear and tear of the bodily machinery – the wasted nerve and muscle – in the form of urea, or other crystallizable substances, the presence of which in the economy for any considerable time is attended with disastrous results.

"Now, nature has put these organs, charged with so important work, as far away as possible from any source of irritation. Could alcohol get as direct access to them as to the liver, there is no doubt that their function would be destroyed almost at once, since the change in arterial blood by alcohol is much more extensive and damaging than that wrought in such venous blood as the liver receives from the portal veins. Thus while the liver takes the alcohol immediately from the alimentary canal, the kidneys receive it only after it has passed through the liver, the heart, the lungs, and the heart again; by which time much of it has escaped, while the remainder has been greatly diluted by the blood of the general circulation; yet coming to the kidneys even so considerably diluted, it has power to congest, irritate, and excite them to the excretion of an unusual amount of the watery elements of the urine, as if to wash the irritant away.

"But it is only the watery element that is increased, not the urea, which is the substance representing the waste of vital action, and is a poison to the system; this it is the

special office of the kidneys to remove. Not only does alcohol not increase its elimination, but actually lessens the discharge. And should the irritation of the spirit continue, or be augmented in force, inflammation would follow, and the excretion of urea nearly or entirely cease and life be in the greatest jeopardy. Relief or death then must speedily follow." – Dr. E. Chenery, of Boston, in *Alcohol Inside Out*.

"Alcohol causes kidney-disease in several ways. In the first place it unduly excites the activity of the organs. Next, by impeding oxidation it interferes with the proper preparation of nitrogen wastes: they are brought to the kidneys in an unfit state for removal, and injure those organs. Third, when more than a small quantity of alcohol is taken, some of it is passed out of the body unchanged, through the kidneys, and injures their substance. The kidney-disease most commonly produced by alcohol is one kind of "Bright's disease," so called from the physician who first described it. The connective tissue of the organ grows in excess, and the true excreting kidney-substance dwindles away. At last the organ becomes quite unable to do its work, and death results.

"The three most common causes of Bright's disease are an acute illness, as scarlet fever, of which it is a frequent result; sudden exposure to cold when warm (this often drives blood in excessive quantity from the skin to internal organs, and leads to kidney-disease); and the habitual drinking of alcoholic liquids." – Dr. Newell Martin in *The Human Body*.

"Every physician knows or should know, that the quantity and quality of the effete, or waste, material

separated from the blood by the kidneys and voided in the urine, is such as to render a knowledge of the action of any remedy or drink on the function of these organs, of the greatest importance in the treatment of all diseases, and especially those of an acute febrile character. As was long since demonstrated by clinical observation, and more recently by patient and accurate experiments by Bouchard and others, the amount of toxic, or poisonous, material naturally separated from the blood by the kidneys and passed out in the urine is so great that if wholly retained by failure of the kidneys to act for two or three days, speedy death ensues. Equally familiar to every observing physician is the fact that in all the acute febrile and inflammatory diseases, not only is the quantity of the urine secreted generally diminished, but its quality or constituency is also changed to a greater degree than even its quantity. Thus, some of the more important constituents are increased, others diminished, and often new or foreign elements are found present, all resulting from the disordered metabolic processes taking place throughout the system during the progress of these diseases.

"It is, therefore, hardly necessary to remind the physician that it is of the greatest importance to know as correctly as possible both the direct and the indirect influence of every medicine or drink on the action of the kidneys and all other eliminating organs and structures, lest he unwittingly allow the use of such as may not only retard the elimination of the specific causes of disease, but also favor auto-intoxication by retarding the elimination of the natural elements of

excretion.

"That the presence of alcohol in the living system positively lessens the reception and internal distribution of oxygen, and consequently retards the oxidation processes of disassimilation by which the various products for excretion are perfected and their elimination facilitated, is so fully demonstrated, both by observation and experiment, as no longer to admit of doubt.

"As nearly all the toxic elements of urine are the results of these oxidation processes, the presence of alcohol in the system could hardly fail to interfere with them in a notable degree.

"The direct and somewhat extensive series of experiments instituted by Glazer, as published in the *Deut. Med. Wochensch.*, Leipsic, Oct. 22, 1891, demonstrated this, as shown by the following conclusions: – 'Alcohol, in even relatively moderate quantities, irritates the kidneys, so that the exudation of leucocytes and the formation of cylindrical casts may occur. It also produces an unusual amount of uric acid crystals and oxalates, due to the modified tissue changes produced by the alcohol. The effect of a single act of over-indulgence in alcohol does not last more than thirty-six hours, but it is cumulative under continued use.'

"Dr. Chittenden kept several dogs under the influence of alcohol eight or ten days, and found it to increase the amount of uric acid in their urine more than 100 per cent. above the normal proportion.

"Mohilansky, house-physician to Manassein's clinic, in

the conclusions drawn from his interesting experiments on fifteen young men to determine the effects of alcohol on the metabolic processes generally, stated that 'it does not possess any diuretic action: but rather tends to inhibit the elimination of water by the kidneys.' It is further stated that this result is owing to the coincident effect of diminished systemic oxidation and of blood pressure.

"On the other hand, several observers have reported that the flow of urine was increased by the use of alcohol. From as full an examination of the subject as I have been able to make, it appears that the diverse results obtained have depended upon the previous habits of those experimented on, and the widely varying quantities of water drank with the alcohol. When the alcohol is taken with large quantities of water, as is usual with those who use beer and fermented drinks generally, the total amount of urine passed is usually increased, but not more than is found to result from taking the same quantity of water without any alcohol. When alcoholic drinks are taken by those already habituated to its use, it has less marked effect on the quantity and quality of the urine than when taken by those who had previously been total abstainers. This was illustrated by the experiments of Mohilansky on the fifteen men, some of whom were habitual drinkers, some occasional drinkers, and others total abstainers. When all were subjected to the same diet and drinks, with alcohol, in two the daily amount of urine voided remained unaltered, in five it was increased seven per cent., and in eight it decreased twelve per cent. But whatever may be the variations in the mere quantity of urine voided under

the influence of alcohol, the alterations in quality pretty uniformly show an increase in the products of imperfect internal metamorphosis or oxidation, such as uric acid, oxalates, casts, leucocytes, albumen and potassium, with less of the normal products, as urea and salts of sodium.

"During the past year I have met with three cases in which the regular daily use of alcoholic drinks for several months, in quantities not sufficient to produce intoxication, had so altered the blood, and the renal function, that the urine contained both casts and albumen, and some degree of œdema was observable in the face and extremities. These changes were so marked as to justify a diagnosis of incipient nephritis, or Bright's disease. Yet after totally abstaining from the use of alcoholic drinks and remedies, and taking such vasomotor tonics as strychnine and digitalis, with a regulated diet and fresh air, they completely recovered.

"When it is remembered that in diphtheria, pneumonia and typhoid fever, the acute diseases in which a large part of the profession administer most freely alcoholic remedies, the function of the kidney is altered in almost the same direction as are found to take place under the influence of alcohol, it should certainly cause every practitioner to pause and critically review the pathological basis on which he has been prescribing. An anæsthetic, like alcohol, may certainly render a patient with diphtheria, pneumonia or typhoid fever more quiet, and cause him to say he feels better, but if it at the same time diminishes the internal distribution of oxygen, retards the oxidation and elimination of waste and toxic products through the kidneys and lungs, and lessens

vasomotor force, it cannot fail to protract the duration of disease, and increase the ratio of mortality." —
Dr. N. S. Davis, A. M. T. A. Quarterly, April, 1894.

Dr. J. H. Kellogg, by a series of carefully executed experiments, conclusively demonstrated that alcohol hinders the elimination of poisonous matter by the kidneys. This property of alcohol is one of the objections which he sees to its use as a medicine. He says: —

"Water applied externally stimulates elimination by the pores of the skin, and employed freely internally by water drinking, and enemas to be retained for absorption, aids liver and kidney activity. If the patient dies it is because his liver and kidneys have failed to destroy and eliminate the poisons generated with sufficient rapidity to prevent their producing fatal mischief in the body."

CHAPTER VI.
ALCOHOL AS A MEDICINE

Although nearly all of the foremost scientific investigators of the effects of alcohol upon the body have lost faith in the old views of the usefulness of alcoholic liquors as remedial agencies a considerable proportion of the medical profession do not seem yet to have learned how to treat disease without recourse to the alcohol therapy. This is largely due to the fact that the new thought has not yet crystallized to any large extent in the medical text-books, and also to the widely variant views held by professors of medicine.

The medical use of alcohol has been, and still is, the great bulwark of the liquor traffic. The user of alcoholics as beverages always excuses himself, if hard pressed by abstainers, upon the ground that they must be of service or doctors would not recommend them so frequently. In all prohibitory amendment, and no-license campaigns, the cry of "Useful as Medicine" has been the hardest for temperance workers to meet, for they have felt that they had to admit the statement as true, knowing nothing to the contrary. Indeed, thousands of those who advocate the prohibition of the sale of liquor as a beverage, use alcohol in some form quite freely as medicine, and are as determined and earnest in defence of their favorite "tipple" as any old toper could

well be. Many use it in the guise of cordials, tonics, bitters, restoratives and the thousand and one nostrums guaranteed to cure all ills to which human flesh is heir.

The wide-spread belief in the necessity and efficacy of alcoholics as remedies is the greatest hindrance to the success of the temperance cause. It is impossible to convince the mass of the people that what is life-giving as medicine can be death-dealing as beverage. The two stand, or fall, together. Hence there is no more important question before the medical profession, and the people generally, than that of the action of alcohol in disease, and, as a goodly number of the most distinguished and successful physicians of Europe and America declare it to be harmful rather than helpful, it behooves thoughtful people to carefully study the reasons they assign for holding such an opinion. Certainly it is true that if physicians and people would all adopt the views of the advocates of non-alcoholic medication the temperance problem would be solved, and the greatest source of disease, crime, pauperism, insanity and misery would be driven from the face of the earth.

To understand the arguments advanced in favor of non-alcoholic medication it is needful to make some study of the effects of alcohol upon the body, and of the purposes for which alcoholics are prescribed medically.

Alcohol is used in sickness as a food, when solid foods cannot be assimilated, "to support" or sustain, the vitality; it is used as a stimulant, a tonic, a sedative or narcotic, an anti-spasmodic,

an antiseptic and antipyretic; it is used in combination with other drugs, in tinctures and in pharmacy. It is not wonderful that the people esteem it above all other drugs, for none other is so variously and so generally employed. Those who discard it as a remedy teach that only in human delusions is it a food or a stimulant, and for the other uses to which it is put, outside of pharmacy, there are different agents which may be more satisfactorily employed.

IS ALCOHOL FOOD?

So well agreed are all the scientific investigators that alcohol has no appreciable food value that it would seem foolish to spend time upon a discussion of alcohol as food were it not that the idea of its "supporting the vitality" in disease, in some mysterious way is deeply rooted in the professional, as well as the popular mind.

Foods are substances which, when taken into the body, undergo change by the process of digestion; they give strength and heat and force; they build up the tissues of the body, and make blood; and they induce healthy, normal action of all the bodily functions.

Alcohol does none of these. It undergoes no change in the stomach, but is rapidly absorbed and mixed with the blood, and has been discovered hours after its ingestion in the brain, blood and tissues, unchanged alcohol. In many of the experiments made with it upon animals, considerable quantities of the amount swallowed were recovered from the excretions of the body,

without any change having taken place in its composition. This, of itself, is sufficient evidence to show that it is a substance which the body does not recognize as a food.

Foods build up the tissues of the body. All physiologists are agreed that since alcohol contains no nitrogen it cannot be a tissue-forming food; there is no difference of opinion here. Dr. Lionel Beale, the eminent physiologist, says that alcohol is not a food and does not nourish the tissues.

> "There is nothing in alcohol with which any part of the body can be nourished." – Cameron's *Manual of Hygiene*.
>
> "Alcohol contains no nitrogen; it has none of the qualities of the structure-building foods; it is incapable of being transformed into any of them; it does not supply caseine, albumen, fibrine or any other of those substances which go to build up the muscles, nerves and other active organs." – Sir B. W. Richardson.
>
> "It is not demonstrable that alcohol undergoes conversion into tissue." – Dr. W. A. Hammond.

If it is a food why do all writers and experimenters exclude it from the diet of children, and why is the caution always given people to not take it upon an empty stomach? Foods are supposed to be particularly suited to an empty stomach.

Foods induce healthy, normal action of all the bodily functions.

The chapter upon "Diseases Produced by Alcohol" is evidence that by this test alcohol shows up in its true nature as a poison, and not a food. Alcohol destroys healthy normal action of all the

bodily functions, and builds up impure fat, fatty degeneration, instead of strong, firm muscle. Dr. Parkes, one of the most famous of English students of alcohol, says: —

> "These alcoholic degenerations are certainly not confined to the notoriously intemperate. I have seen them in women accustomed to take wine in quantities not excessive, and who would have been shocked at the imputation that they were taking too much, although the result proved that for them it was excess."

Dr. Ezra M. Hunt, late secretary of New Jersey State Board of Health, remarks: —

> "The question of excess occurs in sickness as well as in health, and all the more because its determination is so difficult and the evil effects so indisputable. The dividing line in medicine, even between use and abuse, is so zigzag and invisible that common mortals, in groping for it, generally stumble beyond it, and the delicate perception of medical art too often fails in the recognition."

All non-alcoholic writers assert that the continuous use of alcohol as a medicine is equally injurious to all the bodily functions as the employment of it as a beverage. Calling it medicine does not change its deadly nature, nor does the medical attendant possess any magical power by which a destructive poison may be converted into a restorative agent.

Dr. Noble, writing recently to the *London Times*, said: —

> "The internal use of alcohol in disease is as injurious as

in health."

Since foods induce healthy, normal action of all the bodily functions, and alcohol injures every organ of the body in direct proportion to the amount consumed, by this test it is proved to not be a food.

Foods give strength. Alcohol weakens the body. This has been determined again and again by experiments upon gangs of workmen and regiments of soldiers. These experiments always resulted in showing that upon the days when the men were supplied with liquor they could neither use their muscles so powerfully, nor for so long a time, as on the days when they received no alcoholic drink. Of the results of such tests Sir Andrew Clark, late Physician to Queen Victoria, said: —

> "It is capable of proof beyond all possibility of question that alcohol not only does not help work but is a serious hinderer of work."

So satisfied are generals in the British army of the weakening effect of alcohol that its use is now forbidden to soldiers when any considerable call is to be made upon their strength. The latest example of this was in the recent Soudan campaign under Sir Herbert Kitchener. An order was issued by the War Department that not a drop of intoxicating liquor was to be allowed in camp save for hospital use. The army made phenomenal forced marches through the desert, under a burning sun and in a climate famous for its power to kill the unacclimated. It is said that never before was there a British campaign occasioning so little sickness

and showing so much endurance. Some Greek merchants ran a large consignment of liquors through by the Berber-Suakim route, but Sir Herbert had them emptied upon the sand of the desert. A reporter telegraphed to England: —

> "The men are in magnificent condition and in great spirits. They are as hard as nails, and in a recent desert march of fifteen miles, with manœuvring instead of halts, the whole lasting for five continuous hours, not a single man fell out!"

This was in decided contrast to the march in the African war some years before when, as they passed through a malarial district, and a dram was served, men fell out by dozens. Dr. Parkes, one of the medical officers, prevailed upon the commander-in-chief to not allow any more alcoholic drams while the troops were marching to Kumassi.

Experiments in lifting weights have also been tried upon men by careful investigators. In every case it was found that even beer, and very dilute solutions of alcohol, would diminish the height to which the lifted weight could be raised. As an illustration of the deceptive power of alcohol upon people under its influence, it is said that persons experimented upon were under the impression, after the drink, that they could do more work, and do it more easily, although the testing-machine showed exactly the contrary to be true.

Athletes and their trainers have learned by experience that alcohol does not give strength, but is, in reality, a destroyer of

muscular power. No careful trainer will allow a candidate for athletic honors to drink even beer, not to speak of stronger liquors. When Sullivan, the once famous pugilist, was defeated by Corbett, he said in lamenting his lost championship, "It was the *booze* did it"; meaning that he had violated training rules, and used liquor. University teams and crews have proved substantially that drinking men are absolutely no good in sports, or upon the water. Football and baseball teams, anxious to excel, are beginning to have a cast-iron temperance pledge for their members. So practical experience of those competing in tests of strength and endurance teach eloquently that alcohol does not give strength, but rather weakens the body, by rendering the muscles flabby.

Sandow, the modern Samson, wrote his methods of training in one of the magazines a few years ago, and stated that he used no alcoholic beverages. The ancient Samson was not allowed to taste even wine from birth.

A question worthy of serious consideration is: how are the sick to be strengthened and "supported" by drinks which athletes are warned to specially shun as weakening to the body? Either the sick are mistakenly advised, or the athletes are in error. Which seems the more likely?

Dr. Richardson says in *Lectures on Alcohol*: —

> "I would earnestly impress that the systematic administration of alcohol for the purpose of giving and sustaining strength is an entire delusion."

In another place he says: —

> "Never let this be forgotten in thinking of strong drink: that the drink is strong only to destroy; that it never by any possibility adds strength to those who drink it."

Sir William Gull, late physician to the Prince of Wales, said before a Select Committee of the House of Lords on Intemperance: —

> "There is a great feeling in society that strong wine and other strong drinks give strength. A large number of people have fallen into that error, and fall into it every day."

Any unprejudiced person can readily see that experience and experiment unite in testifying that alcohol does not give strength, hence differs radically from most substances commonly classed as foods. Yet millions of dollars are spent annually by deluded people upon supposedly strength-giving drinks, and thousands of the sick are ignorantly, or carelessly, advised to take beer or wine to make them strong and to *support* them when solid food cannot be assimilated. Truly, "My people is destroyed for lack of knowledge."

Foods give force to the body.

Dr. Richardson says: —

> "We learn in respect to alcohol that the temporary excitement is produced at the expense of the animal matter and animal force, and that the ideas of the necessity of resorting to it as a food, to build up the body or to lift up the forces of the body, are ideas as solemnly false as they

are widely disseminated."

Dr. Benjamin Brodie says in *Physiological Inquiries*: —

"Stimulants do not create nerve power: they merely enable you, as it were, to use up that which is left."

Dr. E. Smith: —

"There is no evidence that it increases nervous influence, while there is much evidence that it lessens nervous power."

Dr. Wm. Hargreaves, of Philadelphia: —

"It is sometimes said by the advocates and defenders of alcohol, that by its use force is generated more abundantly. This it certainly cannot do, as it does not furnish anything to feed the blood or to store up nourishment to replenish the expenditure. For by their own theory, the increase of action must cause an increase of wear and tear; hence alcohol instead of sustaining life or vitality, must cause a direct waste or expenditure of *vital force*."

Dr. Auguste Forel, of Switzerland: —

"All alcoholic liquors are poisons, and especially brain-poisons, and their use shortens life. They cannot therefore be regarded as sources of nourishment or force. They should be resisted as much as opium, morphia, cocaine, hashish and the like."

Dr. W. F. Pechuman, of Detroit, in his valuable little treatise, *Alcohol – Is it a Medicine?* says clearly: —

"When alcohol or any other irritant poison is put into

the system, the conservative vital force, recognizing it as an enemy, at once makes an effort through the living matter to rid the system of the offender; – the heart increases in action and new strength seems to appear. Now, right here is where the great mass of people and a large number of physicians are deluded. They mistake the extra effort of the vital force to preserve the body against harmful agencies for an actual increase in strength as the result of the agent given; we wonder that they can be so blind as not to see the reaction which invariably occurs soon after the administration of their so-called stimulant."

Dr. F. R. Lees, of England: —

> "All poisons lessen vitality and deteriorate the ultimate tissue in which force is reposited. Alcohol is an agent, the sole, perpetual and inevitable effects of which are to avert blood development, to retain waste matter, to irritate mucous and other tissues, to thicken normal juices, to impede digestion, to deaden nervous sensibility, to lower animal heat, to kill molecular life, *and to waste, through the excitement it creates in heart and head, the grand controlling forces of the nerves and brain*."

If alcohol is a destroyer of bodily force, as any ordinary observer of drinking men can readily see, it is a problem beyond solving, how it is going to give force to, or sustain vitality in, the patient hovering between life and death. Too often has it been the means of hastening into eternity those who, but for its mistaken use, might have recovered from the illness affecting them.

Food gives heat to the body.

Alcohol does not, but really robs the body of its natural warmth. This finding of science was received with the utmost incredulity when first presented to the medical world, but the invention of the clinical thermometer settled it beyond controversy. It is now believed by all but a very few of those who have knowledge of the physiological effects of alcohol. While Dr. N. S. Davis, of Chicago, was the first to demonstrate this fact, it was Dr. B. W. Richardson, of England, who succeeded in putting it prominently before the attention of physicians.

The normal temperature of the human body is a little over 98 degrees by Fahrenheit's thermometer. If the temperature is found to be much above or below 98 degrees the person is considered out of health; indeed by this condition alone physicians are able to detect serious forms of disease. By the use of the clinical thermometer, placed under the tongue, it is easy to determine what agents acting upon the body will cause the temperature to vary from the natural standard. When alcohol is swallowed there is at first a decided feeling of warmth induced; if the temperature be taken now it will be found that in a person unaccustomed to alcohol the warmth may be raised half a degree; in one accustomed to alcohol the warmth may be raised a full degree, or even a degree and a half beyond the natural standard. But this warmth is only temporary, and is soon succeeded by chilliness.

Dr. Richardson says in his *Temperance Lesson Book*: —

"The sense of warmth occurs in the following way: When

the alcohol enters the body, and by the blood-vessels is conveyed to all parts of the body, it reduces the nervous power of the small blood-vessels which are spread out through the whole of the surface of the skin. In their weakened state these vessels are unable duly to resist the course of blood which is coming into them from the heart under its stroke. The result is that an excess of warm blood fresh from the heart is thrown into these fine vessels, which causes the skin to become flushed and red as it is seen to be after wine or other strong drink has been swallowed and sent through the body. So, as there is now more warm blood in the skin than is natural to it, a sense of increased warmth is felt. The skin of the body is the most sensitive of substances and the sense of warmth through, or over the whole surface of the skin is conveyed from it to the brain and nervous centres of the body, by which we are enabled to feel.

"The warmth of surface which seems to be imparted by alcohol, only *seems* to be imparted. Positively the warmth is not imparted by the alcohol, but is set free by it.

"In a short time the sense of warmth is succeeded by a feeling of slight chilliness. Unless the person is in a very warm room, or has recently partaken of food, the thermometer will now show a decided decrease in temperature, reaching often to a degree. Should the person go out into a cold air, and especially should he go into a cold air while badly supplied with food, the fall of temperature may reach to two degrees below the natural standard of bodily heat. In this state he easily takes cold, and in frosty weather readily contracts congestion of the lungs, and that

disease which is known as bronchitis. If the person drinks to drunkenness his temperature will be found to be from two and a half to three degrees below the natural standard. It takes from two to three days, under the most favorable circumstances, for the animal warmth to become steadily re-established after a drunken spree.

"The excitement of the mind in the early stages of drunkenness is not natural; it is exhaustive of the bodily powers, and exhaustive for no useful purpose whatever. * * * * *

"As nothing has been supplied by the alcohol to keep up the supply of heat the vital energy is rapidly exhausted, and if the person is exposed to cold, the exhaustion becomes extreme, sometimes fatal. All great consumers of alcohol are chillier during winter than are abstainers, and as they labor under the delusion that they must take wine or ale or spirits to keep them warm, they keep on making matters worse by constantly resorting to their enemy for relief."

Dr. Newell Martin makes this very clear in his physiology, *The Human Body*.

"Our feeling of being warm depends on the nerves of the skin. We have no nerves which tell us whether heart or muscles or brain, are warmer or cooler. These inside parts are always hotter than the skin, and if blood which has been made hot in them flows in large quantity to the skin, we feel warmer because the skin is heated. As alcoholic drinks make more blood flow through the skin, they often make a man feel warmer. But their actual effect upon the

temperature of the whole body is to lower it. The more blood that flows through the skin, the more heat is given off from the body to the air, and the more blood, so cooled, is sent back to the internal organs. The consequence is that alcohol, in proportion to the amount taken, cools the body as a whole, though it may for a time heat the skin."

If other evidence that alcohol is not heat-producing in the body were necessary it could be found in the fact that the products of combustion are decreased when it is present in the body. The quantity of carbonic acid exhaled by the breath is proportionately diminished with the decline of animal heat.

Arctic explorers learned by experience what science discovered by experiment. Dr. Hayes, the explorer, says: —

"While fresh animal food, and especially fat, is absolutely essential to the inhabitants and travelers in Arctic countries, alcohol, in almost any shape, is not only completely useless, but positively injurious."

Lieutenant Johnson, who accompanied Nansen upon his northern expedition, said, when interviewed by a reporter of the London *Daily News*: —

"The common opinion that alcohol becomes in some way a necessity in cold countries is entirely a mistaken one. This has been conclusively proved by the expedition. In making up his list of the *Fram's* equipments, Nansen did not include any spirits, with the exception of some spirits of wine for lamps and stoves."

In the list of stores taken upon the long sledging expedition after leaving the *Fram* no liquors are mentioned. See *Farthest North*, by Nansen. The omission of spirits was not because of any "temperance fanaticism," but because the experience of former Arctic expeditions had shown clearly that men freeze more readily after partaking of alcohol than when they totally abstain from it.

That wine is not a fuel-food was shown conclusively in the Franco-Prussian war during the siege of Paris. Food was scarce in the French Army, and wine was liberally supplied. The men complained bitterly of the extreme chilliness which affected them. Dr. Klein, a French staff surgeon, was reported in the *Medical Temperance Journal* of England, October 1873, as saying of this: —

> "We found most decidedly that alcohol was no substitute for bread and meat. We also found that it was no substitute for coals. We of the army had to sleep outside Paris on the frozen ground. We had plenty of alcohol, but it did not make us warm. Let me tell you there is nothing that will make you feel the cold more, nothing which will make you feel the dreadful sense of hunger more, than alcohol."

There is no evidence against alcohol stronger than that which shows it to be not heat-producing, as commonly believed, but a reducer of heat in the body. Indeed, this question of bodily temperature is used in recent times to decide whether a man who has fallen upon the street is troubled by apoplexy, or

influenced by alcoholism. If the clinical thermometer shows the temperature to be above normal, it is apoplexy; if below normal, it is alcoholism.

> "Alcohol is clearly proved to be not a fuel-food, for if it were it would enable the body to resist cold, instead of making it colder; and in the extreme degrees of cold it would go on burning like other fuel-foods, and would maintain, instead of helping to destroy, life." – Richardson's *Lesson Book*.

Yet because it creates a glow of warmth in the skin immediately after drinking it, thousands of people will discredit all evidence that it is a reducer of bodily heat. Clinical thermometers, and after-sensations of chilliness, are unheeded, for "Wine is a mocker," and multitudes are willing to be deceived by it.

So, also, with the conclusions against it as a strengthening agent; because it dulls the sense of hunger and of fatigue, those who crave it will declare in the face of all scientific testimony that it strengthens them, and takes the place of food. They will cite, too, the cases of people who "lived upon whisky" during an illness of greater or less duration. Of the sustaining of life upon alcohol only, Dr. N. S. Davis has said: —

> "The falsity of all such stories is made apparent by the fact that nineteen-twentieths of all the alcoholic drinks given to the sick are given in connection with sugar, milk, eggs or meat-broths, which furnish the nutriment, and

would support the patients better if given with the same perseverance without the alcohol than with it. While we have quite a number of examples of men living on nothing but water forty or fifty days, I have never seen or learned of a well-authenticated case of a man's taking or receiving into his system nothing but alcohol for half of that length of time, without becoming sick with either gastro-duodenitis, nephritis, or delirium tremens."

Some of the defenders of the medicinal use of alcohol claim that since it has been shown to reduce tissue waste it should be classed as an indirect food, a conserver of tissue. Of this claim, Dr. N. S. Davis says in the *Bulletin of the A. M. T. A.*, November, 1895: —

"A careful study of the conditions and processes necessary for both tissue building or nutrition, and tissue waste or disintegration, in all the higher order of animals, will show that neither process can be materially retarded without retarding or preventing the other. Both processes take place only in bioplasm or vitalized matter, supplied with oxygen, water and heat. Neither the assimilation of new material food, nor its use in tissue building can be effected without the presence of free oxygen and nuclein, or corpuscular elements of the blood. And without the presence of the same elements we can have no natural tissue disintegration and removal of the waste. The processes of tissue building and tissue disintegration, are therefore, so intimately related, and dependent upon the same materials and forces, that neither can be hastened or retarded from day

to day without influencing the other. When alcohol or any other substance, introduced into the blood, retards the tissue waste, as shown by the diminished amount of excretory products, it must do so by either diminishing the amount of free oxygen in the blood, by impairing the vasomotor and trophic nerve functions or by direct impairment of the properties of the nuclein or protogen elements of the blood and tissues. The popular idea, both in and out of the profession is, that the alcohol, by further oxidation in the blood, lessens the amount of oxygen to act on the tissues, and generates heat or 'some kind of force.' Those who advocate this theory of saving the tissues by combining the oxygen with alcohol seem to forget that in doing so they are diverting and using up the only agent, oxygen, capable of combining with, and promoting the elimination of, all natural waste products as well as the various toxic elements causing disease.

"But the theory that alcohol directly combines with the oxygen of the blood by which it would be converted into carbonic acid and water with evolution of heat is completely refuted by the well-known fact that its presence in the blood diminishes both temperature and elimination of carbonic acid as already stated. Physiologists of the present day very generally agree that the capacity of the blood to receive oxygen from the lungs, and convey it to the systemic capillaries and various tissues, depends chiefly on its hemoglobin (red coloring matter), protein, or albuminous and saline elements.

"Both experimental and clinical facts in abundance

show that alcohol at all ordinary temperatures displays a much stronger affinity for these elements of the blood and tissues, than it does for oxygen. And when present in the blood, it rapidly attracts both water and hemoglobin from the corpuscular and albuminoid elements of that fluid, and thereby diminishes its reception and distribution of oxygen. We are thus enabled to see clearly how the alcohol diminishes the oxygenation and decarbonization of the blood, and retards all tissue changes both of nutrition and waste without itself undergoing oxidation with evolution of heat. Consequently, instead of acting as a shield or conservator of the tissues by simply combining with the oxygen, the alcohol directly impairs the properties and functions of the most highly vitalized elements of the blood itself, and thereby not only retards tissue waste but also equally retards the highest grades of nutrition, and favors only sclerotic, fatty and molecular degenerations, as we see everywhere resulting from its continued use. Can an agent displaying such properties and effects be called a *food*, either direct or indirect, without a total disregard for the proper meaning of words?"

In another place he says: —

"This lessening of the elimination of tissue waste is simply an evidence of the accumulation of poisonous substances within the body, through the lessened activity of liver and kidneys and the impairment of the blood."

Dr. Ezra M. Hunt says in *Alcohol as Food and as Medicine*, page 37: —

> "It sounds conservative of health to say of a substance that it delays the breaking down of tissue, but the physiologist does not allow a substance which occasions such delay, to possess, because of that, either dietetic or remedial value. To increase weight by prolonged constipation is not a physiological process."

Dalton says: —

> "The importance of tissue change to the maintenance of life is readily shown by the injurious effects which follow upon its disturbance. If the discharge of the excrementitious substances be in any way impeded or suspended, these substances accumulate either in the blood or tissues, or both. In consequence of this retention and accumulation they become poisonous, and rapidly produce a derangement of the vital functions. Their influence is principally exerted upon the nervous system, through which they produce most frequent irritability, disturbance of the special senses, delirium, insensibility, coma, and finally, death."

The power to retard the passage of waste matter from the system is one of the gravest objections to the use of alcohol in sickness, as the germs of disease are thereby caused to remain longer in the body than they would, were no alcohol or drug of similar action, used. Thus recovery is delayed, if not effectually hindered.

The preponderance of scientific evidence is all against alcohol as possessing food qualities. It contains no elements capable of entering into the composition of any part of the body, hence

cannot give strength; it is not a fuel-food as it does not supply heat to the body, but decreases temperature; and its classification as indirect food because it retards the passage of waste matter is shown to be utterly unscientific, as any agent which interferes with the natural processes of assimilation and disintegration is a dangerous agent, a poison rather than a food.

The question naturally arises: —

If these drinks are not liquid food, as we have been taught to believe, how is it, since they are made from food, as barley, corn, grapes, potatoes, etc?

These drinks are not food, although made from food, because in the process of manufacturing them the food principle is destroyed. The grain is malted to change starch into sugar – loss of food principle begins here – then the malted grain is soaked in water to extract the saccharine matter. When the sugar is all in the water the grain goes to feed cattle or hogs, and the sweetened water is fermented. The fermentation changes the sugar into alcohol.

Analyses of beer by eminent chemists show an average of 90 per cent. water, 4 per cent. alcohol, and 6 per cent. malt extract. The malt extract consists of gum, sugar, various acids, salts and hop extract. Starch and sugar are all of these capable of digestion, and the amount of them would be equal to 39 ounces to the barrel of beer. Liebig, the great German chemist, said: —

> "If a man drinks daily 8 or 10 quarts of the best Bavarian beer, in a year he will have taken into his system the nutritive

constituents contained in a 5 pound loaf of bread."

Eight quarts a day for a year would be 2,920 quarts, or a little more than 23 barrels. If sold to the consumer at the low rate of five cents a pint, it would cost him $292; a high price for as much nourishment as in a 5 pound loaf!

Analyses of wine by reliable chemists show that the consumer must pay $500 for the equivalent in nourishment of a 5 pound loaf of bread, wine being higher priced than beer. Wines average 80 per cent. water, about 15 per cent. alcohol, and 5 per cent. residue. This residue is composed of sugar, tartaric, acetic and carbonic acids, salts of potassium and sodium, tannic acid, and traces of an ethereal substance which gives the peculiar or distinguishing flavor. The only one of these ingredients possessing food value is sugar; this exists chiefly in what are called sweet wines. Yet how many thousands of people spend money they can ill afford for wines and beers to build up the failing strength of some loved one! A costly delusion, and too often a fatal one!

Конец ознакомительного фрагмента.