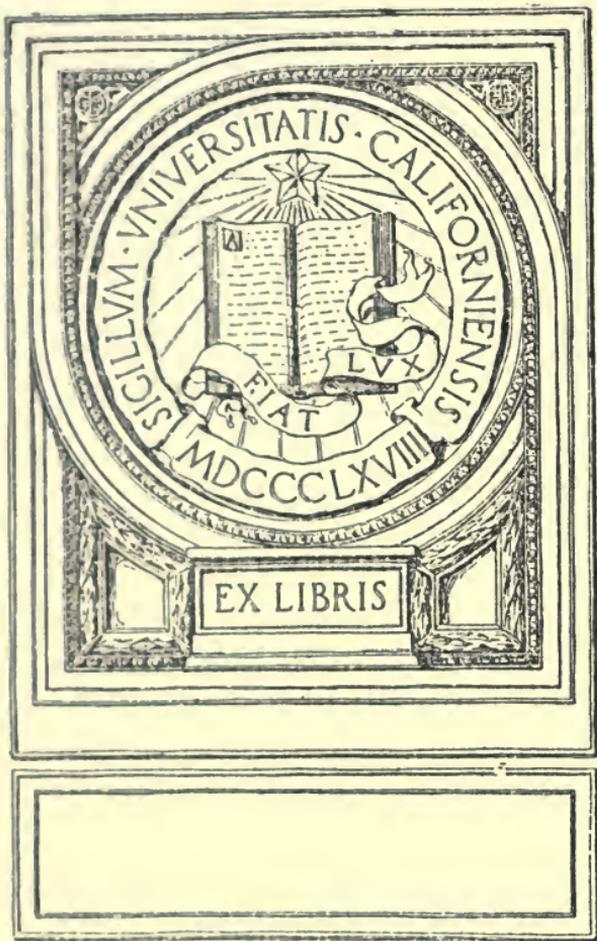


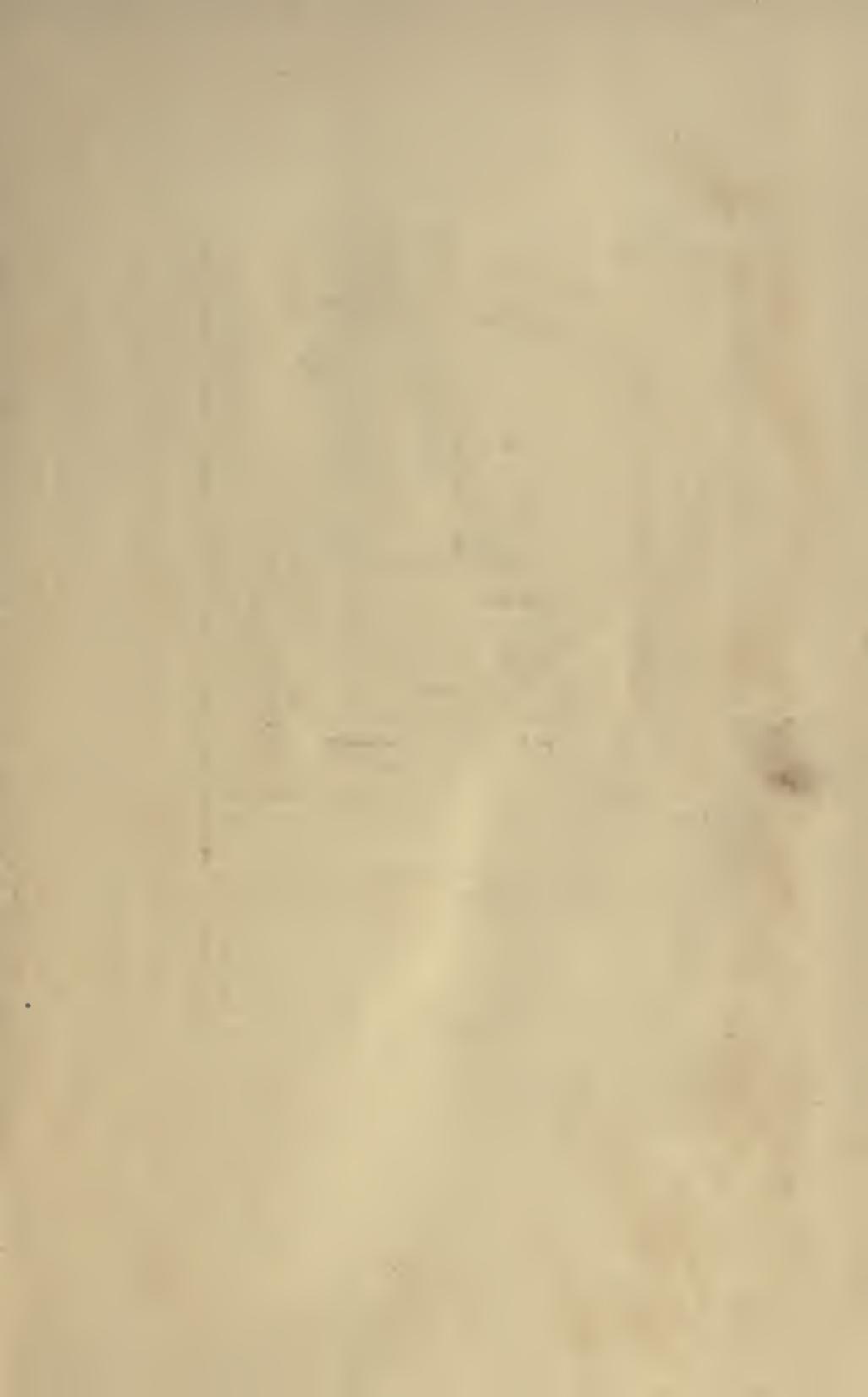
ALCOHOL

And the Human Race

RICHMOND P. HOBSON



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Alcohol and the Human Race

Alcohol and the Human Race

By

RICHMOND PEARSON HOBSON

Late U. S. Navy, Late M. C.



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TO THE
ASSOCIATION

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To
MY WIFE

412587

Foreword

IN 1908 the Legislature of Alabama, after enacting a Prohibition statute, submitted a Prohibition Amendment to the State constitution as a referendum to be voted on by the people early the following year.

I was then a member of Congress from that State. My political advisers, in whose wisdom I had confidence, urged me to come out against the Amendment, as most of the men in public life in the State were doing, and I had about decided to follow their advice, for, though taught in childhood to be abstemious, eighteen years of life in the United States Navy and the superficial observation of an average man of the world, had led me to look upon the liquor question as a mere matter of police regulation which would be out of place in the organic law. The thought that my mother, if alive, would have been for the Amendment, led me to decide, before announcing myself, to make an investigation as to whether any issue of a deep abiding nature, fit for incorporation in the organic law of a state, were involved.

I recognized at once that the question was wholly one of fact rather than judgment, and that it hinged on the actual properties of alco-

hol, a chemical compound. I therefore proceeded, with the aid of the Librarian of Congress, to assemble all available scientific information on the subject. I was startled to find, almost at the outset, that alcohol is not a product built up of grain, grapes and other food materials, but is the toxin of yeast or ferment germs, which, after devouring the food materials, excrete alcohol as their waste product. Though abstemious myself, the thought that intoxicating liquors were really built up of the excretions of living organisms removed all glamour from the cup, and produced a reaction of loathing. Soon I was shocked to find that this toxin causes degeneracy in all living things, disrupts the germ plasm, blights offspring, and, in the end, entails sterility and extinction. I saw at once that instead of being a mere matter of local police regulation its handling was the most fundamental and organic question confronting society, involving not only the integrity of free institutions, but the lives of nations, and the perpetuity of the race. I could not understand how my ignorance had been so dense regarding so important a scientific matter since, at Annapolis and at the Ecole d' Application du Génie Maritime, I had been trained for a scientific profession—that of Naval Constructor and Marine Engineer. After beginning the study of alcohol, however, I never ceased. This book is the product of scientific investigations continued steadily from 1908 until now—investigations in

which I have always sought only "the truth, the whole truth and nothing but the truth."

During the past ten years I have endeavoured to take my knowledge of this subject to my fellow countrymen, chiefly by the spoken word. Now that democracy has conquered in its age-long struggle, and must face the reconstruction of the world, I am hoping and praying that I may be helpful in some degree in carrying this vital truth to the ends of the earth through the written word. If the peoples of the earth do get this truth, a no-license world will follow as day follows night, democracy will endure, and a new era will dawn for the sobering world.

To those who wish to examine original experimental data, I would suggest the following:

First—Publications of the Carnegie institution at Washington on experimental investigations by Drs. Benedict and Dodge, on the effect of moderate doses of alcohol. These investigations establish that alcohol is always a depressant poison, no matter how small the quantity taken, and set at rest the controversy over the imagined food value of alcohol, "temperate drinking," "the use of light wine, of beer, etc."

Second—Reports of Dr. Stockard of experiments conducted at the Cornell Medical College, as to the effect of alcohol taken by mammals upon offspring and progeny, published in the "American Naturalist," and in the Proceedings of the Society of Experimental

Biology on Medicines. These experiments upon lower animals show the disruptive effect of drinking upon the germ plasm, producing degeneracy in the offspring, and finally possible sterility and extinction in the progeny.

Third—Reports of Dr. Laitinen of the University of Helsingfors, investigations—covering thousands of families—into the effects of drinking of parents upon their children, published in the Proceedings of International Congresses on Alcoholism, especially the Congress of London, 1909. These investigations uncover the degenerating effect of even the most temperate drinking by parents upon children, showing that the general use of “light wine” or “light beer” must in time bring about the disintegration of any family, and the decline and downfall of any nation.

To those who wish to examine an assemblage of experimental data, and the searching analysis of poisonous effects of alcohol, I would suggest the “Psychology of Alcoholism” by George B. Cutten.

The basic facts about alcohol are now established so thoroughly by the scientific world that for brevity I have omitted all my copious bibliography, and have cut down the citations of authorities. The question has really passed the controversial stage—elucidation and interpretation are now in order.

I wish to express my great indebtedness to my sister, Sarah A. Hobson, for the patient research work she has done for me at Radcliff.

Only an imperative demand for brevity in order that this book may go on wings prevents the placing of chapters prepared by her along with these chapters of my own.

R. P. H.

Contents

PART I

Alcohol and Individuals

I. ALCOHOL A PROTOPLASM POISON 21

Discovery of distillation—Continued ignorance of alcohol—Scientific Twilight, Sunrise and Noonday—Extensive investigations cited and their results briefly noted.

Chemistry of alcohol—Product of yeast germ—Why it is not a food—How produced—Poison to all higher forms of life—Hydrocarbon—Chain series—Relation to ether and chloroform—Effects on Protoplasm—Coagulates protein—Absorbs water and oxygen—Lessens nutrition and elimination.

Alcohol and Biology—Cells organized into bodies—Cells constitute ultimate tissue substance—Effects on cells produce effects on tissues through coagulation, malnutrition and deficient oxidation, elimination and cell-reproduction—Kills the germs which excrete it—Should have been recognized as toxin—Effect on low orders of life—on vegetable—animal—man.

Alcohol and Physical Pathology—Poisons in general—Slow recognition of alcohol as poison—Expulsion from Pharmacopœia—Alcoholic pathology of Skin—of Nutrition—of Blood and Circulation—of other organs.

II. ALCOHOL A HABIT-FORMING DRUG 66

Alcohol and the Nervous System—Special affinities of poisons—Alcohol's affinity—Nervous system fixes scale of life—Nervous evolution in Man—Lower Brain—Upper Brain—Brain Cells—More highly organized—Usual cell effects but more marked—Greatest damage to Upper Brain.

Alcohol and the Senses—Touch—Sight—Hearing—Taste and Smell.

Alcohol and Intellect—Memory—Dims impressions—Weakens power to recall and recognize—Latest

impressions destroyed first—Imagination—Disorganizes and debases—Destroys constructive imagination.

Thinking—Required coördination of mental powers impaired—Capacity to concentrate lessened—Moral conceptions and judgment go first.

Effects on Reason—On Will—Will requires Memory, Judgment, Reason, superlative nerve energy—Capacity to Will destroyed.

Alcoholic Craving—Based on motive of Exhilaration and motive of Oblivion—Universally present—Have legitimate answers—Falsely baited by alcohol—Appeals to each in turn—The alcohol habit—Each drink enhances drink motives and increasingly anæsthetizes opposing powers—Every drink makes taker less of a man.

III. ALCOHOL THE SPECIFIC CAUSE OF DEGENERACY

90

The Universe in change—Processes of building—Processes of decay—Processes more complex in organic world—In Vegetable—Animal—Man.

Protoplasm the physical machinery of evolution—Highest forms of suffer most—Physical fabric of man's spiritual evolution in Upper Brain—Building processes there reversed.

Alcoholic emotions epitomize gamut of alcoholic degeneracy—Control centers paralyzed—Emotions given rein—Sink in scale as anæsthesia progresses—Like effects over longer period from continuous more moderate use.

Alcohol and morals—Insanity—Pauperism.

Alcoholic toxicology—Shortening of life—Minimum fatal dose—Poisoning symptoms and processes—Premature senility—Mortality of drinkers.

Alcohol and offspring—Nature hostile to degeneracy—Alcohol and germ plasm—Experiments of Dr. Stockard—Degeneracy and ultimate sterility—Confirmed by investigations among human kind.

IV. ALCOHOL AND THE HUMAN LIFE-CYCLE (Including Discussion of Alcohol's Effects in Families)

III

Alcohol and the prenatal period—Effect on germ plasm further considered—Syphilis as a kindred plasm poison—Alcohol's relation to—Sacredness of child in embryo—Alcohol's effect on.

- Alcohol and the period of minority—Incapacitates mothers for nursing—Prevents proper care in infancy—Infantile mortality and—Cause of parental neglect, incompetence, bad example and abuse—Adolescent age—Stops education—Besets with special temptations—Rules out wholesome influences—Youthful depravity and.
- Alcohol and maturity—Effects on breadwinners—On home-protector—Alcohol and wedlock—Shortened period of maturity—Blighter of old age—Alcohol and the soul.

PART II

Alcohol and Society

V. GENERAL PRINCIPLES 133

Keying humanity to the top of its brain—The law of the fang out of date—No surplus human life—Race approaching condition of a warm-blooded organism—The new Bill of Rights—Future civilization will require dominance of top of the brain—The precept of the new order.

Inescapable conflicts—Socialization of "Rights" inevitable—How nature arms a species against menace—In man intelligence and conscience must aid.

Applying the scientific method—What it is—Illustrated in Battle of Santiago.

The great objective—Nature's and Society's must coincide—What natural science reveals as to man's true objective—How Nature aids toward its achievement—All things measured by how they aid—Anything that interferes is of moment to the whole race—Nature's indication of probable social effects of alcohol—Do facts corroborate.

VI. ALCOHOL AND NATIONS 146

Social integration and nations—Higher attributes of humanity developed by exercise—Large social groupings the only adequate field for their use—The why of nations—Ultimate integration of the human race—Average character the spiritually, and industrial organization the physically, determining factors—Nations the highest social organisms yet achieved.

Alcohol and national nutrition—What national nutrition includes—Society built of conscious, not unconscious, units—A comparatively new relationship—Functioning of units not yet fully established or become automatic—Man working at his own socialization—Social nutrition concerns food and more—Alcohol and food supplies—Alcohol and socially wasted labour—Lowered national efficiency—Waste of money—Injury of legitimate businesses—The cloying of the social body with alcoholic débris—Tax burdens—Sickness—Premature deaths.

Alcohol and national exercise—The activities which preserve and develop a nation—How alcohol affects them in the home—The school—Business—Alcohol an anti-social force—Effects on public self-control—Capital—Labour—Morality—Politics and government—Life of a nation not static but in flux—Effects on germ plasm work national consequences—The fall of nations explained—Average individual development of top-brain determines outcome of group conflicts—Drinking nations doomed to displacement—Nations must sober up or wither—Race must conquer alcohol habit or be forever toppling back into alcohol-purging chaos.

VII. ALCOHOL AND CIVILIZATIONS

172

Fundamental factor in life-histories of individuals and nations apply to civilizations—Civilizations formerly dominated by one nation, now by groups of nations—Failure of historians to study the past biologically—Such study reveals prime rôle of alcohol in tragedies of civilizations.

Alcohol and the physical basis of civilizations—Has restricted the zones of civilization—Delayed conquest of natural forces—Makes natural seats of civilization most perilous—Distillation has accelerated rate of decay—Cities as special menace—Alcohol's effect on naturally selective breeding—The enervation of alcoholic diseases.

Alcohol and the spiritual structure of civilization—Built on relations of men with their fellows—Justice as a requisite—Alcohol's effect on—Political virtue and a free civilization—Alcohol's effect on—The alcohol interests and free civilization in unescapable conflict—Peace as an essential—Alcohol's effect on—Closer relations between

alcoholized peoples can only develop discord—
Temporary cessation of conflict not peace—Only
hindrances to civilization now spiritual—Alcohol
destroys the physical basis of the spiritual faculties
—Summarized statement—Civilization must reckon
with alcohol.

Historic proof—How the course of empire advanced
ahead of the cults of dissipation—No more new
lands—Top-brain development the hope of the
world—Cannot be achieved using alcohol.

VIII. THE ONLY CURE 192

Alcohol's appeals reviewed—The motives of elation
and oblivion—Drug's power to increase and in-
tensify its appeal—Methods which leave it freely
accessible no possible cure—As true for society as
for individuals—Habit, heredity and weakened
resistance great social factors.

The alcohol supply—Laboratory processes difficult—
Production by fermentation easy—Manufacture
achieved early—Capable of great development at
low cost—No limit to its financial possibilities—
Greed and the elements of manufacture every-
where—Regulation ridiculous—Society always
susceptible to attack—Contagious in its spread—
Disease is organic.

The Cure—Organic disease requires organic remedy
—Combat the appeals and inhibit the supply—
Truth about alcohol more potent than alcohol's
appeals to the unenslaved—Must be instilled into
each generation—Present-day alcohol heredity,
habit and enslavement make truth alone unequal
to task—Inhibition of drug essential—Education
more fundamental—Must precede and follow pro-
hibition—Effective prohibition only after educa-
tion—Full educational results only after prohibi-
tion.

The educational objective—The instruction of all
the individuals of each generation.

Prohibition of the traffic—License and regulation
the traffic's aids—Prohibition the only rational at-
titude—Must ultimately be complete in a nation—
In the world.

Past failures no criterion—Elements of true cure un-
attainable then—The truth, agencies for its dis-
semination and motives which make that truth
paramount now conjoined—Outcome inevitable—
When, depends on those who have learned the
truth.

PART I
Alcohol and Individuals

I

ALCOHOL A PROTOPLASM POISON

“Ye shall know the truth and the truth shall make you free.”—*John 8:32*.

“My people perish for lack of knowledge.”—*Hosea 4:6*.

“Wine is a mocker.”—*Proverbs 20:1*.

Scientific Twilight.

THE first recorded scientific discovery of isolated alcohol proper was that of the Arabian chemist, Albucasis, who discovered distillation in the twelfth century. Previous to the use of distillation, intoxicating liquor had never contained over twelve to fourteen per cent. of alcohol, because at this concentration the toxin alcohol kills the ferment germs that produce it. The evaporation of the alcohol, like the invisible passing of the spirit of man, and the invisible movements of disembodied spirits, led to the name “spirits” of wine being applied to the condensed distillate. The name was similarly applied to the condensed distillate of turpentine, ammonia, and other substances, but when used by itself the word “spirits” to this day means alcohol.

The powerful, paralyzing effect of pure

alcohol must have become known to this Arabian chemist, but he seems to have kept it as a trade secret, as did those initiated who followed him; and only slowly did the manufacture of distilled liquors spread over the world.

Chinese records indicate that distillation was discovered and practiced in China as early as the tenth century B. C. The imperial edict of 1116 B. C. indicates that "spirits" of wine was known even then.

The appearance of distilled liquor, instead of throwing light upon the real nature of alcohol, as would be natural, only served to obscure the whole drink question. The widespread use of distilled liquors during the last two or three centuries has brought galloping degeneracy in its wake, with a deluge of excesses and drunkenness that is hurrying the nations on to the doom of those nations which have passed and are no more.

Notwithstanding the destructive work of alcohol through thousands of years of history before distillation was known, the early scientific investigators of our day were blinded by the more glaring ravages of distilled liquors, and disregarded the slower but even more deadly, because more general and insidious, use of fermented liquors which produces vastly more degeneracy, quantitatively, than distilled liquors. Largely as a result of this misconception many who are considered well-informed persons to-day still hold to the idea that it is all

right to drink "in moderation." Many actually believe that "drunkenness" is the only ill, that distilled liquors are its only source, and that reform should seek to eliminate "whiskey" but leave and even encourage the moderate use of beers and light wines.

Sunrise.

Scientific Sunrise upon the Field of Alcohol may be said to have come with the publication of the pioneer scientific pamphlet entitled, "An Inquiry into the Effect of Spirituous Liquors Upon the Human Body," by Dr. Benjamin Rush of Philadelphia, in 1783. Dr. Rush was chairman of the Committee of Independence of the Continental Congress, and through the coöperation of such prominent men of that Congress as Benjamin Franklin, General Putnam, and Dr. Belknap, the Continental Congress adopted a strong resolution calling upon the various legislatures immediately to pass laws the most effectual for putting an end to the pernicious practice of distilling grain. As Surgeon General of the Military Department of the Revolutionary War, as Professor of Chemistry in the Philadelphia Medical College, and as a noted practitioner of his day, Dr. Rush made careful observations and analyses which led him to conclude that distilled liquors produce serious injury to the human organism. It seems a pity that his observations did not extend to fermented liquors, because his method was thoroughly scientific and his observations thor-

oughly accurate, so much so that his pamphlet, even to this day, is an interesting authority on the subject, coming to the definite conclusion that spirituous liquors undermine the health and strength of the human organism and are neither good for food nor for medicine. However, Dr. Rush never seems to have suspected that the basic substance, alcohol, is the foundation of the ill effects of all intoxicating liquor, and must of necessity work harmfully in malt and fermented drinks as well as in distilled liquors. His famous pamphlet even advised the moderate use of wine and beer. There are conscientious and otherwise well-informed men and organs of the press to-day, who, in temperance reform, have halted where Dr. Rush stopped over a hundred years ago.

In 1850 Dr. William B. Carpenter published, both in London and Philadelphia, an essay entitled, "The Use and Abuse of Alcoholic Liquors in Health and Disease," which had a valuable educational influence, but scientifically did not advance any farther, if as far, as Dr. Rush.

It remained for Dr. Magnus Huss of Sweden to make the next important step forward. He originated the word "alcoholism." Many apologists for liquor have attempted to maintain, and still attempt to maintain, that the drink problem is confined to what is designated as alcoholism,—the result of excessive and usually fatal drinking. Dr. Huss' book cites evidence proving conclusively that serious injury

results from "moderate drinking." This book turned a furrow in the scientific field, the deepest furrow yet turned, demonstrating the inherently harmful nature of alcohol in any form and any quantity.¹

Twenty-five years later, Dr. Benjamin Ward Richardson of London in his "Cantor Lectures" advanced scientific data another step and entrenched his advanced position. His investigations were long continued, careful, scientific, and conclusive. He demonstrated that alcohol is an anæsthetic, not a stimulant, and that its action upon the organs and tissues, whether taken in "moderation" or in "excess," whether in the form of fermented, malt, or distilled liquor, is essentially that of a poison. These investigations led Dr. Richardson himself to become a total abstainer. They laid the foundation of the general adoption of total abstinence as the rational policy toward drink. Dr. Richardson may be called the Father of Scientific Total Abstinence.

Dr. N. S. Davis, one of the great practitioners of the day, put forth in America the pioneer teaching advanced by Dr. Richardson in England, maintaining that alcohol is harmful to the human system in any quantity, in health or disease. The natural conservatism of the medical profession long retarded the spread of this teaching, but it has finally come to its own. The Great Committee on the American Pharmacopœia in 1915 dropped liquors of all kinds from

¹ Alcoholismus Chronicus. Stockholm, 1851.

the list of legitimate medicines. At the June, 1918, National Convention of the American Medical Association, the president of that Association, amid general applause, appealed to the entire medical profession to join in the prohibition fight as the most important means of promoting the public health.

Investigations of many scientific men followed those of Dr. Richardson, all leading to the same conclusion, that alcohol, instead of being beneficial and curative in its effects as medicine, is a dangerous impediment to curative processes, and causes a predisposition to contract disease. Among these investigators may be mentioned Dr. A. C. Abbott of the University of Pennsylvania; Prof. C. H. Hodge of Clark University; Dr. Reid Hunt of the U. S. Hygienic Laboratory; Dr. Stockard of Cornell Medical College; Prof. T. Laitinen of Helsingfors, Finland; Drs. Delearde, Massart, Bordet, and Metchnikoff of France, and others who might be named.

In confirmation of these general conclusions, a succession of investigations and observations in many parts of the world completed the demonstration that alcohol is the main ally of consumption, pneumonia, typhoid, cholera, sunstroke, and most of the diseases of the stomach, liver, kidneys, heart, blood vessels, nerves and brain. Among these investigators may be mentioned Drs. Crothers, Welch, and Chittenden of America; Muirhead, Horsley, and Woodhead of Great Britain; Bauderon, Bruar-

del, Bertillon, and Meirnon of France; Weichselbaum of Vienna; Henschen of Stockholm; Guttstadt of Prussia, and Forel of Switzerland.

Another series of investigations in the medical world cleverly demonstrated that alcohol is the principal cause of premature death. The pioneer in this line was F. G. P. Neison, English Actuary, who reported the results of his investigations on "Mortality Among Persons of Intemperate Habits" to the Statistical Society of London in 1851. A committee of the Harveian Society of London, appointed in 1879 to investigate the subject, reported in 1882. Another investigation of a similar character was conducted by a committee of the British Medical Association, 1885-86. The Danish Governmental Temperance Commission conducted a similar investigation. Switzerland figures for 1891-94 were reported by Dr. Frank in 1895. In 1901 Swedish figures were reported by Dr. Ekholm. E. L. Fisk has done similar work in America. In 1914 forty-three life insurance companies in America reported extensive investigations of a similar nature through a committee headed by Arthur Hunter. An earlier study is by E. B. Phelps in America in 1910-11. The general plan in these investigations is to average the judgment of doctors, with practical experience, as to the part played by alcohol as a cause of death, and the result of all averages and estimates known showed it to be the greatest single cause of death. The most accurate and significant revelations are those taken directly

from life insurance companies and fraternal and provident associations, where records are kept separately. These show total abstainers to be in a class by themselves in mortality, in matters of health and longevity. The first life insurance company to keep a separate record for total abstainers was the United Kingdom Temperance and General Provident Institution, London, which was founded by total abstainers in 1841. Other companies at that time demanded higher rates for total abstainers on the ground that they gave up the strengthening effects of "strong drink." Among those following the example of the United Kingdom Temperance and General Provident Institution may be mentioned the Sceptre of London, founded 1864, the Scottish Temperance, Scottish Imperial, British Empire Mutual, Prudential, Order of Rechabites, Odd Fellows in England, Swedish Mutual, New England Mutual, Security Mutual (Binghamton, N. Y.), Connecticut Mutual insurance companies. These results of separate records of life insurance companies are confirmed by sick benefit societies and official statistics and tables, among which are those of Leipsic and other German statistics, and the Massachusetts and South Australia statistics. The concensus of these absolutely reliable records has startled the scientific world by the revelation that alcohol not only plays an enormous part as a great direct and indirect cause of disease and premature death, but may be found to be a greater cause than all other causes combined, especially

during the years of man's greatest power and effectiveness—twenty to fifty.

Noontide.

The Noontide of Science Upon Alcohol came in with the world search for efficiency, physical and mental. In no field perhaps has scientific investigation, careful, rigid, exact, brought so surprising results. Everywhere alcohol is revealed as the greatest cause of man's inefficiency in all lines of endeavour. This might have been inferred from the effects of alcohol upon health, its relation to sickness, disease, and premature death. Direct investigations have overwhelmed the industrial and business world with the volume and conclusiveness of their records, until total abstinence is now the aim of armies, navies, railroads, and other organizations demanding high efficiency from their men.

Germans, in the quest for efficiency, have made exhaustive investigations into the effect of alcohol upon human capacity and efficiency. Prof. Emil Kraepelin, of the Universities of Munich and of Heidelberg, is looked upon as the pioneer investigator in this line. He began his work in the early eighties, and in 1892 published the result of careful investigations, demonstrating the serious loss of efficiency, physical and mental, from the use of alcohol even in moderate quantities. His pupils, Drs. Kurz, Fuerer, A. Smith, and Aschaffenburg, continued these investigations with similar results. Prof. S. Exner, however, had made

earlier investigations in the same field in 1873, and arrived at the same conclusion, though the results were not generally known till presented by A. Smith in 1895.

Exner's experiments were followed up by Dietl and Vintschgan in 1876 and Danillo in 1883. Among other noted German investigators are Schmiedeberg, Bunge, Filehne. Extensive investigations along these lines were also made in Switzerland by Professor Rubin and Dr. Schnyder; in Norway by Professor Vogt; in America by the Rosanoff brothers. Careful, though less extensive, observations tending to the same conclusions were made by scientific men, extending back to the middle of the last century. Among these investigators may be mentioned Lichterfels, Fröhlich, Ridge, Kramer, Crothers, Reis, Kerr, Gustafson, Partridge, Schweinitz, Hyslop, Lewis, Thomeuf, Jacoby, Ladd, Abel, Billings, Cutler, Benedict, and Atwater. These studies covered the effect of alcohol on the intellect, the memory, the will, the emotions and the senses, including sight, hearing, smell, taste, touch, muscular sense and reaction.

Special investigations as to the effect of alcohol upon the efficiency of children have been conducted by the authorities at Vienna through Professor Bayr and Dr. Fröhlich; by the Italian authorities through A. Schiave and Dr. Arcelti; by the German authorities at Munich by Hecker and also at Bonn; and by the Hungarian authorities through Dr. Doczi. These

all show the same general results as the investigations dealing with adults, though the loss of efficiency is naturally more marked in the young for the same proportion of alcohol.

Similar experiments have been conducted to show the effect of alcohol upon the vitality of animals, notably by Huss and by Hodge. These led to the same general conclusions.

Investigations into the causes of industrial accidents, inaugurated by employers and accident insurance companies, led to the conclusion that alcohol, in lowering the efficiency of operatives, is the principal cause of accidents. Prominent among these investigations are those of Zurich, Switzerland, conducted by the Building Trades Club, those at Leipsic by the Sick Benefit Club, those at Volklingen, Germany, among the steel workers.

The same conclusion of impairment of vigour and loss of efficiency has been reached in all lines of athletics. There is scarcely a military or naval service in the world where tests and observations have not been made, all showing the heavy toll of inefficiency that alcohol invariably levies in the numbers incapacitated for service, in rejections at enlistment, in the time spent on the sick list, in lack of endurance on the march, in loss of skill and precision in marksmanship, and in lapses of discipline. Investigation showed drink to be the chief cause of inefficiency in the Russian Army in the war with Japan, and in the British Army in the Boer War. These investigations in the latter

case were the principal cause of a new awakening, first in England, then in other countries. The governments of Europe, sobered by the responsibilities of the great war, are all seeking to reduce as fast as possible the use of liquor in armies and fleets, and ultimately among all the people.

Another line of scientific investigation led to the conclusion that the serious loss of efficiency in productive industries, and the immediate general loss of national efficiency, are but surface manifestations of a deeper organic disintegration that alcohol produces in the reproduction of life itself, which threatens the very survival of nations and endangers the progress of the human race. Prof. Rudolph Demme, of Berne, Switzerland, head of the Jenner Hospital for Children, was an early investigator into the effect of alcohol upon offspring. For over ten years—1878–89—he conducted investigations which showed that intemperate drinking by both parents impairs the integrity, especially as to the nervous system, of the child unborn. Prof. Taav Laitinen of the University of Helsingfors, Finland, conducted the most extensive investigations in this line, beginning in 1903, in which he studied over 17,000 children. While he dealt with moderate-drinking parents, his investigations led to the same conclusion as did those of Demme.

Prof. Gustav von Bunge, of Basel, Switzerland, made investigations involving various degrees of drinking by the parents, which

showed disastrous results, further indicating that the degree of blight upon the offspring varied with the degree of the drinking by parents.

Dr. W. C. Sullivan, Medical Inspector of Prisons in England, made investigations into the effect upon offspring of the drinking on the part of the mother only. Invariable results of injury to offspring were again demonstrated.

Investigations confirming the correctness of these general conclusions have been made by Dr. Bourneville, Bicêtre, France; Dr. W. A. Potts, Birmingham, England, 1908; Dr. Bertholet of Lausanne, Switzerland, 1911; Dr. Josef Schweighofer, Salzburg, Austria, 1912; and many others. Drs. Hartman and D. von Bezola of Switzerland found that wine harvest and other drinking festivals were attended by conception of an increased number of mentally defective children.

Dr. Bertholet's investigations, covering a great many autopsies, showed that alcohol made destructive attack upon the glands of reproduction in men. Drs. Arlitt and Wells, experimenting on animals, found the same results.

Experiments upon animals show the same destructive results produced upon the offspring of parents taking alcohol. Dr. Laitinen was a pioneer in this field, with elaborate experiments on animals,—rabbits and guinea pigs and other animals. Professor Hodge of Clark University, Worcester, Mass., conducted extensive experi-

ments on dogs and cats with the same general results. Prof. W. S. Hall of Northwestern University, Chicago, found similar results in similar experiments.¹

The most exhaustive experiments in this line are those still being conducted with guinea pigs at the Cornell Medical College in New York City under the direction of Dr. Stockard. Already more than a thousand animals have been experimented with, extending to the seventh generation. These experiments show the correctness of less extensive experiments formerly made in other places. In addition, they bring out most startling results that appear in the third, fourth and later generations. For instance, if one parent is an alcoholic, no matter if all the rest of the ancestry is free from the taint, nevertheless the family may become sterile and extinct with the fourth generation.

The most scientific investigations thus far conducted in any line are those made by the Carnegie Nutrition Laboratory under the direction of Dr. Benedict. In these investigations instruments of greater precision than heretofore available and methods heretofore found impossible for lack of plant and resources were freely used. Dr. Benedict and his collaborators formerly thought that alcohol in small quantities could be utilized by the system and serve as a food. These investigations showed conclu-

¹The International Congress on Alcoholism 1909 and 1913. Works of Lancereaux, Simonds, Weichselbaum, Combemale, Stockard, Popanaculaoci.

sively, however, that alcohol is always a narcotic poison.¹

They brought out the unsuspected quick effect of even small quantities of alcohol upon the reflexes. We now know that numberless accidents have been due to slow reflex action of men in shops, and like reflex slowness by men driving automobiles—men of the most “temperate” drinking, men never suspected of being under the “influence” of liquor. These exact and conclusive experiments must set at rest all question as to the inherently poisonous nature of alcohol.

Powerful vested interests, with vast resources, have exerted stupendous influences to hamper the march of scientific knowledge about alcohol, and especially to prevent its dissemination among the masses. They have cultivated the ancient beliefs, derived from temporary sensations and misunderstood observations, that alcoholic drinks were valuable for food, for stimulation, for medicine. They have promoted laws facilitating the procuring of drink by the people, granting oftentimes free distribution to government employees, soldiers, and sailors.

Naturally the first public action taken, action that is even now advocated by some not yet informed, was that of regulation. Subsequent steps have come in rapid succession, the scientific world laying before the people at large the terrible truth that all alcohol is an insidious

¹ Benedict and Dodge, “The Psychological Effects of Alcohol.” Benedict in *Journal American Medical Association*, 1916.

poison of a deadly nature, bringing disease, premature death, blighting of offspring, and, through widespread use, national declines and downfalls. In full light of the truth as it may now be known no sacrifice is too great for any nation to make to become sober, to bring about total abstinence by its people and the complete destruction of the beverage liquor traffic within its borders.

Out of this vast field of scientific research, respecting which the vested interests of liquor have vainly tried to produce confusion and misunderstanding, there stand forth three simple findings and conclusions of modern science which may be considered as fully established as the law of gravitation. First, alcohol is a protoplasm poison; second, alcohol is a narcotic, habit-forming drug; third, alcohol is a specific cause of degeneracy, a disruptive agent in the life and reproduction of individual man and in the order of society. Men may differ in opinion as to matters of judgment, but every intelligent and honourable man will wish to know the truth in matters of fact settled by science. The simple conclusion is that the nations of to-day must become sober or perish as have the nations of the past. The human race must become sober or suffer degeneracy and final extinction.

Chemistry of Alcohol.

Alcohol, the Toxin of the Ferment Fungus.

Alcohol, as a chemical derivative of carbon,

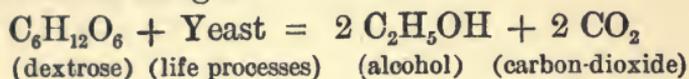
belongs to the domain of organic chemistry, called organic because these derivatives are usually associated with organic or life processes in plants and animals.

The life processes that produce alcohol are those of the yeast germ, which belongs to the plant kingdom, the fungi subdivision. The distinctive characteristic of the fungi is that they lack chlorophyl, the green colouring substance in other plants by virtue of which, under the action of sunlight, they seize lower carbon and hydrogen substances in the air and from them build up higher products suitable for food. The fungi, on the contrary, feed upon higher products, as animals do. They cannot, however, reach food materials intact. The coating produced by nature is proof against such attacks. These take place when fruits, grains, and other food materials have been damaged, and the attack of fungi is essentially a process of decay and dissolution. In breaking up the higher food substance, the fungi throw off the lower, with products known as toxins.

The ferment fungus feeds upon a higher sugary food product known as dextrose, glucose, or grape sugar, and breaks it down into two lower waste products, or toxins, one a gas, the other a liquid; the energy liberated by the process supplying the life energy of the fungus. The gas is a well-known toxin poison, carbon dioxide, which in escaping causes the bubbling in fermentation. The liquid toxin is alcohol which remains, and begins to attack the fungi

that produced it. As a result, the fermentation slows down steadily until the amount of the poison reaches twelve to fourteen per cent. of the solution, when fermentation, the life process of the fungi, ceases altogether.

The formula for the production of alcohol by the ferment fungus is as follows:



Thus, one molecule of grape sugar (dextrose, or glucose), entering as food into the body of the ferment (or yeast) fungus, is broken up into two molecules of alcohol, the liquid toxin, and two molecules of carbon dioxide, the gas toxin.

Food Controversy Settled.

The moment the fact was established that alcohol is the toxin of a fungus, that moment the old controversy as to whether alcohol is a food was definitely settled. Investigations with toxins of all kinds, from those of high orders of life, like man, down to those of micro-organisms, like the consumption germ, the diphtheria bacillus, have brought out a general law that governs the action of all toxins, namely: the toxin of one form of life is a poison to the form of life that produced it, and a poison to all forms of life of a higher order.

Since the ferment fungus is a single cell germ, the lowest form of life known except such as the vinegar germ, its toxin alcohol will be found a poison to all higher forms of life, higher plants as well as all animals, and of course to the most

delicately organized of all, man, with his wonderfully developed nervous system.

Alcohol is a chemical compound, one of the dangerous derivatives of the hydrocarbons, a clan which includes most of the poisons known to man. It belongs to the chain series, and is one of the alcohol-chloroform group derived from methane. Its chemical formula is usually written C_2H_5OH , the second member of a remarkable family known as the alcohol family. The other members are interesting, some of them very interesting, but the second member of the group is such a prodigy and has ruled over mankind so long that he has taken the family name to himself, the other members passing in the world at large with other names or distinguished by given names.

All the members of the alcohol family are sired by the hydrocarbon methane, CH_4 , the dangerous, poisonous gas known among miners as fire-damp, and among people at large as marsh-gas, which is composed of one atom of carbon and four atoms of hydrogen. The family is mothered by hydroxyl, OH , one atom of oxygen and one atom of hydrogen. When hydroxyl, OH , detaches one atom of hydrogen from methane, CH_4 , and takes its place, the result, $CH_3.OH$, is the first-born of the alcohol family, known as methyl-alcohol. Methyl goes about in overalls, under the common name of "wood alcohol," a dangerous enough citizen if trifled with, but content to stay in his place and serve the arts. He is outspoken and honest,

never pretending that he is good to drink nor, because he can burn, that he is a food.

The chain in the alcohol family has for its link CH_2 . Inserting this link before hydroxyl in methyl-alcohol we have as a result $\text{CH}_3 \cdot \text{CH}_2 \cdot \text{OH}$ (or, as simplified $\text{C}_2\text{H}_5\text{OH}$), the second of the alcohol family, known as ethyl-alcohol, or popularly simply as alcohol, King Alcohol, the arch-usurper and deceiver of the universe, really poisoning more people than wood-alcohol, yet pretending to be food and to be the source of strength and joy to man.

When another link, CH_2 , is inserted before hydroxyl in ethyl-alcohol the result, $\text{CH}_3 \cdot \text{CH}_2 \cdot \text{CH}_2 \cdot \text{OH}$, is the third member of the alcohol family, propyl-alcohol.

Similarly by the insertion of another link we have the fourth member of the family, butyl-alcohol. Next follows amyl-alcohol, commonly known as fusel-oil, though not itself alone responsible for the conduct of fusel-oil. Next comes hexyl-alcohol, etc.

It is easy to recognize the members of this remarkable family. They all show their hydrocarbon ancestry, founded by the "fatty" branch, CH_3 , one atom of carbon and three atoms of hydrogen, while hydroxyl, OH , one atom of oxygen and one atom of hydrogen, breeds true in them all.

Hydroxyl is liable to drop the hydrogen atom and take up in its place other hydrocarbon derivatives, also derivatives of chlorine, bromine, etc., or, on the other hand, it is liable

to drop out entirely, new complicating chemical substances taking its place. For instance, by coaxing ethyl-alcohol, the alcohol in liquor, with a little sulphuric acid simply to extract water from it, H_2O , the hydrocarbon doubles up and produces ethyl-ether, $C_2H_5OC_2H_5$, the anæsthetic poison known as ether, one molecule of which is nothing more than two molecules of alcohol less one molecule of water.

Again, by treating alcohol with bleaching powder through a double reaction, we have chloroform, $CHCl_3$, one atom of carbon, one atom of hydrogen, three atoms of chlorine.

Hydroxyl and hydrocarbons are sometimes found in different combinations, as, for instance, by adding more carbon, leaving the rest the same as in alcohol, making the formula, C_6H_5OH , we have carbolic acid.

Sometimes we find nitrogen linked up with hydrocarbon derivatives like chlorine, without hydroxyl, and with varied rearrangements of carbon, hydrogen and oxygen, as, for instance, in the formula, HCN , which is prussic acid.

In similar manner we recognize the analogy between the higher members of the alcohol family and the opium derivatives, morphine, $C_{17}H_{19}O_3N$, and its further derivatives, cocaine, $C_{17}H_{21}O_4N$, and strychnine, $C_{21}H_{22}O_2N_2$, and heroine, $C_{21}H_{23}O_3N$, etc.

Alcohol and Protoplasm.

It is strange, considering the close family relationship of alcohol to nearly all of the

deadly poisons, many of them well known, that mankind has not sooner been put on guard against its true nature. This is because its ordinary production from grapes, grain, and other food materials led mankind falsely to conclude that it was something naturally present in these foods, and so must have a rightful beverage use. On this basis alcohol accomplished a world-wide career of deceit and illusion generations before the science of chemistry was founded, and that science has had to combat and overcome the false teachings of ages.

It is not necessary to follow all the complex chemical reactions of this poisonous tribe to understand their fundamentally destructive effect upon the protoplasm of living tissue and upon the delicate processes necessary to maintain life.

Protoplasm is composed of proteins, water, and a little salt. Its life processes require a regular supply of food and oxygen and a regular elimination of waste products.

Some poisons attack the protoplasm itself, some interfere with the life processes, some, such as the protoplasm poisons, alcohol, chloroform, carbolic acid and prussic acid, have both effects. It is easy to note a hardening effect when carbolic acid or alcohol comes in contact with exposed protoplasm, like the white of an egg, or the eye, or the mucous membrane of the tongue. This is due to the coagulation of the proteins of the protoplasm itself, as well as the extraction of water.

The attack of these poisons upon the structure of the protoplasm is general, but its intensity varies from one part to the other, thus for alcohol, chloroform, and most of their family groups, in fact, for most of the protoplasm poisons, the severest attack is upon the protoplasm of the central nervous system of the brain.

The quickest and most violent derangement of protoplasm itself is in the case of prussic acid, where the poison combines directly with the proteins and produces sulphocyanides, among other waste products.

The destructive effect of poison upon protoplasm can be easily understood by taking account of the general composition of proteins, about one-half being carbon, one-fifth oxygen, one-sixth nitrogen, one-fifteenth hydrogen, and a little sulphur. In some protoplasm phosphorus enters, being highest—about five and one-half per cent.—in nucleo-protein, the principal constituent of the central nuclei of living cells. These proteins are especially prominent in the central nervous system, particularly the brain.

Other proteins known as chromo-proteins, contain a little iron, like hæmoglobin, the dye-stuff of the red blood cells, the most important, forming as it does a quick, loose combination with the oxygen in the lungs, constituting thus the carrier of oxygen as the circulation reaches all the cells.

As pointed out above, water is as vital to the

structure of protoplasm as to its life processes. Some poisons, like alcohol and the mineral acids, such as nitric acid, vitriol, etc., have a thirst for water, and produce a parching effect upon protoplasm by literally sucking out its water. When these corrosive acids are concentrated the effect becomes evident and even violent, the protoplasm and carbohydrates being literally charred. The general effect of alcohol is the same, though not so violent. It is not difficult thus to understand how "drink" produces "thirst."

Some of the poisons, such as prussic acid and alcohol, have an affinity for oxygen. They extract oxygen from the proteins of the protoplasm as well as from the red blood cells, the vehicles of supply. Alcohol combines with oxygen to form carbon dioxide, acetic acid, and other lower products. The clouding effect that takes place in the transparent protoplasm of a living cell when attacked by alcohol is not thoroughly understood, especially the chemical reactions, but no doubt is due, in part at least, to the essential oxygen being extracted from the structure along with the sucking out of water.

It is not necessary to pursue further the chemical reactions to understand how fundamentally deranging and ultimately disastrous alcohol must be to the structure of the myriad cells of the body.

The destructive effect of most poisons, especially the organic poisons to which alcohol belongs, is not limited to the attack upon the

structure of the living cells, but is twofold and extends to a derangement of the necessary life processes as well. Alcohol and, indeed, practically all the protoplasm poisons interfere with the nutrition of the cells. The injury to the structure of the cells lowers their power of assimilation; thus injury to the heart, blood and lymph vessels reduces the nutritive value of the blood itself and the lymph; similar derangement and effect come from the attack upon the alimentary organs, juices, and processes of digestion. Nutrition, including assimilation, excretion, as well as reproduction, are thus all deranged by the intimate chemical action of the alcohol poison.

Alcohol and Biology.

As a nation is made up of a large number of living individuals, so the body is made up of a large number of minute living particles called cells, already referred to above. The citizens of a country are engaged in varied pursuits—some in the work of production, in field, forest, mine, factory; some in the work of distribution, in transportation, in warehouse, store, bank; some in the work of regulation, in legislative halls, on the bench, in the executive chair; some in the work of protection, soldiers, sailors, doctors, teachers, preachers. Likewise in the body some cells are working on production,—mouth, stomach, intestines, lungs, supplying food, water, air; some are engaged in distribution of supplies and elimination of waste,—heart,

blood, lymph, lungs, liver, kidneys, skin; some perform the office of regulation,—brain, spinal cord, nerves; some are occupied in protection,—white blood corpuscles, anti-bodies, skin, bone, muscle. In the body there are also cells to which are entrusted reproduction of the species.

In the nation each citizen must carry on his own individual life. There is birth, growth, reproduction, necessitating food, air, water, elimination of waste. So must each cell in the body carry on its individual life through similar processes. As the vigour and welfare of a nation depend fundamentally on the vitality and efficiency and coöperation of its citizens, so the health and life of the body depend upon the vitality, efficiency and coöperation of its myriad cells.

The cells of the human body are of many varieties, having many special characteristics and functions. All of them are made up of protoplasm, as mentioned above, in each of which there is a dense central nucleus surrounded by opaque jelly. Upon the integrity of the nucleus depends the life and reproduction of the cell.

In the lowest form of life, as in bacteria, consisting of only a few cells, in some cases of only a single cell, as in the amœba, it is possible with the microscope to watch the life processes in full operation. If we examine a drop of stagnant water we clearly see the single cell amœba moving around gathering and sucking in food and air and throwing out waste products. After

a while we see the nucleus divide into two parts, the surrounding jelly closing in between the parts. Then the cell itself divides into two parts, each a complete independent cell body that starts upon its own similar life history. In some cases, as in the case of the yeast or ferment germ, the mother cell produces many new cells at a time instead of simply dividing in two, through a process popularly called "budding."

As previously pointed out, the various elemental cells of any living thing are of absolutely vital importance, lying at the foundation and perpetuity of all life, plant and animal. It is well enough at this point to have a more definite knowledge of the protoplasm out of which all cells are constructed, especially the protein constituents. All proteins are hydrocarbon derivatives of nitrogen with a trace of sulphur. While many in variety they differ but slightly in chemical composition, which may be taken approximately to be the following: 53% carbon; 22½% oxygen; 16½% nitrogen; 7% hydrogen.

As previously pointed out, alcohol along with certain other poisons hardens or coagulates protein. For instance, it will cook an egg, and an egg thus cooked can never be restored; especially is it unfitted for reproduction. It also has been pointed out how alcohol and certain other poisons suck up the water from the elemental protoplasm and altogether injure not only the substance but interfere with the life processes of the elemental cells. Bearing this in

mind we can readily get a realization of the manifold forms of injury to the functions of the body itself, such as breathing, nutrition, elimination and reproduction. Breathing is interfered with both by the injury to the protoplasm, in the cells themselves, and by the reduction of the supply of oxygen delivered by the blood, the power of the red blood cells to absorb oxygen from the lungs being reduced and the facility of delivering it to the cells likewise reduced, and during the process of delivery the alcohol itself appropriating part of the oxygen. In addition, the velocity and regularity in transportation is affected by reducing the fluidity of the blood through drawing water from its plasma and by disturbing the equilibrium and regulation of the circulation.

The imperfect oxidation of fats and starches is one of the first injuries to manifest itself, gradually causing an accumulation of particles of these substances in organs and tissues, producing the dangerous condition of fatty degeneration. It is not necessary to proceed in similar way to describe the functions of nutrition and excretion of the elemental cells to realize the general fundamental derangement this deadly poison produces in the human organism in all its life processes, whether in the cells themselves, in the organs, tissues, or in the whole body itself.

The fact that some of the alcohol appropriates part of the oxygen of the blood and in burning produces necessarily a proportionate amount of

heat, led early investigators and latter-day apologists for liquor to maintain that alcohol therefore is a food. By the same reasoning, chloroform, strychnine, prussic acid, and other poisons, would be foods, as also would be the waste products of the system like uric acid that partly burns before elimination.

In like manner, some have held that alcohol through its own burning spares the burning of food tissue. It does reduce injuriously the processes of nutrition of the cells and does tend to the accumulation in an unhealthy way of fats, but such a process of derangement that spares food material cannot be considered useful any more than we could recommend to a general to poison his soldiers in order to cut down their appetites and save food supplies.

Few intelligent persons, however, still call alcohol a food, and, since the experiments of the Carnegie Nutrition Laboratory, no one thoroughly scientific still clings to this old fallacy, as these experiments showed once and for all that alcohol, no matter how taken, or even in small quantities, is always a poison, a narcotic poison. Forel says, "the statement that a poison can be at the same time a food is a play on words."

Especial significance must be attached to the deep and fundamental derangement of alcohol-poisoning upon the processes of reproduction in all cell life, the injury being more marked and more vital than to any other life process. One of the best illustrations of this is seen in the

case of the yeast or ferment germ, a single cell vegetable organism used in the processes of commercial manufacture of alcoholic liquors. In warm "sweet-wort," sugary dextrose in water, the yeast cells flourish, multiplying rapidly by budding until they permeate the whole mass, vigorously carrying on their life processes, producing enzymes that ferment the sugar, breaking it up into lower waste products, one a gas, carbon dioxide, which causes the bubbling, the other a liquid, alcohol. The alcohol, not being eliminated, begins quickly to attack the yeast germs themselves. When the alcohol is only one part in a thousand it has a marked effect upon the life processes, but especially upon the budding reproduction processes, which begin to subside and continue to subside as the proportion of alcohol increases until it reaches twelve to fourteen per cent. Then the whole process of fermentation ends, because the waste product or toxin, alcohol, then destroys the germs that produce it. More concentrated alcohol must then be produced by distillation. It cannot be produced by further fermentation. When we bear in mind that no other form of life is as tolerant or as resistant to alcohol as is its own yeast germ, we can readily understand how terrible must be the effect of this poison alcohol upon the processes of reproduction of all other forms of life.

The fact that alcohol is produced as a waste product from the life processes of a lower form of life, the single cell yeast or ferment germ,

and promptly deranges the life processes, poisons and destroys these germs themselves, should have suggested to thoughtful men long ago that it was a protoplasm poison, that if it poisons the lowest form of life it must, in increasing scale, poison the higher, more delicate and sensitive forms.

It is singular that the medical world did not sooner suspect the true nature of alcohol, recognizing in it a toxin of a low order of life like the toxins of diphtheria, pneumonia, and other disease bacteria. As soon as the medical world discovered the dangerous nature of the toxin of such micro-organisms, it could have deduced at once that the toxin of the ferment germ, alcohol, must be in the same class.

The deranging and destructive effect of alcohol on low orders of life, plant and animal, has been verified time and time again, and can be verified still further with little difficulty. The very fact, well known, that organic matter, vegetable or animal, can be preserved in alcohol, is itself proof that no living process can go on within the alcohol, and that nothing living, not even single cell germs themselves, can penetrate the alcohol, not even the ferment germs that produce the alcohol.

In the case of higher types, like animals with a regular circulation, the startling fact has been found that in no case can an animal survive if the alcohol reaches even six parts in a thousand parts of the blood.¹ It can be said, practically,

¹ Cushny's "Pharmacology."

that one-half of one per cent. of alcohol in the blood of an animal will quickly cause death. As the scale of life ascends and the life processes become more delicate and complicated, it is naturally to be expected that this toxic poison must more and more derange the vital functions. Likewise in the same animal it is to be expected that the total effect will be more disastrously felt in the delicate tissues which are the latest in the creature's evolution.

Thus, we must look for alcohol to have greater destructive effect in proportion upon man than upon other living things, and more marked effect upon man's delicate nervous system than upon any other part, the greatest effect appearing in the brain in those nerve elements associated with moral and spiritual attributes, these being of the most recent evolution and the most delicate and complex nature.

As will be seen later under toxicology, five ounces, a small tumbler full, is the minimum fatal dose for man, causing death within ten hours.

This brief review of the biological characteristics of alcohol leads necessarily to the conclusion that it is not only a protoplasm poison but that it will be found to be a habit-forming drug and a specific agent of degeneracy for all life, especially destructive in bringing a chain of life to an end by interfering with its powers of reproduction.

Alcohol and Physical Pathology.

Experience verifies and elaborates what

chemistry and biology demonstrate, that beverage alcohol as used by a majority of the people of the world both in temperate and intemperate drinking impairs and tends to destroy the human organism both in its functions and in its structure. It injures the normal processes of supplying the system with nourishment—digestion, circulation, assimilation. It damages all processes of utilization for current expenditures, for repair and growth. It interferes with all processes of waste elimination—respiration, perspiration, and urinary and fecal excretion. It disturbs and paralyzes all processes of regulation, voluntary and involuntary. It vitiates and nullifies the processes of reproduction. All of these vital functions are impaired by alcohol in proportion to the amount of poison taken, the time and the condition of the indulgence influencing the extent of the effect.

No organ in the system of the average temperate regular drinker, no elemental protoplasm, can possibly escape some injury—the blood, stomach, intestines, pancreas, heart, blood vessels, liver, kidneys, lungs, skin, nervous system, brain, spinal cord, ovaries, testicles, bone, sinews—all suffer more or less, and with them, of necessity, the body, the mind, the morals, and the character. And the tragic climax is that the yet unborn children of such drinkers will reap the most terrible harvests of all.

As in the case of other protoplasm poisons

and poisons in general, the derangement and injury are variable, not only according to the amount of the poison, but the effect varies also in different tissues and organs. With alcohol the first effect is upon the reflex centers, controlling involuntary movements, but the elective affinity or preference is for the organ of reproduction and the central nervous system, the derangements of which disturb the functions of the rest of the organism, complicating and, in some parts, for the time, counteracting the direct narcotic effect. Thus the early narcotic effect upon centers of inhibition and control, removes ordinary restraints, and permits speeding up of function in various organs before the full narcotic effect can reduce this speed. This complication for a long time obscured the real effect of alcohol and caused it to be regarded even in the medical world as a stimulant. This in part accounts for its false hold upon the science of medicine for so many generations.

Alcohol has an irritating effect when applied externally but other substances are better irritants; it is an anæsthetic, but chloroform and ether are better anæsthetics; it has an anti-septic effect, but a three per cent. solution of carbolic acid is better than a seventy-five per cent. solution of alcohol; it produces heat when oxidized in the body, but it causes the body to lose more heat than this oxidization produces; it saves some of the fat from being burned, but as a rule the fat it saves ought to be burned instead of lodging in the heart tissues and other

vital organs where it becomes a source of danger. It is good fuel for an engine or a lamp, but the idea of this protoplasm poison being good for fuel or food in the body of man or any living thing is illogical, unscientific and altogether preposterous.

The medical profession as a whole, which was at first loath to give up a drug so accessible and so popular, has now authoritatively divorced alcohol from use as medicine.¹ As mentioned above, the American pharmacopœia, prepared under the authority of the American Medical Association, has omitted all forms of alcohol from its list of medicines.

There is no code of appeals above the truth once established by science. The sentence upon alcohol has been pronounced. It has no legitimate place as food, or drink, or medicine, and must retire to the field of the arts; and even here it must be denatured from its high estate of dominion over the world and step down to the rank of a toiler.

Pathology of the Skin.

When alcohol is applied externally the skin affords reasonable protection against it, largely because of its quick evaporation. In this way alcohol produces a cooling effect while it also helps to cleanse as a germicide and is a solvent of grease and other substances. If, however, evaporation is delayed, the continued presence

¹ Charles H. Mayo, Richard Cabot, resolution of American Medical Association June 6, 1917.

of alcohol will irritate and harden the skin, some of it penetrating to the blood-vessels and nerve-endings below, producing characteristic disturbances. It is not necessary to take up in more detail the question of the external use of alcohol, for it is in its internal use that it has exerted so direful an influence upon the course of history.

Pathology of Nutrition.

In its injurious effect on nutrition, derangement begins the moment alcohol enters the mouth. The delicate mucous membrane or outside skin is quickly affected. Whether in the mouth, gullet, stomach, or intestines the effect in general is the same. The shock upon the nerve-endings quickly causes a reflex action which deranges the normal, healthy formation of juices necessary to alimentation, including the juices of the salivary glands, the pancreas, and liver, as well as the juices formed in the alimentary canal itself. This reflex action, even at an early stage, naturally tends to derange all other normal functions of the system.

The irritant, poisoning effect is next felt upon the complex network of blood-vessels, just beneath the mucous membrane, causing them to dilate and congest with blood, thus deranging their function of gathering up the digested food. This also causes the membrane to excrete excessive mucus, which in turn impedes all the functions of the membrane.

The direct effect upon the protoplasm of the cells of the membrane is typical. The protein elements begin to clog while the water is sucked out. The hardening, parching effect can be readily perceived by retaining alcohol in the mouth even for a short time. This hardening, of course, impairs the sense of taste and its function in alimentation. When the alcohol passes on, the protoplasm tends to re-absorb its required water, and in course of time to resume its natural function, but it will never have quite the same vitality again. As the poisoning is repeated the injury deepens. The cells degenerate, shrivel, and are thrown off without having first reproduced themselves. Finally the protecting surface-cells of the membrane peel off, especially in the pit of the stomach where the alcohol rests longest. When this takes place the more delicate cells beneath are exposed and in turn are subjected to more violent congestion and derangement. The waste cells thrown off, and the excessive mucus caused by the congestion, clog the surface of the gastric gland, working, at last, irreparable injury to digestion.

In the same general way, the function of the mucous membranes and fine blood-vessels in absorbing the food fluids, as well as their other complex activities, are deranged. In addition, the reflex influence lowers the churning power of the muscles of the stomach.

The poisoning effect on the mucous membranes, through irritation, reflex action and

congestion, may produce a temporary, abnormal supply of digestive juices, producing the impression of aiding digestion. Nevertheless, the flood of mucous and the dilution of the juices, the loss of tone of the stomach-churning muscles, the tendency of albumen and protein substances to coagulate, the loss of selective absorption, and the general derangement, cause retardation not acceleration, injury not aid, to digestion, however much the victim may "feel" otherwise.

When we realize how delicate are the cells of the mucous membrane from the mouth to the intestines, how delicate are the processes of alimentation, it seems incredible that the delusion that this protoplasm poison is an "aid" to digestion should have persisted so long in the popular mind along with its twin delusion that alcohol is a "food." Wine is surely a mocker, and a past master at the art, but even the "aid-to-digestion" and "food" apologists have not denied that this protoplasm poison, of necessity, injures the cells of the alimentary canal in proportion to the amount and the frequency of the beverage taken, and that this cumulative injury, of necessity, must more and more impair the whole process of nutrition, and this in turn must affect all parts of the body.

It seems almost incredible that so many millions of people, regarded as intelligent and well-informed, should continue subjecting themselves to this injury. When we think of the billions of gallons of alcoholic beverages consumed every

year, the mind is almost appalled by the thought of the incalculable injury to the nutrition, vitality, and efficiency of the race.

Pathology of the Blood and Circulation.

Injury to the alimentary canal and derangement of the processes of digestion are but the beginning of alcohol's disturbing career in the body. None of the digestive juices can digest the alcohol; so it quickly makes its way unaltered into the blood, about twenty per cent. being absorbed from the stomach and about eighty per cent. from the intestines. The maximum proportion is found in the blood in from thirty to ninety minutes after the drink, the maximum effect upon the system naturally following later.

Upon entering the blood the alcohol strikes the blood constituents and begins at once poisoning them all by taking away water and oxygen, and by coagulating protein and albumen. The fluid plasma, largely composed of these substances, is affected through and through. Its work of carrying food materials to the body-cells, and waste materials away, is impaired. Likewise the poison interferes with the supplemental substances carried in the blood to further prepare cell-food and to destroy germs and microbes. In this way nutrition is addedly impaired and the body is opened up to attacks of disease.

The myriad red blood-cells, living vehicles transporting their precious cargoes of oxygen

from the lungs to the cells, and their return cargoes of waste from the cells to the lungs, are assailed by the alcohol. Their protective covering is pierced, as in the case of attack by chloroform and ether, and part of the oxygen is seized by the poison and the structure of the corpuscles injured.

This inefficiency produced in the transportation of oxygen and waste products affects the very breath of life of all the cells of the body as it does that of the nerves. It is not surprising that six parts of alcohol to a thousand in the blood is the minimum fatal dose for animals.

The white blood-cells, complete living cells as they are, patrolling the system like a defending army to destroy invading and disturbing enemies, germs and microbes, are fiercely assailed by the alcohol. Partially paralyzed, they become slow and respond irregularly to the calls for mobilization and attacking enemy microbes. With this loss of efficiency in defense and resistance through the general demoralization of the white corpuscle army, it is not surprising that enemy invaders can more readily establish themselves, particularly the powerful microbes of pneumonia and typhoid, and the dangerous germs of consumption.

Thus it is evident that general drinking in a nation, even though it be kept within "moderate" bounds, must produce a serious rise of mortality and levy a heavy toll of death upon a nation. It is not surprising that the president of the American Medical Association at

the recent annual convention in Chicago, while recommending nation-wide prohibition, should have declared drinking the greatest factor in lowering the public health.

The health and vigour of the myriad cells of the body require not only a high quality of blood, but a normal, well-regulated supply. Derangement follows an abnormal supply, whether it be a surplus or deficit. Nature has provided a delicate automatic regulation of the supply through the central nervous system in its control over the speed of the pumping power, the heart, and over the size of the blood-vessels.

Alcohol, chloroform, ether and other poisonous members of the methane hydrocarbon group, depress the central nervous system, penetrating beneath the sheathing that protects the nerves. The effect upon the deep seated centers of the medulla, which regulates the breathing and circulation, comes later and is less marked than over the higher centers of the cerebellum, and of the cerebrum, the seat of consciousness, judgment and self-control.

In fact, the depression of the centers of control causes a feeling of excitement and fancied stimulation before the full effect of the depression is felt on the lower centers.

Chloroform and ether have less affinity for water and other fluids of the body than has alcohol, so larger proportions of these two drugs reach the central nervous system.

Thus it takes longer for alcohol to bring about unconsciousness; but when unconsciousness

comes it is deeper, more prolonged and more dangerous, being more liable to paralyze the medulla and cause death. If unconsciousness from alcohol continues from ten to twelve hours death is practically certain.¹

When alcohol, borne by the blood, reaches the heart muscles its effect is very much like that of chloroform and the diphtheria toxin, causing poisoning of the protoplasm, swelling and cloginess. When persisted in, fat collects between the muscle fibers. This, in consequence, gradually weakens the power of the heart, producing dilation and stretching, together with a general derangement of the whole circulation, especially in the blood supply of the viscera, liver, spleen, stomach, etc. These organs become congested with venous blood.

As the pumping power of the heart declines, the blood literally stagnates all over the body. Its quality becomes poor, while its circulation through the body cells is defective. This malnutrition, in time, further lowers the strength and efficiency of the heart itself. The weakened heart thus produced even by temperate drinking is liable to collapse and give way even under ordinary muscular strain or the attack of disease not ordinarily dangerous. This weakening of the heart through drink is an important factor in the appalling mortality of men in their prime.

The effect of alcohol on the blood-vessels is much the same as it is upon the heart. First

¹ Cushny's "Pharmacology."

congestion and stagnation, then the gradual thickening of the vessel walls, with loss of elasticity and strength of the muscles, followed by fatty degeneration. These derangements throw more work on the heart, which itself is progressively weakening. Coupled with all this is an interference with the outward passage through the walls of the blood-vessels of the nourishment going to the cells the vessels serve and the intaking of the waste products which it is the function of the blood to absorb and carry away.

Pathology of the Liver.

Upon the liver the effect is particularly marked on account of its complex structure and multiple functions. Coming with the partially digested food straight from the stomach and intestines, the alcohol causes inevitable congestion in the great network of blood-vessels, large and small alike, deranging the liver processes of working over the food substances and storing up starchy foods in reserve, and preventing the proper formation of the digestive bile fluid and its systematic discharge into the intestines.

Acting on the liver cells, alcohol causes them to swell, press upon and constrict the blood-vessels. The nuclei of the cells are attacked and their nature is modified by the poison. They turn pale and shrink, and many of them die without reproducing themselves. Thus the liver grows smaller and has but a reduced num-

ber of cells, and all of them of lowered efficiency; and this just at the time when, owing to the general derangement caused by the poison, the body needs more than ever the full capacity and most efficient service of this vital organ.

Nor does the jelly protoplasm surrounding the nuclei escape. Here fatty degeneration gradually sets in, further incapacitating the cells and lowering the efficiency of the organ.

When the cells of the liver die the fibrous connective tissues, forming the supporting structure of the liver and blood-vessels, gradually fill up the space left by the dead cells. This inert, low-grade, scar tissue, taking the place of the dead and dying cells, in turn contracts and presses upon the weakened liver-tissue proper, hastening its disintegration and death.

Liver derangements are more marked and permanent when alcohol is taken regularly, even though "in moderation," as the world uses that term, than when it is taken occasionally to excess.

It is not necessary to elaborate the ills that follow from the injuries to this important organ, such as lowered nourishment of the whole body, imperfect elimination of poisons and waste products, pain, declining health, premature death. So prolific is alcohol as a cause of liver troubles that death from certain diseases of the liver is commonly assumed to be due to alcohol unless otherwise specified.

It is not now necessary to describe alcohol's

deranging effect upon the kidneys, pancreas, and other organs and glands. This brief description of the poisoning effect of the drug upon the stomach and alimentary canal, upon the blood, the heart, the blood-vessels and the liver is sufficient, without even considering the drug's supreme affinity for the nervous system, to show that the general effect upon the wonderful cell-complex, the human body, is in exact accord with its effect upon elemental cells. In both there follows derangement of nutrition, of oxidation, of elimination of waste, of reproduction, and a general interference with metabolism. All normal physical activities are disturbed, structure is impaired, and the way is paved for degeneracy and death.

II

ALCOHOL, A HABIT-FORMING DRUG

Alcoholic Pathology (continued).

MOST poisonous drugs, especially the organic poisons, to which alcohol belongs, have a special affinity for certain parts of the human organism, even though the drug be poisonous to all parts.

When a victim of alcohol poisoning is quickly dissected, it is found that the brain contains many times more alcohol in proportion to its weight than any other part except the organs of reproduction, the testicles and ovaries; in fact it contains about as much as all of the balance of the body.

It is thus clear that alcohol has a special affinity for the nervous system, the paramount and dominant part of the human organism. The degree of the development of the nervous system practically determines the place of any animal or species in the scale of life. This is readily understood when it is remembered that the nervous system is the regulating vehicle of the whole organism, determining and correlating all activities.

Reason and intellectual, moral and spiritual attributes are only found associated with a highly developed nervous system. The relative

development of the nervous system not only determines the position of the species in the scale of life, but the stage of progress of races within the species, and the power and influence of the nation and the individual within the race. Development of the nervous system is the anatomical line of evolution of the higher species, if not of all life.

The order of the evolution of the nervous system in the human species follows the sequence of evolution in general, proceeding from the simple to the complex, the earliest and simplest part being the lower brain, the cerebellum, and the spinal cord, with their connecting medulla-oblongata and outgoing and incoming nerves leading to the heart, lungs and all vital organs and to all tissues and exposed surfaces. These regulate the elemental life-functions. The later and more complex part is the upper brain, the cerebrum. This is the major part of the human brain. It regulates the more complex functions of control and inhibition, and houses the delicate physical machinery of reason, judgment, and all moral and spiritual activities. This tender, upper brain, younger in evolution and more delicate, would naturally be more susceptible to attacking agents, especially the protoplasm poisons to which alcohol belongs. Yet the injury done is less likely to be appreciated and may proceed to great lengths without the victim's realizing the seriousness of his condition, because the less delicate lower brain and medulla, presiding over the heart and

lungs, continue able to maintain the simpler, elemental life-processes for long periods under their slower and less perceptible injuries. This is why there is popular and full appreciation of the poisonous nature of all drugs which quickly and directly attack the lower brain and medulla and bring sudden death from the cessation of the heart beat and respiration, but an appalling lack of appreciation of the equally poisonous nature of the drugs which first attack the upper brain, the seat of consciousness, and incapacitate it from apprehending both its own injury and the sure but slower injury to the lower brain.

The gray matter of the nerve-cells of the brain consists of about eight-tenths water, one-tenth of proteins, albumen, and gelatin, a little less than one-tenth lipoids, special nerve protoplasm, and a little salt. Remembering that alcohol sucks up water, hardens and coagulates protein, and dissolves lipid, it is easy to understand its special deranging effect upon the nervous system. Even the nerve fibers that have protecting sheathing are subject to the attack of this drug, for alcohol readily penetrates this sheathing, which is composed chiefly of fatty substances which are soluble in alcohol.

The regular life processes of the nerve-cells, nutrition, oxidation, and excretion, are deranged by alcohol in the same general way as described above for other cells, but in a more marked degree. As the nervous system is later in evolution, more delicate and complex than the other

parts of the body, and is more largely composed of elements for which alcohol has a direct and special affinity, the derangement here to both structure and function is far greater in proportion than in any other part, reacting dangerously upon all other parts controlled and regulated by the nervous system. Since the upper brain is the physical basis of thought, feeling, judgment, and self-control, and is the physical organ of the will, of the consciousness of God, of the sense of right and wrong, of ideas of justice, duty, love, mercy, self-sacrifice and all that makes character, any injury to this crowning and delicately constituted nerve mechanism is attended with far-reaching consequences—consequences, alas! not limited to the individual who drinks, but affecting his family, his country, the evolution of human life, and the destiny of man and the will of God in creation. It is obvious from this that no human being can have any natural or inherent right to drink liquor. It is further obvious that alcohol will always strike its costliest blows at the most nobly organized brains. It weakens the strong, takes away the judgment of the wise, makes cowardly the brave, withers loyalty and self-sacrifice and injures the capacity for love and devotion.

The protoplasm of the nerve-cells is more highly organized and developed than that of other cells. The central nucleus is surrounded by highly developed spindle-shaped, striped or tigroid-bodies, held in opaque protoplasm, from which shoot out twigs or dendrites, variable in

number and length, which in turn shoot out small twigs. One of the main twigs, extended in length, is the nerve fiber. In exposed parts of the body the nerve fiber and its offshoots have the protection of sheathing. Through the twigs the central cells maintain communication with other cells in the same part of the nervous system, and through the longer fibers with cells and other parts, binding up the whole together; while fibers in bundles and trunk lines, each with its own fatty sheath or insulation, extend to all parts of the body, ending in sensitive cells which receive and transmit impressions. Certain fibers take messages to the central system, others carry power and instructions back. Some of the smaller cells only receive messages, notifying the centers concerned; others, larger in size, generate nerve force as called upon, discharging it through the fiber to the organs, muscles, or other parts involved. Some of the higher centers automatically, and some through volition, decide upon the nature of the instructions given to the larger cells, causing the processes of knowing, judging, feeling, willing, acting.

Under the attack of alcohol poison upon a cell the twigs soften, swell, and then become rough. This effect, temporary at first, becomes permanent if the use of alcohol is continued. As the principal twigs become permanently swollen and knotty, the smaller twigs and buds drop off. Finally the outer parts of the main twigs disappear, leaving only knotted stumps.

As in the cases of other cells described before, alcohol, in addition, hardens the protein substance, interferes with nutrition, oxidation and excretion. The cell body becomes swollen, the tigroid-bodies gradually disappear. The nucleus becomes spongy and is pushed out from the center toward the surface. Empty spaces form and finally some of the cells rot away with fatty degeneration and disappear, never to be replaced, while some are replaced by inert scar-tissue, as in the case of cells of the liver and heart. These small, inert, supporting cells, of no nerve value, take the place of the highly sensitive, masterful, and vital nerve-cell bodies. As the diseased nerve-cells disintegrate, scavenger cells, resembling spiders, appear and devour them.

The damage inflicted by the poison increases with the delicacy and complexity of the nerve protoplasm. The parts of the nervous system last and least damaged, permanently, are the fibers leading out from the spinal cord and brain to the various parts of the body, the skin and sense organs. Though even small quantities of alcohol will temporarily interfere with their efficiency, reducing the speed and accuracy of perceiving and conducting messages, continued use causes neuritis and local paralysis.

Next in order of increasing damage come the automatic groups or ganglia, distributed to and presiding over the internal organs, constituting, with the fibers leading to the spinal cord and

brain, the sympathetic system. Then comes the spinal cord, where fatty degeneration appears, attended by the appearance of scavenger spider cells which sometimes cover whole sections of the cord, resulting often in meningitis and myelitis.

Next comes the cerebellum or small brain, where all forms of damage takes place, and the direct result is seen in the general loss of co-ordination in movement. This affects muscular efficiency especially, particularly control over the muscles of the legs.

As intimated above, alcohol's greatest damage is inflicted upon the cerebrum, or large brain, where the protoplasm is most complex and delicate. There the deeper layers of the cortex, the motor cells of the fifth layer and large pyramidal cells suffer most. In the sixth layer it produces the greatest number of spider cells, which seem to have a special appetite for the spindle-like cells, though the larger pyramidal cells are not overlooked by these scavengers. As mentioned before, the first effect to be noticed with small doses is upon the reflexes, demonstrating that numberless accidents are due to most temperate drinking, a fact never suspected heretofore.

In addition to these injuries to the brain, the interlining of the skull and the delicate covering of the brain carrying the blood-vessels become swollen and thickened. Spaces filled with fluid form underneath and inert tissue and cells form and encroach upon the nerve substance. The whole mass of the brain shrinks, the convolu-

tions, carrying the gray matter, become narrow and flat.

The walls of the arteries supplying the brain swell in a similar way, the outer wall, middle wall, and inner wall of lining alike, causing, between the walls, leakage and an accumulation of dying and decomposing white blood cells and débris, while the opening or bore of the vessels grows smaller, reducing the amount of blood and lymph they carry. The same general effect takes place inside the brain itself, where the interference with the elimination of waste may produce dangerous results.

As the quantity of blood becomes less, its quality also wanes in the way outlined in the discussion of alcohol's effect on the blood in general. All the life processes of the brain cells are interfered with,—nutrition, oxidation, excretion. The whole body, being under the regulation and control of the brain and nervous system, must seriously suffer from these derangements, as well as from the general constitutional effect of the poison.

It is not surprising that we find the poisoning effect of alcohol on the nervous system intimately associated with the problem of health, individual and public, and with questions of character and conduct. We can readily read its destructiveness to public health in the increase in meningitis, neuritis, gout, paralysis, loss of memory, nervous debility, illusions, timidity, cowardice, delirium tremens, dipsomania, depression, melancholia, insomnia, hysteria,

epilepsy, convulsions, dementia, insanity and suicide. And we can readily see its influence upon public morals in widespread loss of judgment and self-control, in neglect of natural duties, in crimes, and immorality.

Alcohol and the Senses.

The deranging influence of alcohol, as seen in the previous section, extends to all parts of the nervous system, to the cerebrum, the cerebellum, the spinal cord, the nerve fibers and nerve endings; consequently, we must expect corresponding derangement in all the phenomena of mind. The senses, the basis of so large a part of these phenomena, are affected both in their outer organs and nerve endings, and in their corresponding central nerve-cells in the brain, thus interfering with and falsifying the mind's communication with the outside world.¹ The *Sense of Touch* and the *Muscular Sense*² are easily deranged, producing variability and unreliability. In workers in the arts and industries, these results have been frequently manifested and accurately measured, proving that in many instances the impression of the drinker is just the opposite of the truth. He has a sense of greater accuracy and speed while working less accurately and more slowly. In extreme cases illusions and hallucinations arise. Delirium tremens is liable to set in,

¹ George B. Cutten—"Psychology of Alcoholism." Kraepelin, Kurz, Aschäffenburg, Vogt.

² Dubois, Schnyder, Hellsten.

when the victim will believe that spiders, worms and scorpions, are crawling over his flesh.

Sight, the most delicate and complex of all the senses, is the one most deranged by alcoholic poisoning, the injury in extreme cases resulting not infrequently in partial or total blindness. The poison attacks the optic nerve, the disc, the retina, the globe, the cornea, the pupil, the conjunctiva, in fact all parts of the outer organ, while making a still more severe attack upon the corresponding brain centers. Even small doses of alcohol may produce results, temporary or permanent, taking many forms such as colour blindness, partial or total, short-sightedness, loss of accuracy and precision, as in sighting a rifle. Larger doses frequently produce visual hallucinations and delusions with confusion of colours and forms, flying and floating objects. In delirium tremens referred to above, the victim will often see loathsome things crawling toward him and other terrifying forms threatening him.

Hearing, Taste and Smell are all deranged by alcohol, though to a less degree. The outer organs are not so much affected as the brain centers. Cases arise where strange sounds are heard, voices, bells, whistles, rushing wind, booming cannon and other hallucinations of these senses.

The general psychic effect of alcoholic derangement of the senses is to create an unnatural world in which the mind's interpretation of natural phenomena is inaccurate and

unreliable, and in which the foundation is laid for the higher derangement of the will, the morals, the character.

Alcohol and Memory.

Alcohol injures the perceptions not only in their nature but also in their intensity, therefore weakening the mind's power of retention, reproduction, and recognition. This loss of intensity or depth of impression, and consequent loss of memory, is the result, not only of the inefficiency of the end organs and nerve fibers in producing and transmitting nerve communications, and of the inelasticity of the brain in receiving impressions, but is also due to the lack of available nervous energy resulting from general nerve disturbances due to the depleted and impoverished condition of the blood. To these must be added weakened capacities of concentration and attention, both spontaneous and voluntary, due to alcoholic disintegrations of the brain centers through which they operate. Efficient memory involves a high state of cooperation between all the nerve-cells of the brain centers involved.

Alcohol, in contracting or destroying some or all of the branches or dendrites through which the cells communicate with each other, thus undermines the power of reproduction. The loss affects not only the power to reproduce a single idea, but also to associate ideas. The general disuse thus entailed upon many brain cells tends to produce atrophy and decay, and

there is no renewal. Impressions are thus entirely lost. The ideas and associations of ideas that can be reproduced become fewer in number, until an alcoholic ends with only one central idea and purpose about which everything else revolves—to get and consume the drug that has enslaved him.

The elements of memory involved in recognition are more complex than those involved in perception, retention, and reproduction, entailing an intellectual process of judgment and a state of self-consciousness; consequently the derangement of alcoholism here is more marked and more complicated. Sometimes things perceived previously are not recognized and things never perceived are supposed to be recognized. This is why the testimony of an alcoholic is unreliable. It is so not merely because of his moral deficiencies, one of which is lack of loyalty to the truth; but also because of his lack of ability to recognize what is true. A normal person sometimes thinks he has had an experience when reason tells him it is impossible, that it must have been a dream. The alcoholic has these delusions more frequently and in exaggerated form and lacks the reason to judge or distinguish between fact and fancy. He is consequently living in a world of delusions, unable to realize that his imagined experiences are unreal. He lives in an abnormal state where things really remembered are confused with things only dreamed or imagined.

The order of losses in memory due to alcohol,

as from other derangements in general, is in the reverse of the order of perception, the oldest experiences being the last to go and the latest impressions being the first forgotten. A purpose or association of recent origin is more apt to be quickly forgotten. A resolve of an alcoholic is usually unstable and often lightly made. The impression it produces in his brain is superficial and the memory of it fleeting. The high-order nerve-cells and connections involved are so poisoned and wasted by disease that they cannot function efficiently, if at all, and are incapacitated either for receiving deep new impressions or renewing in dynamic power former ones once registered in the now disorganized and depleted upper brain. This inevitable loss of memory with the alcoholic is fundamental. It nullifies restraints that might otherwise cause a halt and leads to increased slavery to the drug.

With the alcoholic the memory of events goes first, then of ideas, then of emotions, then of his own actions. Finally he loses his vocabulary. As the phenomena of the intellect and its edifice of reason and control disappear, the victim lives more and more in the realm of emotion, becomes more and more dominated by feelings, the finer steadily declining and giving way to the coarser, more elemental and brutal. This facilitates other drug habits and all forms of conduct typical of degeneracy.

The effects on the "moderate" drinker naturally are not so pronounced as on the con-

firmed alcoholic, but in a general way they are proportional to the amount or degree of his drinking, though he himself may never realize this. The constant searing of memory and self-consciousness under the anæsthetic may hide the progress of the effects of the drug so completely that the victim may go through to his death without ever realizing his impaired mental condition even though he reach a condition of acute or even chronic alcoholism.

Following the impairment of the senses and of memory, through alcoholic poisoning of the nerve-cells and their connections and the drug's injury to life functions, comes the undermining of the higher intellectual powers—the power of the imagination to reproduce and construct, and the more complex powers of thought, such as the power to conceive, judge and reason.

Alcohol and Imagination.

The effect upon imagination is characteristic. The early congestion of the brain causes a feeling of exhilaration, as if the imagination were released from ordinary restraints. Many a drinker takes his glass as a "bracer" in preparation for an intellectual effort. An analysis of the imagery which follows, however rich it may appear to the imaginer himself, shows it to be abnormal, lacking in balance and co-ordination, and of a low order in general inclining toward coarseness and vulgarity. The permanent injury inflicted by the poison, the

increased fear and timidity and loss of self-confidence, make the drinker feel more in need of his "bracer" the next time, when the dose will have to be larger and more concentrated than before in order to make him feel the same sense of "exhilaration." This illustrates the general course of all habit-forming drugs.

The greatest loss that the individual and collective intellect sustains through alcohol is in aborted *creative imagination*, the power most valuable to the individual, most precious to society, and for which special supplies of nerve energy are required. The drinker cannot control the direction of his imagination, cannot "picture" things at will, cannot start with foundations and construct an edifice of thought. Yet it is vain to point out to him the ultimate consequences of his habit. The loss of intellectual grasp and of the imaginative faculty, together with the impairment of reason, make it impossible for him properly to weigh the ultimate consequences of his conduct. He will readily do things irrational and sinful because he cannot wholly realize their consequences. We see here the foundation for much of the crime and immorality of the world. The field of an alcoholized imagination steadily grows narrower and descends toward the brute, and gets more and more beyond control, till, for him, the universe becomes focused in his habit, and about this he is still able to construct cunning combinations of deception, especially for getting the drug.

Alcohol and Thinking.

This degradation by alcohol of the power of imagination is repeated and deepened in those more complex processes of thinking which require not only soundness and efficiency of all parts of the brain, but the perfect coördination and harmony of the whole. The power of concentration rapidly declines with the decline in ability to generate nerve energy, and from this inevitably follows a falling off in the ability to conceive clearly, to judge soundly, and to reason correctly, manifesting in its earlier stages a general habit of indecision. The performance of routine work may go on fairly well for a while, but the weak-minded alcoholic goes to pieces when new and unforeseen responsibilities and contingencies arise requiring individual judgment, decision, action. His befuddled intellect is not able to rise and master the situation. Man created with immortality and a dominant power of spirit thus becomes the slave instead of the master of circumstance. This is the origin of the practice, now becoming general in industry and big business, to promote total abstainers only, leaving the drinker to gravitate to the lowest positions. Even temperate drinkers in some cases are not excepted from this rule of the business world.

With continuing drink, efficiency in carrying on routine work even of a low order gradually declines, and with efficiency, reliability also. Drinkers thus find it harder and harder to get positions and keep them; they have less and less

desire to work. That is why alcohol is the primary cause of the bulk of the pauperism of the world,¹ as it is of irregularity, inefficiency and accidents in industry.²

In matters relating to morals and religion, the powers of conception and judgment suffer first. Right and wrong, truth and falsehood have no clear line of separation for the confirmed alcoholic. Brutality supersedes gentleness, selfishness supplants self-sacrifice. Thus the drinker gradually becomes unfitted for civilized society and intercourse.³ Yet he has not the mental power to recognize and realize this fact, but continues egotistical, vulgar, brazen, without respect for man, without fear or reverence for God. It is not difficult to picture the awful cup of sorrow this puts to the lips of women and children, placed in intimate association with drinkers.

Alcohol and Reason.

The still higher intellectual process of reasoning not only demands sustained voluntary attention upon the matter in hand but the power of inhibition to exclude foreign and irrelevant

¹ Pringle. Committee of Fifty. Warner, Booth, Devine, Elizabeth Tilton, Rowntree. Massachusetts Bureau of Labour Statistics.

² Crothers, Booth, Bureau of Builders Union Zurich, Sick Benefit Club Leipsic, Steel Workers, Voeklingen, Germany.

³ Kraepelin, Kurz, Fuerer, Smith, Aschaffenburg, Exner, Rosanoff brothers.

matter. Under the attack of the alcohol poison upon the brain cells and their connections, upon their nutrition, oxidation and excretion, the power required for this highest intellectual process cannot be adequately generated. The reasoning produced is of a low order, cannot be controlled, and flows automatically into the few mental channels kept open by constant alcoholic indulgence. Ultimately all the rudimentary reasoning capacity left is focused and expended upon the one practice of procuring and imbibing drink.

The *order* of decline of the intellectual powers is the same as the general order cited above, the higher and more complex first, reason, constructive imagination, judgment, conception, and reproductive imagination; while the power of memory suffers steadily and continuously throughout all the various stages.

Alcohol and the Will.

The Will more than any other power of the mind determines the character and fate of the individual, as well as his influence upon society. Alcohol in attacking the "temple," strikes at the indwelling "spirit." Since will is the highest, most delicate and complex power of mind, the latest evolved, an injury to the integrity of the brain by such a poison necessarily produces its maximum harm to the will.

The exercise of the will requires and presupposes memory. As pointed out above, memory is quickly impaired by the action of alcohol on

the nerve-cells and connections. It was there stated that memory declines in an inverse order of the events producing it, so the memories of immaturity linger longest, the memories of youth when the will itself was undeveloped. Consequently, in an alcoholic, the ends or ideals of will gradually contract to those of youth or even childhood, until the only end or purposes remaining are those which center upon gratifying appetite. It is vain to expect the victim to be cognizant of high ideals, of love, duty, home, country, God.

Furthermore, the normal act of willing is preceded by an intellectual process of deliberation, requiring voluntary attention and concentration, judgment, and reasoning. As the power of voluntary control of the mental processes declines, the actions naturally spring more and more from feelings and impulses, which, though steadily weakened themselves, do not subside until much later in the mind's disintegration. The loss of voluntary control has its own natural order of decline, first of ideas, then of feelings, lastly of muscles.

When voluntary control is gone, capricious ideas may suddenly come and go, but at last impulses alone control the alcoholic's actions. Just what these impulses may be cannot be stated without a knowledge of the individual, but they will usually revolve around his drug-master. Appetite and habit hold the reins. In earlier stages there may be some slight control left to turn the action into other channels

and arouse opposing influences, a saving recourse for a normal person in time of temptation; but later it becomes impossible for the alcoholic to turn his attention away from his master and only one set of impulses remains. Appetite and habit then reign as supreme conquerors.

The exercise of the will in volition requires the generation of nerve energy as well as the discharge of this energy in the particular channels decided upon by the reason. The poisoning effect of alcohol not only takes away progressively the power to control and discharge nervous energy, but impairs the very power to generate it and breaks down the faculty of judgment by which the energy would be directed into proper channels. At certain stages the drinker may still be able to recognize what he should do and may try his best to control his habit and conduct, but all in vain. The nerve fatigue caused by the poison makes it impossible to generate sufficient nerve energy for effective volition and will power.

In the light of the poisoning effect of alcohol upon the brain centers, its disintegration of the physical bases of the capacities which compose the will and the reason, it is futile to talk of self-control and temperance to confirmed drinkers. Self-control and temperance are ideals to be striven for by all men at all times, but the alcoholic has not the power to strive even when he has the desire. The only alternative, manifestly, is to segregate the poison, and thus, as a

public policy, the complete prohibition, not the regulation, of the beverage liquor traffic must be one of the fundamental means of breaking from mankind the tyranny of this drug which enslaves so many of the most nobly endowed men.

If we recall that under regular, continued drinking, even though "temperate," memory is impaired, and the scope of thoughts, objects, and purposes, instead of expanding, is contracting, and that the intellectual processes of deliberation, voluntary attention, concentration and reasoning steadily weaken while action springs increasingly from impulse and individual caprice;—if we remember that the power to choose declines with the power to deliberate; that through the constant narrowing of the fields of intellectual interest and aim a confirmed alcoholic's desires become abnormal and turn chiefly to drink; that though an enfeebled desire to reform should arise in him there is a dearth of energy to transmute desire into effective will; that the physical conditions necessary to the functions and life of the brain and nerve cells essential to high self-determination are completely deranged, we must conclude that the victim of alcohol is no longer a real man, but stands bereft of power to will,—a slave, and the most abject of all slaves.

The Psychology of Alcoholic Craving.

With the progressive decline of the power of self-control and the capacity of will, the drinker

is progressively at the mercy of his impulses. As the first effect of the anæsthetic is the numbing of the higher centers of control and inhibition, the lower activities, the elemental impulses, and passions are released, producing a false feeling of stimulation, of well-being, even of ecstasy, and so satisfying the intoxication impulse and motive. With the loss of the power of proportion, of judgment, and of reason, the feeling of self-importance rises, satisfying the natural, inherent, elemental egotism, and promoting a false feeling of sociability. As anæsthesia progresses, the feeling of exhilaration is succeeded by an oblivion, in which the cares, sorrows, tribulations, and responsibilities of life are forgotten, satisfying the narcotic impulse and natural longing for rest. But all with the most debasing and ruinous consequences!

The exhilaration-intoxication motive has its special appeal to youth, to young and rising nations and races, and to the upper strata of society. The narcotic-oblivion motive has an appeal for the old and weary. It lures the decadent nations and races, the lower, submerged strata of society. There is an appeal to the strong, and an appeal to the weak. These motives and impulses, universal with humanity, and each of which has a legitimate answer in life, are thus baited with false and destructive satisfactions until they become the agencies of physical and spiritual ruin.

In progressive drinking, both classes of sensa-

tions are experienced by the drinker. Both are highly pleasurable, the anæsthesia preventing every feeling of pain or even of discomfort from the poisoning, and hushing every warning of nature. After the debauch, when the drinker comes out from under the anæsthetic, depression, discomfort, and pain set in as a result of the poison. Then the narcotic motive to seek relief in further drinking becomes compelling. In the case of this, as of other habit-forming drugs, it requires progressively larger doses to produce the same sensation of exhilaration or oblivion, while the depression and pain that follow grow proportionately and enlarge the craving for drink.

Without a scientific knowledge of the true poisonous nature of the drug, it is easy to understand why the ancients called alcohol the "Water of Life"; how men came to look upon it as a source of strength and inspiration; how peoples all over the world have linked drinking with family, social, political, and religious ceremonies; how it permeated art, music, government and religion in all lands and in all ages. It is easy to understand how a monopoly of the drink supply has proved an easy source of revenue to dealers and governments, and has deeply, though uneconomically, rooted the liquor traffic in the fiscal policies of the world.

The Alcohol Habit.

With many of the educated and well informed, the liquor interests are yet able to main-

*dry
drinks*

conclusion.

tain that it is the "excessive" use that causes harm, depression, weakness, while "temperate" use produces only pleasure, exhilaration, strength and well-being. The whole drink habit feeds upon temperate drinking. Studying the effect of alcohol from the standpoint of pathology and psychology, it is evident that each drink increases or exaggerates the conditions which lead to further drinking, enhances the motives for drink and the appetite and craving for it, while weakening the will and impairing the forces which oppose and control drinking—memory, intellect, judgment, reason, moral sensitiveness and all the spiritual attributes of manhood. Every time a man takes a drink, he becomes a little less of a man.

III

ALCOHOL THE SPECIFIC CAUSE OF DEGENERACY

AS far as the knowledge of man extends, the universe is undergoing constant change. It is of two kinds: processes of building or evolution, and processes of decay or disintegration. Some planetary systems, suns and worlds are forming. Others are disintegrating.

In the realm of living things these changes are more advanced, complex, and varied than are the atomic and geological changes in the inorganic world. In the animal kingdom the changes are more advanced, complex, and varied than in the plant kingdom. In the division of the vertebrates, animals with a backbone, the changes are more advanced, complex, and varied than in the division of the invertebrates, animals without a backbone. Mammals, animals that suckle their young, are the highest in evolution of the vertebrates, and man is the highest of the mammals.

In man, the highest evolutionary forces are the consciousness of God, the sense of right and wrong, love, self-sacrifice, self-control, and the sense of duty.

As pointed out in previous chapters, an elemental substance, protoplasm, composed largely of water and protein, composes the physical

machinery of all life and of the evolution of all life in plants, animals and man. Since alcohol attacks this elemental protoplasm, drawing out the water and clotting or coagulating the protein, its effect is to tear down cell complexes and force them back toward simpler forms and so stop further evolution and prematurely precipitate the processes of dissolution.

In the study of alcoholic poisoning from the standpoint of biology, we noted this alcoholic dissolution in single cells, more marked in the nucleus and complex bodies around the nucleus, the highest, tenderest portion and the latest in the cell's evolution. In the physiological and pathological divisions we pointed out the same effect of alcohol on tissues and organs, finding it most marked in the central nervous system, particularly in the neurons of the upper brain, the operating zone of spiritual evolution where the physical fabric of the capacities distinguishing man from the brutes is in process of growth and development. The sociological effects are similar. The finest and best things in organized society are the first affected and the most deranged. In every case where alcohol is applied to life it tends to stop further evolution, to tear down the highest results of previous development and evolution and put life back on a lower plane. It reverses the building process—the foundation principle of life. It precipitates dissolution, and premature death, or leads to restricted development. Reliable scientific research in all parts of the world is

harmonious in the finding that ethyl alcohol is thus a specific and certain cause of degeneracy.

Alcoholic Emotions.

We have recounted the progressively degenerating effect of alcohol upon the intellect and will, but the process in the whole man is best tested and observed in the transformation of the emotions, both temporarily as a single debauch proceeds, and permanently as the drinking becomes chronic. This is a true test because, in a general way, man may be said to possess in some state, active or latent, the emotions corresponding to all the stages of his evolution.

Any study of the changes and transformations of the emotions must take due account of the condition of the body and organs, and the interaction between the physical condition and the emotions. The effect of emotions in causing disease is well known, but not so well, the equally potent effect of disease, even fatigue, upon the emotions.

In intoxication the paralysis of the center of inhibition and control leaves the emotions unrestrained, thus exalting them above the higher faculties. This result, which is manifest, even in the early stages of drinking, constitutes the basis for "Sociability" attributed to the cup. Incoherence, lack of plan or objective, uncertainty, and unreliability, accompany this exaltation of emotions which themselves may vary widely between individuals, and in the same

individuals may shift and change suddenly without logical cause, though the general trend and final ending are the same for all. The moral and spiritual emotions, the latest and highest in human evolution, do not partake of this general exaltation, but are dulled from the start. As a result, the emotions characterized by genuine altruism and self-abnegation are outrun by those connected with self-interest and egotism; so the general trend is from the man toward the brute.

The abatement of the guiding hand of conscience, of principle, and of ideals, and the unbridling of the passions leave the field clear for self-indulgence, jealousy, suspicion, anger, hatred, lust and avarice, and fling wide the doors to acts of injustice, cruelty, immorality and crime. In deep intoxication and advanced alcoholism, the anæsthesia or paralysis, accompanied by malnutrition, overtakes even the lower emotions, the last to fade being the first acquired—namely, those associated with self-preservation in the individual and the species, fear seeming to be the most persistent of all the emotions, flaring up even in paroxysms which become acute in delirium tremens.

The progressive loss of memory accentuates the general effects, and introduces an element of uncertainty. In general the memory of emotions outlasts the memory of events, the emotions of earlier years remaining after those of later years have passed away. In the end, childish emotions alone remain, and chiefly

those associated with pain, which are the ones that have made the deepest impression.

The malnutrition and general derangement and steady disintegration of tissues and organs likewise accentuate the emotional effects of alcohol, especially in the later stages, producing irritability, depression, despondency, moroseness, the emotions in turn inciting to further drinking for relief, only to increase the condition of morbidness. The degeneracy, as it gradually progresses, permanently transforms the emotions from those of a civilized man to those of the savage and the brute, and brings the greatest woe to individuals, the greatest tragedies to families, and the most serious problems to the State and organized society.

Alcohol and Morals.

The moral sense is late in evolution. In the earlier, lower stages it is intimately associated with the motive of escape from pain or punishment, it is simply a part of the elemental motive of self-preservation. Education and development through punishment and penalty are thus essential parts of every system or code of laws, civil and religious. In later stages, the sense of obligation, the "ought" feeling, prevails; in the latest and highest stages of evolution conscience and the sense of duty rooted in love become the guiding principles in man's life, laying the foundation of enduring civilizations.¹

¹ Aschaffenburg, Lombroso, Sullivan, Hoppe, Ferrero, Bianchi, Paolo, Amaldi, Baer, Bunge.

On the stage or in fiction the first act presaging a moral lapse is a drink; the author knows that the public will then recognize as natural even the most sudden and radical change in moral conduct. Instigators to crime could not exist without liquor, their principal instrument. The whiteslaver will disappear with the liquor traffic.

As drinking on a single occasion is recognized as an explanation for temporary moral lapses, so habitual drinking is recognized as the cause and explanation of the disintegration of moral character and the criminal career which follows.

This result is due not only to the fact that the "still small voice" is silenced by the tumult caused by alcohol, and that the young, tender nerve tissue associated with the higher moral senses is quickly paralyzed by the poison, but also to the fact that the activities of the moral sense are intimately associated with and largely dependent upon the other faculties of the mind, memory, intellect, feeling, and will, and even the senses. These are all seriously impaired by alcohol, this derangement being one of the powerful, indirect causes of moral lapses and weaknesses and degeneracy.

Alcoholic Insanity and Pauperism.

The progressive undermining of the nervous system by alcohol manifests itself in various mental diseases and forms of insanity, every known form of which is found in intoxication.

The organs of the body and the lower activities may continue their usual functions long after the poison has permanently overthrown the higher faculties of the mind. A large part of the backward, the feeble-minded, the imbeciles, the lunatics, of the world are now known to be products of drink.¹ Joined with their comrade victims, dependents and paupers,² they make up an increasing, and a pitiful and tragic, host of degenerates.

Alcoholic Toxicology.

In studying alcohol from the standpoints of chemistry, biology, and physical and mental pathology we arrived at three conclusions which cannot be controverted: First, alcohol is a protoplasm poison; second, alcohol is a habit-forming drug; third, alcohol is a specific cause of degeneracy. Let us now examine its fruit-ages of premature death in individual drinkers and of blight and extinction in their progeny.

In studying the destructive processes of the poison, we note a natural classification: First, the interfering with health processes, causing physical and mental ills, the undermining of

¹Laitinen (studied 17,400 children in 6,000 families), Demme, Bezzola, Forel, Andrie, Zelm, Legrain Combe-male, Crothers, Sabatier, Mobius, Potts, Branthwaite, Sullivan, McAdam Eccles, Claye Shaw, Bourneville, Wigglesworth, Ridge.

²A. G. and W. S. Warner, Booth (London Survey), Rygg (Norwegian Survey), Ridge (Liverpool and Manchester Records). Convocation of Canterbury. Devine, Rowntree and Sherwell, Crothers. Massachusetts Bureau of Labour Statistics.

moral character, and the shortening of the life of the individual; second, interference with reproduction, causing the blight and possible extinction of the group. These are the two ways in which the curse operates, not only destroying individual lives, but destroying likewise their capacity to reproduce their kind. As the law governing life and its perpetuation is that of advance, of building, of evolution, we must conclude from alcohol's consequences that the reverse of this law, degeneracy, is the deadly sin against life, against nature and God, and that He will not suffer it to continue.

Alcohol and the Shortening of Life.

The shortening of the life of an individual drinker may result from either or both of two causes put in operation by alcohol poisoning: First, interference with vital functions; second, the impairment of vital organs, both causes naturally operating at the same time, hastening dissolution and precipitating death.

Formerly alcohol was held responsible only for those deaths recorded as due to "alcoholism" and physicians in a spirit of charity covered up most of these cases, especially where chronic, the deaths being attributed to diseases or conditions of which alcohol had been the cause. This was simplified by the fact that many of the cases were chronic and made it easy to assign as the cause of death one or more of the attendant ills.

As seen in a previous chapter, ethyl alcohol is

so deadly an organic poison that in animals six parts of alcohol in a thousand parts of blood is fatal. Five ounces is the minimum fatal dose. A man full grown and healthy, swallowing a small tumbler of alcohol, will be dead inside of ten hours. A man was once brought out of ether who had taken eight ounces of ether. A man was once brought out of chloroform who had taken twenty-two and a half ounces of chloroform. No man ever revived who had swallowed five ounces of alcohol.

In this acute poisoning the symptoms resemble closely those of poisoning from opium and carbolic acid. The earlier stages resemble those of poisoning by strychnine. The condition of coma is like that from ether and chloroform, though more dangerous. The stage of excitement passes quickly in acute cases of alcoholic poisoning. The face turns pale, the pupils dilate, the skin becomes cold, the temperature of the body falls below normal, the mucous membranes become congested, the victim may collapse and fall helpless, the pulse will start up quick and full, then become slow and feeble, and the breathing become slow and intermittent. Unconsciousness sets in, and the victim dies of paralysis of the respiration. Sometimes vomiting and involuntary evacuation produce some relief, though rarely in case of a fatal dose. Consciousness may return with signs of recovery, only to pass into coma again, the victim dying in convulsions, especially if a young person.

With regular, hard drinkers, the heavy doses bring on great depression and a sense of impending danger, frequently ending in delirium tremens. At its approach the tongue begins trembling, the muscles tremble all over the body and a delirium sets in with distressing hallucinations. The victim sees snakes, vipers, spiders, monsters pursuing him, and sometimes makes frantic efforts to escape, talking incoherently and sometimes screaming out in terror. It is the extreme frenzy of a possessed brain, the strongest and earliest acquired human emotion, fear conjuring up creatures with which man battled in his earliest experiences on the planet.

If the delirium subsides in a reasonable time and sleep follows, the patient recovers after a period of exhaustion, nausea, and prolonged suffering, in which he will plead piteously for the anæsthesia of liquor. Sometimes the victim falls dead while in the delirium, or from exhaustion afterwards, if it is of long duration.

Coma produced by alcohol is more obstinate and dangerous than that produced by other anæsthetics. If it is not broken within ten or twelve hours, death is practically certain to follow.

In chronic alcoholic poisoning, the changes are those previously described. Practically all the organs and tissues undergo progressive degeneracy, particularly the central nervous system. The symptoms are numerous, dilated capillaries in the nose and cheeks, congested eyes, diseased liver, kidneys and nerves. The

walls of the blood-vessels become brittle, in some cases to such an extent that a slight blow on the nose may bring on hemorrhage of the brain. The morbid condition of the whole system produces general depression, often leading to suicide. This explains why so many cases of suicide are due to liquor, and a large part of those attributed to other causes could be put down to liquor as the original or primary cause or a contributing cause. In other cases premature death is the result of Bright's disease, dropsy, cancer, or another of the dangerous maladies which constantly threaten weak and disordered organisms.

When a comparatively small quantity of alcohol is taken in regularity, the dissolution process is comparatively slow, analogous to the gradual decline that sets in with old age. The condition of the victim is like that of one overtaken by premature senility, carrying with it the hardening of arteries, the calcification of the joints, the loss of memory, and practically all of the other symptoms of senility. The number of premature deaths from this cause is tremendous. The mortality of insured men in their prime is practically doubled in comparison with the mortality of the average insured men of corresponding ages.¹ Of the millions of drinkers, even temperate habitual drinkers, all must surely die before their time. These premature deaths are not recorded in ordinary mortality tables as due to alcohol, the real cause.

¹ Neison, Hunter, Phelps.

In addition to the symptoms of gradual general dissolution, alcohol in larger quantities hastens fatty degeneration and other decay processes of special organs of the body, entailing the early failure of the organ or of its vital function. The large number of deaths thus precipitated are recorded as due to the failure of the organ, without mention of alcohol as the first and real cause of this failure.

In addition, the alcohol poison lowers the vitality of the whole system. It destroys the fighting efficiency of the phagocytes and antibodies which overcome disease germs and microbes in the human body and neutralize their toxic poisons. These dangerous micro-organisms enter the system by way of the air, water, food, the skin, and the bite of insects. Investigations in France showed that more than half of the cases of consumption investigated were due to drink. The average mortality of abstaining and light drinking consumptives treated at Phipps Institute was less than half of the average death rate of alcoholic consumptive patients. In a world without liquor the deaths from consumption would fall to a small proportion of the present fearful figures.

This illustrates how far short of the facts are the estimates formerly made as to the number of deaths from consumption and other diseases attributable to alcohol, the highest in the case of consumption having been previously placed at twelve per cent.

What applies to consumption, applies with

equal force to pneumonia and other germ diseases, and in a less degree, of course, to all diseases.

In addition to deaths from disease alcohol is either the direct or indirect cause of the bulk of the great number of deaths from violence through murder, manslaughter, and accidents in the industries and transportation.

The records of insurance companies which have kept separate records of their abstinent policy-holders give a fair indication of the startling increase in mortality in the population at large resulting from alcohol. The average of the five great companies which have kept separate records shows that the death claims in the general section have been eighty per cent. of expectation, while those for the temperate section have been only fifty per cent. This would indicate a three-fifths increase in general mortality.

If this percentage were to be applied to the estimated total mortality of the United States (1,427,237 in 1916) we would have an annual total of three hundred and thirty thousand deaths attributable to drink.

The figures in particular cases and for special ages are strikingly serious. A study of 2,000,000 American policy holders in life insurance companies showed that among men who drank daily more than two glasses of beer or one glass of whisky half as many again died as among men who did not exceed these amounts, both classes being considered acceptable insurance

risks. The first named class had an average death rate about eighty-six per cent. higher than the average insured man. Those using the equivalent of two glasses of whisky or four glasses of beer daily during the working years of life, have a death rate nearly double that of persons who have always been abstainers.¹ Records of British insurance companies covering a long period of years, show that up to the age of fifty-five the death rate of drinkers is never less than forty-five per cent. higher than that of abstainers, and that at some ages it is ninety-four per cent. higher or nearly double.²

The question rises whether the insurance companies' figures indicating the difference between the mortality of drinkers and abstainers may be applied to the population at large. So applying them may easily be on the conservative side, because adult males are the fathers of all the nation, minors and females included. The effect of the drinking of either parent upon the mortality of the offspring of both sexes is far more appalling than on the increased mortality of the parent whether male or female. Investigations of Dr. Laitinen, previously referred to, showed that the most conservative, temperate drinking of not more than one glass of mild beer per day in investigated families quadrupled the chances of miscarriage and still-births and nearly doubled the number that died the first year. These investigations showed that where both parents were

¹ Hunter.

² Newsholme in Horsley and Sturge.

total abstainers, nine out of ten of the children were normally vigorous, whereas, with both parents alcoholic, only one out of six was normal. Investigations of Dr. Demme at Berne, Switzerland, showed that up to the age of five, five times as many children died who had drinking parents as of children who had abstaining parents.

Furthermore, the direct ravages of liquor are not confined to adults. The records of Bellevue Hospital, New York, show that sixty-eight per cent. of the drinkers investigated there contracted the habit before the age of twenty-one, thirty per cent. before the age of sixteen, and seven per cent. before the age of twelve.

After viewing these gruesome facts, who can doubt that alcohol is the great scourge, inflicting more premature deaths upon the race than all other causes combined?

Alcohol as a Blighter of Offspring.

Appalling as is the effect of alcohol in the shortening of human life, the distorting and withering blights it accomplishes on and by the germ plasm are truly terrifying. They are abundant proof that God will not be mocked nor the universe upset. In return for the gift of life, nature exacts from living organisms cooperation in the great purpose of progressing and developing each in its own line. For cooperation nature bestows in return health, strength, long life, and increase of offspring.

As a corollary it is not reasonable to expect nature to permit degeneracy to inherit the earth; and since nature impresses the line of evolution most deeply upon the germ plasm, the chromatin, the carrier of heredity, we should expect a specific cause of degeneracy to make its most violent, disruptive attack upon the germ plasm. Experience and investigation indicate terrible and far-reaching results due to the effect of alcohol on the germ plasm.

Comparatively small quantities of alcohol interfere with and interrupt the seeding and germination of plants.¹ The blighting effect upon the multiplying process is even more striking in the low orders of animal life.² Rigidly conducted, scientific experiments with mammals, dealing with large numbers and extending over many generations, have startled the scientific world by their proof of the frightfully destructive effects of alcohol upon reproduction and progeny. The same general effects have been found in investigations in the human species, as was naturally to be expected.

It will suffice to cite the experiments of the Cornell Medical College conducted by Dr. Stockard on guinea pigs. Large numbers and many generations were involved in the experiments. These show startling results. A pair, mated and shown to be normal in reproduction and normal in every way, was experi-

¹ Ridge.

² Fere, Palazzi, Ridge, Detcher, Cowles, Arlett, Hodge, Raymond, Pearl, Rauber.

mented on by treating with the fumes of alcohol. For instance, one only, say the male, was treated once a day and the treatment stopped short of the point of intoxication, corresponding more or less to the alcoholic condition of a person who is a regular, heavy drinker, but not a confirmed drunkard. After five weeks of treatment the pair was mated again, and the results compared with the previous results of their mating before the treatment and with the results of matings of control couples not treated with alcohol. The disrupting effect of the alcohol, in this case, was astounding, and found to be general no matter how many couples were tried. The number of litters in a given time dropped in a marked degree. The number of failures to reproduce and of early abortions was practically doubled. The numbers of still-born litters was increased many fold. The total dead offspring, including those born dead and those dying soon after birth, actually exceeded the total living, while in the normal pairs the proportion was only about one-fifth.

This wholesale killing of offspring does not complete the tale of destruction. The offspring which do survive are permanently impaired. They may show no lesions or visible abnormalities under the microscope, yet they are not normal. Let them remain total abstainers from birth, and, when mature, let them be mated under most favourable conditions with mates proven to be vigorous and normal in reproduction and in every way. In such cases both

parents have never touched alcohol, and only one alcoholic grandparent interrupted a strong and vigorous strain. Nevertheless, the total born dead or dying soon after birth exceeded the total living, and those living as well as those dying showed marked signs of advancing degeneracy, especially in the central nervous system and in the more delicate sense organs such as the eyes.

The tragic tale is not yet told. The small per cent. of this third generation are not really so normal as they appear to be. Kept free from alcohol themselves, and, when grown, mated with provenly vigorous normals, under the most favourable conditions—thus having both parents and all four grandparents free from the poison and only one great-grandparent on one side alcoholized, nevertheless this generation was still degenerate, the number dying being nearly double the number that lived.

Not until the fourth successive alcohol-free generation of those descended from an alcoholized great-great-grandparent, do the surviving progeny begin to be on a par with the always unalcoholized strains, and such a case is exceptional, most of the offspring of this generation proving sterile. In other words, it takes four generations of individuals entirely free from the use of alcohol for any of the offspring to overcome the germ plasm effects of one alcoholized great-great-grandparent. And even this recovery is accomplished at a tremendous sacrifice in the total number of offspring in the three inter-

vening generations, and a lack of vitality and soundness in those who survived.

With a generally permitted sale of alcohol and with constant reintroductions of alcohol-damaged strains by marriage, the tendency of alcoholized human lineages to increasing degeneracy and possible ultimate sterility seems a reasonable conclusion. The alcoholic apparently puts his progeny into a pit from which only their intermarriage with untainted stock can ultimately lift them, if complete rescue be at all possible.

Investigations with the human species have been conducted in various parts of the world, as mentioned previously. These were, of course, simply the making of records, but they confirm the tragic results of the experiments with other mammals.

In most of these cases families were chosen in which both parents were alcoholic, or one parent was an alcoholic, and the results compared with those of families living under other conditions more or less similar, in which both parents were total abstainers. In abstinent families, with alcohol-free heredity, nine out of ten children proved to be normal, the tenth being only a little backward. Where both parents were alcoholics, five out of six of the children proved abnormal, evincing various forms of degeneracy such as mental deficiency, hysteria, convulsions, epilepsy, feeble-mindedness, idiocy or insanity, many turning out to be impulsive degenerates, criminals, profligates and moral

imbeciles. The mind cannot conceive the infinite tragedy of this. As Forel says, "The damage to the cells of reproduction is well-nigh irreparable."

Extensive investigations have been made covering cases of "temperate"-drinking parents—drinking only light wine or beer at one meal and not more than one glass apiece, and the results in such families compared with the results in totally abstaining families. The results here also are appalling.¹ Temperate drinking in the family multiplied many fold the cases of miscarriage, early abortion, and of children born dead. It nearly doubled the number of children who died in the first year, interfering with the mother's capacity to suckle her young.² Evidences of increased degeneracy, of weakness of mind, of body and of morals, continued to appear in the children which survived.

Reviewing the evidence briefly cited in this chapter, and of the chapters immediately preceding, but one conclusion can be drawn. Modern science has found beyond question that alcohol, once supposed to be the "water of life," formerly thought to be a food, stimulant and medicine, is in reality the deadliest of all poisons, poisoning not only the organs and tissues of the individual who drinks and shortening his life, but, as no other poison can do, fixing degeneracy in the sacred germ plasm and blighting offspring unborn, until that degeneracy,

¹ Laitinen, Devine, Bertholet.

² Bunge.

under nature's wrath, snaps the chain of life that has come down through the ages. It is a specific cause of degeneracy, bringing down upon any and all life that it touches the curse of nature and of nature's God.

In the light of modern science the hideous and tragic truth about alcohol now stands revealed:

1. Alcohol is a protoplasm poison, a poison of all life, whether of plant, animal, or man.
2. Alcohol is a habit-forming drug, a most alluring, deceptive and enslaving drug.
3. Alcohol is a specific cause of degeneracy, an active principle of death for body, mind, and soul in the individual who drinks, and of degeneracy and ultimate sterility in his progeny.

IV

ALCOHOL AND THE HUMAN LIFE-CYCLE (INCLUDING DISCUSSION OF ALCOHOL'S EFFECTS IN FAMILIES)

THE catalogue of the effects of alcohol on individuals would not be complete were we to overlook its bearing upon prenatal integrity and welfare and upon adequate birth and growth environments. This involves a discussion from a new angle of some matters already touched upon, and new facts as well, showing how the whole life-cycles of individual human beings are disturbed and impoverished through the operations of this drug in homes and families. No members of the animal kingdom enjoy so long a period of immaturity as does man. No germ plasm has as much "promise and potency" as has his, and no infancies and immaturities offer so infinite a range of possible development as do those of humankind. From the earliest times thoughtful men have recognized the high importance of the influences with which children and youth are surrounded, but modern science has revealed that the period of determination of what manner of man a child will be begins long before he is

born and involves many factors subsequent to birth of which the ancients never dreamed.

Alcohol and the Prenatal Period.

The life span of the individual in civilized society consists of three periods, the prenatal period, the period of minority, and the period of majority. The prenatal period begins with the cardinal event of conception, when the germ plasm of two lines or two chains of life are welded to make a new link or mesh in the great living, changing net of human life. The result of the welding, the relative perfection of the little embryo life as it starts upon its course of immortality, depends chiefly upon the integrity of the two lines of germ plasm. Many factors may enter the equation which determines the integrity of such a line of germ plasm, factors of strength and factors of weakness, factors laden with life, factors laden with death. But in the present state of human life, as in the past state from which the present state comes, a potent, determining factor is alcohol, a great carrier of death. Generally speaking, nature can be relied upon to bring in the needed life factors; man, in the person of father or mother, brings in the death factors.

We have already noted that while alcohol strikes a heavy blow at all the protoplasm of an organism, and strikes a still heavier blow at the central nervous system and the brain, its most far-reaching blow is struck by way of the germ plasm. Investigation shows the disaster

to the germ plasm of male animals to be somewhat more marked than to that of the female, and that the generative organs are injured by even small quantities of the poison, when other tissues show no effect. We have also recounted how the upbuilding forces of a species stamp themselves most completely on its germ plasm and how, by disintegration of those portions of the germ plasm freighted with these precious inheritances, alcohol vitiates the ensuing chain of life and becomes a cause of degeneracy and ultimate sterility. Considering how widely and thoughtlessly men and women, the fathers and mothers of the race, drink intoxicating liquors, it is alarming to know, from investigations of Dr. Laitinen and others, that very temperate drinking by both parents multiplies the number of early abortions, miscarriages, and still-births, heavily increasing the number of deaths in infancy. It is yet more disturbing to know, from the investigations of Drs. Stockard, Arlitt Wells, Ballantyne, and others, with both animals and human families that where one parent is an alcoholic and the other normal and alcohol-free, these results are present, and the germ plasms of their surviving progeny tend progressively to weaken and disintegrate—even though the microscope may reveal no lesions in the tissues and organs—until, in the fourth generation, the chain of life may break and the line become extinct.

Of course the effect of occasional drinking upon the germ plasm is more acute when in-

dulged in at or near the time of conception. Informed by researches of Dr. Bezzola, the public health authorities in communities abroad where drinking festivities occur at fixed periods every year, know just when to expect the birth of an excessive crop of backward children or feeble-minded and idiotic children. But the persistence of the injury to the germ plasm through successive generations, when injury to other protoplasm is not discernible, indicates the fundamental and permanent nature of the injury, even when conception is well removed from the time of drinking. Any person, man or woman, who is ever to have the responsibility of parenthood, should abhor the thought of permitting alcohol to enter the system. Even if a person is recklessly inclined as to taking chances with himself, he would not, unless a degenerate, take deadly chances on the lives of the little beings he is to be responsible for bringing into the world. No normal person would knowingly or carelessly strike a death blow at the chain of life for which he is trustee. Besides this direct effect, alcohol has the usual indirect effect upon the germ plasm, the carrier of heredity, through the pathological conditions and lowered vitality produced in the organs and tissues of a drinking parent.

The only other poison which approaches alcohol in its direct, persistent, deadly assault upon the germ plasm, is syphilis; and this scourge is the boon companion of drink. Alcohol prepares the way for its infections by deadening the

moral sense, unleashing the lower passions, suspending self-respect, judgment, and prudence, and lowering the resistive vitality of the body.

Alcohol is the original, inflammatory cause of the infection of most of those who are carriers of this and kindred diseases, the primary cause of the condition of feeble-minded, unbalanced female sex-perverts, and of those women and girls who, though of sound mind, were taken advantage of through the temporary suspension of their higher faculties as the result of drink. This cannot be questioned. The estimates of the best authorities in the world differ but slightly as to the relation between drink and venereal disease. Dr. Douglas White, of England, estimates that eighty per cent. is the proportion acquired under the influence of alcohol; while Dr. Forel, the best authority on the Continent, estimates it at seventy-six, and Dr. Haven Emerson, the best authority in America, at seventy-five per cent. As the chief fundamental cause of immorality, alcohol is the mother of venereal disease. Mother and whelp are continually stalking through the land and, not in the slums alone but in tens of thousands of good homes, are tearing to pieces with foul fangs the holy weft of which nature weaves new lives.

After the welding of the two lines of germ plasm in conception, the little life starts upon its course. The first appointed period of development is passed in the warm, tender, sheltered retreat under the mother's heart, where

its well-being should be the most sacred concern of father and mother alike. During this delicate period in the womb the little life draws solely upon the mother's life. So sacred is this little life that a woman under penalty of capital punishment to forfeit her own life is nevertheless reprieved for its sake. For its best welfare the little life must have its full term in the womb, must receive from the mother's blood the best of nourishment, must be kept safe from harmful agencies taken into the mother's system or generated there by malnutrition, worry, fatigue, shock, or violence, and must have the benefit of those happy, serene conditions within the home, which only a father's love can provide.

If alcohol poisons the tissues and organs of the mature, how much more must it poison the tissues and organs of a little life just forming. If its attack is so deadly upon the nervous system of the mature, how much more deadly must it be upon the nervous systems of the unborn. If its effect is so disrupting upon the germ plasm in the mature, how much more disrupting must it be upon the germ plasm in the embryo. Expectant mothers should spurn this deadly poison. To take it is to serve it to the unborn little ones.

Thus is alcohol scientifically revealed as the overwhelming cause of injury to the germ plasm of the race, as the principal cause of the failure of conception, of miscarriage, and unpurposed abortion, of that brutalizing and pauperizing of husbands, which brings discord and disruption

to the home, worry, malnutrition and illness to the mothers of men, and consequent physical and nervous robbery of the race in embryo.

The Period of Minority.

Under civilized usage minority extends to about the age of twenty-one in man and a few years younger in woman, and the period of majority extends thence onward till death. The period of minority includes infancy, childhood, adolescence and youth. Alcohol, harmful to the adult, is, of course, more harmful to the young. Even in those places where the sale of liquor to the grown is freely permitted, the law, as a rule, if it regulates at all, forbids the sale to minors. Such laws exist in most of the civilized countries of the world, and did exist in all the license states of the American Union. It is a commentary upon the innate lawlessness of the liquor traffic that, though the law forbids the sale of liquor to minors, yet most of the drunkards, more than two-thirds of all, have formed the alcohol habit before reaching their majority.

A mother in health and well nourished should herself suckle her young. For its best well-being the infant should have a period at the breast as long as the period in the womb. Even temperate drinking on the part of the mother tends to incapacitate her from nursing her children. This has been clearly shown in the investigations of Dr. Bunge and many others. If the mother's parents have been intemperate, particularly the father, the same unfortunate in-

capacity of nursing her children is liable to result even though the mother herself may be a total abstainer. This hereditary defect may be traced back even to grandparents. Alcohol robs millions of infants of this birthright of infancy. Some mothers, experiencing difficulties in nursing, have strangely enough had recourse to intoxicating drinks. It is pitiful to contemplate that physicians, supposed to be reputable, have prescribed beer, porter, and other drinks to nursing mothers, thus tending to alcoholize the infants.

During the whole period of infancy, the child is entitled to the surroundings of a true home with guarding and guiding parental love. All records show that alcohol is the principal disrupter of the home, often more potent than all others combined. Next to liquor comes marital infidelity, second in rank as a home destroyer, and it is well known that most of this infidelity has drink for its moral and physical background.

Alcohol is not content with robbing infants of their racial rights. It steals life itself. Not only is it the principal cause of death before birth, of involuntary abortions, miscarriages and still-births, but it is also the principal cause of death in infancy. From the investigations of Dr. Laitinen and others we calculate that, including the number born dead, half the human race dies before the age of five. Little animals on farms do not die prematurely in this way, neither should little children. Through its

direct effect in poisoning the germ plasm and the embryo, with resulting injury to organs and general lowering of vitality and resistance to infantile diseases, and through its indirect effect in disorganizing homes and causing lack of care, of carelessness in overlying, alcohol is the Herod of the ages. The big graveyards are full of little graves. Tens of thousands of little children die every year from derangements inflicted upon their helpless, innocent lives by alcohol. Hundreds of thousands of others every year receive permanent injuries to body and mind which may react to destroy even character and soul. Alcohol, the deadliest enemy of the individual in the prenatal period, is also the deadly enemy in infancy.

In childhood, as in infancy, the chief needs for normal development are the ministrations of parental love in watching over the health, providing food, clothing and shelter, teaching and moulding the plastic mind and laying the foundation of character in obedience, self-control and regard for the rights of others. In this period the mother's care and the father's example and ability to provide for the family are the factors of prime importance. Alcohol, in addition to causing most of the inherited and constitutional weaknesses of children, likewise causes most of the physical mistreatment of children, such as brutal handling and exposure to the elements and to disease. It brings about their exposure to degenerating influences and causes most of the parental neglect—of the

mother by making it necessary for her to leave the home and child and be a bread-winner, and of the father, by making him a bad example and a poor provider. It produces an atmosphere of misery and depravity and incites to actual physical abuse. In the cities the number of children thrown upon the streets, a prey to disease and depravity, is incredible. The investigations at Bellevue Hospital, New York, show that about seven per cent. of the drunkards investigated there contracted their drink habits before the age of twelve years.

The critical period of adolescence offers alcohol almost limitless opportunity for injury. It steals away educational opportunities so vital to the future welfare. Investigations show that an American whose education stops at the grammar school has only one chance in nine thousand to become one of the ten thousand leaders whose names are in "Who's Who in America." If he completes his high school course, he will have one chance in four hundred. If he goes through college, he will have one chance in forty. The average American boy stops school before finishing his twelfth year, so we can see what this neglect of educational advantage must mean in cutting down the nation's leadership and limiting its manhood.

During adolescence, the influence and example of the father become vital factors in the life of the child, especially the boy. Alcohol largely converts these into a liability. Adolescent youth is also a special target of legalized

traffickers in alcohol. They know the steadily depleting circle of their regular patrons has to be replenished, and they display devilish ingenuity in devising ways of creating a taste for alcohol in mere boys. A common practice of American liquor dealers has been the free, surreptitious distribution of liquors in attractive little bottles. They have employed agents to promote drinking among boys in whatever gathering-places offered opportunity. These agents and the dealers they serve also preach an alcohol cult. Boys are told that it is manly to drink, that strong men like strong drink. The Bellevue Hospital record previously cited shows that one-third of the drunkards investigated there contracted the habit before reaching the age of sixteen. At this critical period alcohol swings wide the door to immorality and crime and starts the boy on a career of depravity. Alcohol, the deadliest enemy of infancy and childhood, continues as a deadly enemy in adolescence and youth.

In a general way, the higher the order of being, the longer is the period of immaturity. For the perfection of individual life in a high state of civilization, there must be a long period of minority for the process of growth, development, education, and general preparation. Alcohol, more than all other causes combined, seriously shortens this period, throwing the boy upon his own resources.

The forces which mould adolescent and immature life should be moral forces, carefully

determined to produce health, cleanliness, chastity, mental vigour, self-control, obedience, honesty, integrity, reliability, respect for the rights of others—the conditions of physical, mental, moral, and spiritual well-being. Alcohol, more than all other causes combined, interferes with the bringing to bear of these wholesome forces, and, on the other hand, brings to bear directly and indirectly all forms of malevolent forces. A majority of the criminals of the world are youthful criminals, below the age of twenty-one. Of all who are criminals in their majority years, records show that probably four-fifths began their criminal careers below the age of twenty-one. Of all the world's criminals, records of all lands show that from fifty to ninety per cent. or more were produced directly and indirectly by the action of alcohol on their heredity and their minority environment. As if by malevolent intelligence, alcohol makes a dead set to control the formative factors of the individual life, heredity in the germ plasm, the pre-natal period, conception and life in the womb, and the period of minority covering infancy, childhood, adolescence and youth.

Alcohol and the Period of Maturity.

After having such a free hand in the formative periods one would think alcohol might well abandon the individual to society and take chances on the period of maturity. This, however, is the period of the harvest when the great

profits of the liquor traffic are realized. With drinking establishments constantly thrust in his face, surrounded with drinking customs and institutions, the drink habit formed in boyhood and youth continues without break and deepens in manhood. The liquor traffic stands ever at the elbow of the grown, a dark shadow with the features of death, but possessing unparalleled powers of allurements.

Man is a mating mammal. The normal life of maturity is lived in the family. The principal functions of the individual in maturity are connected with the home. The life of the aggregation, the nation and the race, is built upon homes. In the usual normal differentiation of the activities of the home, the man is the bread-winner and protector. As bread-winner, he holds the purse strings, the liquor dealers' objective. Therefore he is more exposed to liquor's influence. Heretofore, too, man alone has held the political reins with power of life and death over the liquor traffic. Naturally he has been addedly the target of the liquor traffic's promoters on that account.

In normal conditions the earning power of the average man is measured by his efficiency in productive industry. Early manhood is normally spent in the development of productive efficiency, trying out the fields, putting into application and building upon the knowledge and training of youth, acquiring and broadening the grasp in some particular line leading up to a period of mastery and maximum efficiency

in the prime of life, during which the acquisition of wealth should largely exceed expenditure and so make good the obligations incurred earlier and lay aside for the later period when productivity will decline.

Liquor strikes alike at the acquiring and husbanding of wealth. Whether in a trade, profession or business, efficiency and alcohol cannot go together. The loss of skill in manual labour is marked, even from temperate drinking. The loss of force in intellectual pursuits is greater. The loss of character and stability, honesty and integrity, the foundations of true success, is the greatest loss of all. As a rule, only the places of low pay are constantly open to the drinker. Since it has become a matter of common knowledge that even temperate drinking makes serious inroads upon efficiency, alcohol can be said to have barred the way to the promotion, and the legitimately continuing careers of thousands who would otherwise have been the world's best producers. Its followers must be content now with the husks and dregs of industrial life. The question is not debatable. Every intelligent, well-informed person now knows that alcohol is the bread-winner's deadliest enemy.

Man's capacity as a home protector is as much impaired by liquor as is his capacity as a bread-winner. Alcohol, by its brutalizing effect on man's nature, tends to turn him back from the natural normal inclination in a Christian civilization to mate with, marry, and live in

wedlock with one woman, toward a lower civilization and toward a promiscuity like that of the lower animals. Of course, there are many striking and some noble cases of self-sacrifice in the single life, arising from other causes, but, on the whole, alcohol is the principal cause of bachelorhood, resulting in the voluntary ending of so many chains of life that God and nature intended to go on till the end of time yielding blessings to the world.

The general effect of alcohol is the same even when it does not prevent wedlock. It tends to incapacitate a man for the highest reproduction, debases love to the level of lust, removes the restraints of reason and conscience, and causes most of the marital infidelity of the world. In this way alcohol, more than any other thing, creates the commercial demand for immorality. It also enters as the chief instrument in the fall of women and thus it is the chief factor in producing the supply. It bears the relation to immorality, in most cases, that cause does to effect. Nature's horror of the immorality of the degenerate is manifested by the contagious diseases with which it is interwoven, all of which are terrifying in their ultimate effects. From being the protector of his wife and home, liquor often makes the husband a serious menace, practically making impossible the normal, true course for the individual, namely, absolute chastity till wedlock, and fidelity and temperance thereafter. Even where it does not bring disease and destruction to the home, alcohol is

the principal cause of that condition of mind and heart which plants the seed of discord while it progressively incapacitates the man for the tender functions of husband and father. As it strikes at one man in his heredity, rearing and education through his father, so through him it will strike at his own children. In his capacity as home protector, as in his capacity as breadwinner, individual man suffers sadly by alcohol.

The most important function of maturity in any form of life is that of reproduction, which in civilized man must take place amid the safeguards of the home. Upon the integrity of this function hangs the perpetuity of civilized life upon the earth. Protecting the germ plasm for which he is trustee and passing it on in its full integrity to coming generations is the most vital, the highest, holiest duty of the individual. To completely perform this duty, to be true to this trust, the individual man or woman must absolutely banish alcohol. "For want of knowledge do the people perish." How strange, how pitiful it is in the light of the truth about alcohol, that liquor still sits a welcome guest at so many tables, a constant inmate of so many homes, companion of father, mother, and even of children,—attractive, alluring, but secretly sending its poisonous taints of disease and degeneracy into their bodies, brains, intellects and characters.

As alcohol deranges and degenerates the functions and activities of young manhood and maturity, so it shortens those periods. It is

difficult for men to grasp the significance of the fact that even temperate drinking increases mortality and shortens the span of life, and also leads to heavy drinking which at some ages doubles the death-rate. It is not surprising that standard life insurance companies have practically ceased to insure heavy drinkers, and are more and more loath to insure temperate regular drinkers, no matter what their other qualifications. The man who indulges in alcohol takes on new death risks from violence and accidents, from organic diseases of the heart, liver, kidneys, lungs and brain. The imagination can scarcely picture the multitudinous annoyance, sufferings, depressions, remorse that accompany the ill-health of body and mind as multitudes slowly disintegrate with alcohol poisoning. It is incredible that rational beings, after achieving manhood and mature judgment, will deliberately incur such risks and dangers for the sake of the fleeting, sensual gratifications of alcoholic indulgence. It is a sinister tribute to the hideous power of this drug that, though scarcely any one now really believes that any good comes of drink, and all know how it invariably results, yet so many continue the baneful indulgence. Often it is not so much the lack of knowledge as it is lack of will and volition, the sacred saving attributes earliest affected by drink. It is not surprising, therefore, that multitudes of drinkers, themselves aware of their weakness when this temptation besets them, are now voting en masse for

prohibition to change their environment and remove the evil from their paths.

Alcohol is as incompatible with well-being in old age as in the prime of life. Normally the energy and activity of the period of prime passes imperceptibly into the contemplation and philosophy of age. In the fullness of years, the soul elements, the attributes of latest development in the evolution of race, carry the day of a well-spent life into serene sunset. Alcohol attacks and particularly impairs these soul elements.

Alcohol and the Soul.

The ultimate unit of real value in the world is the individual human life. The orderly development of the individual human life and the evolutionary recreation of individual human lives are clearly the object of Nature. All things, animate and inanimate, derive their true value from their contribution to the progress, the uplift, of human life. The value of any line of conduct, of any traffic, institution or civilization, must be measured by the same standard. It is soul-life that gives dignity to human life above the life of the brute, that links the human with the divine, that is the basis of faith and immortality. It is soul-life that sustains a man in the hour of trial, danger and suffering, that girds him to stand for right and the truth no matter what the odds, that empowers him to tread the path of duty erect and unflinching even though it lead to death. There

are no material standards by which to measure the value of soul-life. "What shall it profit a man if he gain the whole world and lose his own soul, or what shall a man give in exchange for his soul?" Alcohol taken internally strikes at a man's soul-life.

In the divine order of things, a man is chief architect of his own character and a contributing architect to the character-building of others, and he plays a concrete part in the general up-building of the race. Heredity plays an important part, as does environment, in the results, but the individual can largely regulate, or at least powerfully affect, these factors—environment for the present, heredity for the future—and thus maintain mastery, not only over his own destiny, but be a potent contributor toward the destiny of the race. Alcohol taken internally will undermine and ultimately destroy a man as a character-builder—will tear down the noblest upper-structure of his own character and incapacitate him for contributing to character-building in others. It will transform a character-builder into a character-destroyer.

There is a natural law governing all development, the law of exercise. All are familiar with the elements of this law. In the development of the biceps the arm must not be put in a sling. It must be exercised not once only, not spasmodically, but regularly, as an integral part of daily life. It must not be strained beyond its strength, nor fatigued beyond its powers of

rebound and recuperation. All the while the tissue structure must be healthy and must be adequately and regularly nourished. How can a man develop character in himself? By exercising the top part of his brain, the seat of character activities. A man exercises the top part of his brain when he lives by principle, when he strives for high ideals, when he seeks daily to serve others even at the cost of self-sacrifice, when he renews his soul by daily communion with his Maker. "He that is greatest among you shall be servant of all." But if you hope to carry out any such philosophy, do not take alcohol internally. It tears down the temple of the spirit. Plan, rather, to do a man's part in the struggle to destroy the sway of alcohol.

The magnitude and fundamental nature of such a conflict sweeps away differences of creed, caste and race. A humanity-wide warfare against this universal foe offers the world a common task at which to forget the prejudices and hatreds of centuries and make enduring peace. In no field can a man more truly feel the strength of the everlasting arms beneath his feeble efforts or be surer of harmony with the great forces of nature and the will of God.

PART II
Alcohol and Society

V.

GENERAL PRINCIPLES

Keying Humanity to the Top of its Brain.

AN unparalleled period of scientific research has placed at human disposal great secrets and forces of nature. Though brief in point of time, this period has lifted human life, in its material aspects, higher above the life of the brute than all the previous thousand years. It has drawn the fangs of human competition and has eliminated the necessity of injurious conflict as a determining factor in human survival. The conquest and utilization of the forces of nature requires the harmonious coöperation of large numbers of men. The demand everywhere is for more men to join in producing the necessities and goods of life, and for more people with capacity to buy and use them. It is no longer necessary in human society that any should perish in order that others may live. On the contrary, it is better for each that all should live, and should become efficient, in order the better to perform an increasing part of the boundless work of the world.

In the vegetable kingdom, briars, thorns, weeds, are disappearing before scientific methods of cultivation, while grain, vegetables,

fruits, cotton and other useful plants are multiplying. In the animal kingdom the bird of prey has almost disappeared, the beast of prey is disappearing. The useful animals, fowl, swine, sheep, cows, oxen, horses, and the like, are increasing upon the earth. Among men, civilized society is fast crushing out habits of prey, eliminating extortion from useful business and completely destroying businesses which injuriously exploit men with harmful commodities. That business is expanding most which is serving most.

We have seen policies of exploitation and oppression among nations cost nations their colonies and their commerce. The nations which are most productive, which supply goods of high grade at low cost, which help their colonies and are just to weaker nations, these are the nations destined to win and hold the commerce and the wealth of the world in spite of all the power and military efficiency that may be used to bolster dominion by brute force. The test for fitness to survive is no longer the ability to destroy, but the power and willingness to cooperate and conserve. As the Master announced two thousand years ago, whether for nations or for men, the greatest shall be the servant of all. As the development of means of communication on the frontier, making neighbours of the settlers, put an end to the brigand and the outlaw, so the annihilation of space by steam, steel, electricity, and the wireless, in their conquest of the water and the air

as well as of the land, making neighbours of all nations, will make short future shrift of nations, empires and alliances, which undertake to live without the moral law.

Before the conquest of nature, humankind were spread loosely over the earth with few means of communication and was racially like a creature whose severed parts can live independently. With the incredible development of transportation, the annihilation of space, the conquest of nature, the race as a whole has become analogous to a warm-blooded creature with a circulatory and a nervous system. A shock or injury in one part is now felt in all parts. The nations and races have become "members one of another"—some of the thoughts, habits, institutions and systems evolved in and suited to the old era will have to be transformed, some reconstructed, and some obliterated to make way for what fits the new era. Among other things, the ancient Bill of Rights will have to be supplemented. For its own protection, society will be driven to consider it the inherent right of every child, (1) to be well-born, without taint and the seeds of degeneracy in its blood; (2) to be born in a home equipped with parental care and love; (3) to receive proper and adequate education during the plastic period; (4) to be protected in immaturity from vitiating agencies and environment, and (5) to have a fair chance in maturity to take any part in the activities of his generation for which he is fitted.

Any scientific direction of social development will require the progressive elimination of social friction. It will demand the harmonious coöperation of men and nations to secure the highest welfare of all. Such a civilization can only be built upon a high and ever-rising average of character. It will require the dominance of moral and spiritual forces—the exercise of those faculties operating in the top parts of men's brains and rigorous restraint of everything which tends to make human activities originate in the base of the brain, the operating center of the elemental, brute instincts.

In such a civilization peace would be enduring and liberty universal. Henceforth thinking must be done, not in terms of single nations nor even of groups of nations, but of the human race; and it must concern itself with the truly vital social issues which press for solution. Systems and institutions are being weighed in nature's balance. Under acid tests sham and pretense are withering, and ease, luxury and gilded vice are melting away. The hidden causes of disease and waste are being dragged to the light. In every land truly vital questions are to the fore.

The world is appropriating, and giving new and radical interpretations to, that venerable but ever sound Anglo-Saxon precept, "The public welfare is the highest law." Limited in its application by so-called vested rights in the land of its origin, but made the ultimate norm by which the rights of every American institution

are tested, it is having far-reaching consequences for the race. It frees organized society for adequate and summary dealing with any public menace. It puts humanity above property, soul above things. It is the lode star of a social order directed by the top part of the human brain, and enables organized society to function truly as a living organism and muster its powers of health against any social ill. It is society's laboriously acquired legal anti-toxin for the parasites that prey upon it.

Unescapable Conflicts.

Such a socialization of all "rights" was inevitable, naturally. It is the fruit of that process by which nature prepares all life to survive and progress. In all types and species which survive, individual members are provided with capacities of development in the line of the species' evolution—instincts, habits and means of self-preservation, of reproduction and means of protecting offspring. From time to time destructive enemies appear which threaten the perpetuation of a species. Nature, in turn, develops within the species the means or capacity of safety and self-preservation. In this way the healthy blood of most species of animals has gradually developed the power of throwing off or destroying disease agents which have menaced the species in the past, and gradually attained immunity. In some cases the enemy almost destroys a species before the means of defense or immunity is developed. With

keener intelligences, the higher species naturally more readily acquire protection and immunity from the attacks of lower species which prey upon them.

Man, the crowning species of creation, adds to natural instincts the light of reason and the guidance of conscience. Only a subtle, disguised enemy, directed by man himself, could possibly menace the human species. Such an enemy is alcohol. Its poisoning effect is covered up by its appeal to the motive of elation and the motive of oblivion alike. As the injury it does its victim grows, so grows the strength of the oblivion or narcosis motive for more drink; so grows likewise the grip of the drug effect; so also wane the victim's vital resources for resistance. With the truth respecting it hidden, naturally the race's struggles against it in the past were vain in the end. Society was oblivious of its own peril as governments and private citizens joined in exploiting the public with the insidious drug.

Yet it was inevitable that in time the human race should isolate this enemy, uncover the truth respecting it, and penetrate all its disguises. Now patient, inexorable science has exposed not only the social falsities of the alcohol traffic, but the psychological fraudulencies of the drink cult itself.

Applying the Scientific Method.

The conquering, scientific method by which man is steadily winning the mastery of circumstances, consists essentially in: First, establish-

ing a real objective, and keeping this objective before the mind; second, analyzing the objective, to see it as an effect and establish its various causal factors; third, to work out general and detailed plans for its attainment in accord with the relative importance of its causal factors, applying to the execution of the plan and all of its parts unrelenting hard work. Humanly speaking, this method of analysis and procedure is irresistible. It can be well illustrated by the relative execution of the ordnance of the contending fleets in the battle of Santiago. The Spanish fleet had good ships, homogeneous, up-to-date, all of twenty-one knots trial speed, with good guns, good armour, good machinery. The American fleet was made up of a motley conglomeration of heterogeneous ships of varying speeds, the result of a neglectful, happy-go-lucky, non-consecutive naval policy on the part of Congress, the battleships being of only sixteen knots trial speed. Disinterested foreign experts estimated the Spanish fleet as superior to the American, especially after the destruction of the *Maine*. The Spanish fleet had brave officers and enlisted men, who died at their posts of duty like the noble men they were. To this day, the world cannot understand how it was possible for the American fleet totally to destroy the Spanish fleet, as no fleet had ever totally destroyed another in the history of the world; or how it was possible for the American fleet to gain the victory without substantial loss, as no fleet in history had ever gained such a vic-

tory without serious loss of ships and men. The secret lay in the simple fact that the American fleet was prepared according to the scientific method and the Spanish fleet was not. Spanish battleships of twenty-one accredited knots made but sixteen knots in battle. American battleships of sixteen accredited knots made seventeen knots in battle.

As naval constructor with Admiral Sampson, for instance, my duty of preparing the ships for maintaining their stability when damaged and for fighting fire and conflagration in battle, took me to all the vessels of the fleet. I marvelled at the activity on every ship. Everybody was busy, day and night, from the captain down to the last apprentice boy; and all were working according to plan, general and detailed, to attain efficiency in every element bearing upon the great objective, victory when battle came.

Likewise, I had an opportunity to judge of the conditions in the Spanish fleet from a conversation with Admiral Cervera when I called on him while he was a prisoner at Annapolis. (He had chivalrously called on me when I was a prisoner in the Morro at Santiago.) He was talking about the battle, when I ventured to suggest that the conflagration on board his ships must have been fierce; that I had just come from them, and, in fact, was organizing an expedition to raise his flagship, the *Maria Theresa*. "You cannot conceive how fierce it was," he replied. "On the *Maria Theresa*, for instance, one of the first shots that struck cut the fire-

main. The next shot set us on fire. With the fire-main gone we could not fight the fire. The ship burned like tinder. There was not a space as big as the palm of your hand where life could have remained. An insect could not have lived. We were compelled to beach the ship and leap into the sea." "May I ask whether you had cut out your woodwork and thrown overboard your inflammable materials and subdivided your fire-main for battle conditions?" I asked. "Oh, something of that kind did occur to me once, when the Fleet was at the Cape de Verde Islands, and I wrote to the Minister of Marine in Madrid on the subject, but he never acknowledged my letter and I let the matter drop." I said nothing further on the subject, but to myself I thought, "Now I understand how the victory was won." The contrast came home to me the more strongly, because the duty of insuring this very element of efficiency had fallen to my lot. With Admiral Sampson's authority I had taken the carpenter's gang on each ship, and, starting at the bow, had gone through to the stern on every deck, cutting out the woodwork and throwing overboard inflammable materials. We even sawed down the wooden partitions between the officers' state-rooms and gave up the furniture, standing up at meals. The whole surface of the ocean was strewn with the wreckage. We stripped the ships to the bare iron. We subdivided the fire-mains with special valves to localize any injury, and reorganized the whole fire-drill for

battle conditions. I thought, after the conversation with Admiral Cervera, of the contrast between the Spanish and American method of preparation, recalling his words, "The *Theresa's* fire-main was shot away in one place and we could not fight fire." The *New York's* fire-main could have been shot away in forty places, for we had prepared special hose-connections down at the fire pumps themselves, in the bowels of the ship, and had special hose at hand ready with lines tied to the end. Without any fire-main, in case of fire, we would have promptly hauled this special hose up through the hatches and have extinguished the fire without slackening the service of a single gun. Applying the contrast in efficiency in this particular to others it becomes clear how our victory was won before the battle was fought. In the same way have all great victories been won. Similarly we must win the great biological victory for mankind in the elimination of the alcohol parasite, by bringing to bear the conquering method, establishing the great objective, keeping it always in view, thoroughly analyzing it in all its elements and preparing scientific plans in accord with them, and then executing them with tireless energy.

The Great Objective.

The objective of all wise social endeavours must accord with the objective of human life itself. What is the objective of human life? How can we correctly establish and define that

objective? By recourse to Nature? What is Nature trying to do with the human species? What is the line of human evolution? Every species has its main line of evolution, the line along which, from generation to generation, it tends to build.

The human race is not evolving, except incidentally, along the line of the physical man. Nature completed the general physical evolution of man many ages ago and now allows only about twenty-one or two years of his life-span to the general completion of his physical development. In the Scriptures (Phil. 3:14 and Eph. 4:13) Paul spiritually interprets the objective as follows: "The high calling of God in Christ Jesus" and "till we all come in the unity of the faith and of the knowledge of the Son of God unto a perfect man, unto the measure of the stature of the fullness of Christ." This spiritual evolution has its essential physical expression and basis. It is found in the evolution going on in the gray matter on the surface of the convolutions of the cortex of the cerebrum, the seat of the will power, of the moral sense, of the spiritual activities. Nature is striving to produce a race of masterful men, masters not only of circumstances, but of themselves. To this end she is erecting ever more complex and effective brain-machinery for the use of the spiritual faculties. Coöperating with the human soul, she not only adds this machinery in the individual brain to the complete measure of an individual's effective use of it,

but, unless interfered with, stamps these gains upon the germ plasm and so hands them potentially on to the succeeding generation. Nature is trying to produce a race of God-fearing men, living in the spirit of brotherly love, controlled and directed by moral and spiritual forces. Nature is trying to produce a world in which moral and spiritual forces reign supreme in the hearts of men. Interpreted through Scriptures and through nature, God's purpose is the development of the "perfect man" of Christlike attributes in the true image of his Maker.

Character-building is the line of human evolution. A man does not have to stop character-building when he is twenty-one years old. If he does his part, Nature and God will cooperate with him to continue character-building all the days of his life. That each human being who comes into the world may develop to the highest level of character, and that each generation may rise on the average to a higher level, as much higher as possible above the average of the previous generation—this is the Great Objective, the objective of Nature as well as the will of God in the world.

The true measure of all things, then, is their effect upon this objective of Nature and God. By this standard we can compute the worth of an individual's conduct and life, the wisdom of a policy, law, or institution. All true religion, all governments exist for the purpose of forwarding this natural and divine objective.

In the light of these facts, what groups of men

do to the top parts of their brains, becomes of infinite moment to the whole race and to generations yet unborn. Looked at merely from the standpoint of the brain's line of evolutionary growth the general use of a drug having the series of effects upon the top brain detailed in previous pages cannot but have serious social consequences, affecting the perpetuity of nations and civilizations. Is this scientific deduction borne out by the facts?

VI

ALCOHOL AND NATIONS

Social Integration and the Nation.

MAN is not only a mating animal but a social being. His development and progress in the line of his evolution can only be in proportion to the growth in the integrity and stability of the family, and the integration of families into larger social groups. This is because development comes by the exercise and use of faculties. Only in the family, and among large numbers of families living in social groups, can the higher attributes of intellect and the highest attributes of spirit, such as love, service, self-sacrifice, find highest opportunity and receive that systematic exercise necessary to individual development and racial progress. The individual and the social group act and react upon each other. In the larger, more developed social groups, the more frequent calls and opportunities for exercising the higher faculties develop more highly socialized individuals and families. These in turn permit of higher social integrations in which the consciousness of kind and social sympathy includes

larger areas, greater numbers, and more widely diverging types.

The law of growth of structure and differentiation of function leads to the organization of groups of nations and will lead ultimately to an organization of the human race in which the individual nation will remain the cardinal unit much as the individual state has remained the cardinal unit in the United States of America.

The extent of social integration and the solidity of the social structure will depend upon the average standard of character of the individual citizen—that is, the degree of his *social* development. Alcohol, in lowering the standard of character of the world's citizenship and desocializing the race, is the great factor limiting the development of larger units and groups, with the great advantages that would follow, and is the underlying cause of instability and inefficiency in existing units. It is the paramount factor in holding back free institutions, in preventing harmony among the nations, and the approach of the brotherhood of man.

The rate of the rapidity of social integration is dependent, in a large measure, on the development of the community, and the community of interests between its composing units, particularly by coöperative action against the common menace, and by the advantages and rewards from common action in competition with other social units.

With the development of modern science, the extension of man's control over nature's forces,

and the swift expansion of industrial activities offering almost unlimited possibilities for increasing the fields of coöperation, we have been witnessing a general spread and intensification of the spirit of nationalism. The world is now at the height of the period of nationalism and with the grouping of nations produced by the great war we are at the dawn of the period of organized internationalism. Advanced minds are now thinking in these terms, but the people at large still think in terms of the nation. The welfare of the nation is still the subconscious objective of citizens everywhere, though comradeship in arms has broken down many national barriers and is creating a subconscious interest in allied groups. Patriotism has a high place among Christian virtues and offers the highest inspiration to duty and self-sacrifice yet achieved by masses of men. Citizens will still make any sacrifices required for home and native land. The great war has created unprecedented opportunities for prosecuting national reforms calculated to promote the strength and efficiency of nations. National interest in war problems turned public attention sharply to the menace which the alcohol parasite is to every element of strength and efficiency. It is an opportune time to consider alcohol and nations.

Alcohol and National Nutrition.

As mentioned before, the two inclusive factors in the progress of any organism are nutrition

and exercise. Nutrition, in the scientific sense, includes all those contributions to an organism which are utilized to maintain its structure and sustain its functions. In organisms composed of cells, unintelligent units, nutrition is by purely physical elements and the machinery for its distribution works automatically once the nutriment is appropriated. Human society, however, is of a higher order. It is built of intelligent units which are capable of working at cross-purposes and even of waging destructive war upon each other. Man's body, for instance, is composed of cells which have lived in such thoroughly organized and mutually dependent and mutually helpful relations for so many millions of cell-generations that they function together automatically. Man himself, however, the "cell" of the great social organisms, is come so lately in his race-history into highly organized relations with his fellows, is as yet so rudimentarily adjusted and habituated to organized relationship, that he functions far from automatically in his social articulations. In addition, he is a fluid unit. A particular cell in the body has always the same given and limited functions. A man is not so, socially. He may gravitate from lower to higher orders of social service in his own lifetime. Furthermore, he is self-determining. His perfect social functioning has to be the fruit not only of a sound body but of truly socialized will, intellect and affections. The articulation of unintelligent cells is physical. The social articulation

of men is partly physical and supremely spiritual. Man creates the arteries of social transportation and operates them consciously. He creates machinery whereby he works at his own socialization, spiritually. Hence if, in the later portions of this chapter under the headings "nutrition" and "exercise," the reader finds enumerated in the one field other things than mere food, and in the other fields items outside the realm of physical effort, let him remember that he is considering society, the superlative organism, whose individual cells are intelligent, self-determining human beings; and that "nutrition" and "exercise," when applied to a nation, cover more things than food and the use of muscles.

America is physically the best fed nation in the world, but in America, as in all the nations, there are disturbing quantities of people underfed. The spectacle of diverting vast stocks of precious foodstuffs from the mouths of the hungry in order to manufacture beverage poison with which to further weaken and vitiate the people is arousing the indignation, not only of the hungry themselves, but of fair-minded people the world over. Under war pressure the most fully involved nations took some kind of action to curtail, in part at least, this, the largest source of food perversion and food waste, in most cases laying the stricter embargo upon the manufacture of distilled liquors, as though the alcohol in these were of a less harmful sort than that in fermented

liquors. The fact that similar industrial pressure has not obtained in the past in days of peace has tended to blind nations to the fact that equally serious wastages of food have been taking place constantly.

The expenditure of labour in the manufacture and distribution of liquor is a waste even greater than the expenditure of food materials. The liquor traffic and its apologists have long boasted of the number of men it employed in production and distribution, directly and indirectly. Accepting their own figures, we must estimate at about a half a million the man-power turned away from productive pursuits in the United States by the liquor traffic before the war.

But serious as is the wastage and perversion of foodstuffs and the diversion of labour caused by the liquor traffic, these injuries are small in comparison with the harm inflicted upon the health, morals and socializing processes of the nation through the wholesale poisoning and its consequent degeneracy. The fact that, in the public discussions attending war legislation against the liquor traffic, emphasis was placed on food wastage rather than upon the harm inflicted by the poison showed the lack of information and of proportion in the public mind and the limited degree to which the average man realizes the deadly nature of this drug. If so much of wholesome legislation has come from such an imperfect realization of the lesser evil, what may we not expect when nations ulti-

mately realize that the liquor industry instead of giving value received for the peoples' substance is turning the grain into poison, and is systematically degenerating organized society with the most destructive of all poisons, striking not only at its welfare and success in war, but at its very life.

Taking conditions when the great war began, America can be said to have been the soberest of the great nations. It is on the side of conservatism to estimate that five per cent. of America's producers were heavy drinkers, twenty-five per cent. were temperate regular drinkers, and fully fifty per cent. were occasional drinkers. In the light of accurate scientific research, it is conservative to estimate that the total producing efficiency of the nation was thus being reduced fully twenty-five per cent. The Minister of Finance in Russia estimated that during the prohibition period of the Empire, with one-third of the producers under arms, the producing power of that nation was increased fully fifty per cent. The Minister of Munitions in England estimated an increase of over twenty per cent. in producing efficiency in localities where only moderate regulatory measures were enforced, chiefly a reduction in the hours of sale. Taking the conservative estimate of twenty-five per cent. as the former loss of producing efficiency in America, this would be the equivalent of more than ten billion dollars a year—the value of all the farm products of the nation. We can form some idea of the

stupendous loss this means every year when we realize that it is equivalent to a loss of the whole wheat crop, the entire barley, rye, oats, rice, corn, hay and forage crops, all the cotton, wool and hemp, and all the fruits, vegetables, sugar cane and sugar beets.

While inflicting this staggering economic loss upon America, the private individuals connected with the liquor traffic were also levying a direct money cost of two and one-half billions of dollars a year, the total retail selling price of the liquors dispensed. All civilized governments punish fraud, requiring the return of actual value in exchange for money. The drink customers, instead of receiving value for their two and one-half billions, suffered an injury to their earning power of ten billions a year, and this took no account of the deeper injury and loss in health and morals and character. The ordinary highwayman is satisfied to get his victim's money. The liquor traffic, in lifting its victims' money, injects a poison which impairs the functionings of their limbs, sears their brains and mars their souls.

Civilized governments make it a rule to insist on fair play between business rivals. But, through the use of this habit-forming drug, the liquor traffic gets so effective a first mortgage upon the earnings of millions of drinkers that no legitimate business can compete with that traffic on fair terms. The American liquor traffic was collecting in the course of a year a sum equal to more than one-half of all the cash money in

circulation in the nation—the cream of its cash transactions. By lowering the efficiency of the millions of its victims, thus reducing their earning power and therefore their purchasing power, the traffic strikes also at the integrity of every other business. It is almost incredible that the legitimate businesses of the world should have tolerated so long this unscrupulous rival and privileged outlaw. It can only be explained by the equally persistent ignorance of business men regarding it.

Ordinarily a business man realizes full well that wealth must be produced and that loss of productive power means loss of business to a community; but by a strange logic liquor has persuaded many business men, a few shrewd, far-sighted bankers among them, that the liquor traffic increases the business of a community. To the ignorant and the deceived must be added those who profit by the patronage of the liquor world and those who are terrorized by it, ere we begin to understand the influence the traffic has exerted in the business world.

One of its hoariest deceptions is the claim that its paying of special revenues reduces taxation. This fallacy is especially prevalent in liquor-ridden communities where corruption controls politics and taxes are heavy, and where, while the revenue from liquor is large and visible, the still greater charges and burdens laid upon society as the result of drink are not sorted out and known. This fallacy has a surface appeal to all who selfishly place their own interests

above public welfare, but it is without economic foundation. All the revenues paid by the traffic do not defray the cost of the crime, pauperism, and insanity produced by it and laid in the form of direct taxes upon the shoulders of the community at large, while the extent to which it impairs productiveness and thrift, which alone create wealth and increase legitimate taxable values, leaves it a stupendous financial debtor to society.

The Minister of Finance in Russia, M. Bark, who had violently opposed the institution of nation-wide prohibition in the Russian Empire, reported after prohibition had been in effect for the first year that, while the state had lost hundreds of millions of dollars of liquor revenues, the treasury was not embarrassed, but, on the contrary, its gigantic war difficulties were overcome by the increase of productiveness and the enhancement of profits and of taxable values generally.¹ The wise, the true solution of the world's present alarming financial problems is world-wide ending of the beverage alcohol traffic.

Commercial competition for the markets of the world has been greatly intensified by the war. Hereafter nations must use every means for increasing national efficiency or drop behind in the race, whether during peace or war. The loss of efficiency from drink is so great and so fundamental that losses from all other sources combined are only of secondary importance. The swiftness and thoroughness of the sup-

¹ E. J. Dillon. Contemporary Review, March, 1915.

pression of drink in a nation will, in a large measure, determine the rapidity of its recovery from the economic and financial burdens of war, and will determine in large degree the position it will achieve in the future commercial and industrial struggles of the world. In this regard the great war was a scavenger agency, forcing a militant grapple with internal national evils, and it will ultimately compel the elimination of any nations too far gone in degeneracy to rally. That drinking nations will be unable to endure the fierce competitions ahead stands out more clearly when we realize that the heavy loss of efficiency is but an outward manifestation of a morbid condition deep in the body politic and body social. A drinking nation is literally sick with a chronic, organic illness.

Sick benefit society records show that the number of days of absence from work for sickness increases directly with drinking habits. Manifestly the same disadvantage must apply between drinking nations and abstaining nations. The large lists of absentees after pay days and the lowered efficiency and marked increase in industrial accidents following periods of drinking are only symptoms of a diseased condition.

It cannot be too often repeated that the death rate tells the story with gruesome certainty. Records of the French National Hospitals show that drink in France about doubles the number of cases of consumption, and then about doubles the mortality of this disease. Public health agencies are trying vigorously to suppress

the spread of the white plague. While taking manifold precautions on divers other lines, they are dumb before the great underlying cause of the ravages of this great scourge, the liquor traffic. There can be no doubt that the abolition of alcohol drinking would eventually eliminate two-thirds to three-quarters of the ravages of tuberculosis and remove the white plague from the list of serious public dangers.

In like manner drink is the dominating factor in the high mortality of other diseases of the lungs, such as pneumonia, and in diseases of the liver, of the kidneys and stomach, of the heart and circulation, and of the nervous system and brain. The wide-spread diseases associated with the social evil, as pointed out above, are largely the offspring of the liquor traffic. When we realize that even in America, the youngest and therefore the least degenerate of the great nations, it is estimated that 8,000,000 citizens have syphilis, and we know that the mortality of men in their prime is practically doubled by drink, we begin to get some appreciation of the ghastly toll of disease and death exacted by the liquor traffic throughout the world.

Taking all drinkers together, insurance records show that about one hundred and eighty drinkers die to each one hundred of average risks. Human lives constitute the basis of the economic as well as the military power of a nation. In days of slavery a high financial value was placed on the life of a slave. How much more valuable, economically, is the life of

a free citizen and how staggering is the economic loss to a nation by the premature death of so vast a number of its citizens. Whether we measure by usual economic standards or whether we measure by the added burdens of disease and premature death, drink to-day is largely sapping the vitality and destroying much of the potential wealth of the world.

Looking upon a nation as an organism, and combining production, distribution and all economic and financial activities in the category of nutrition, we must conclude that drink is the great cause of malnutrition of civilized nations, as of individuals—is, indeed, an overwhelmingly greater cause than all other causes combined. Now that the great war has thrown open the doors of the world's commerce to all competitors on equal terms, the question of drink will absolutely determine the race. The sober nations will quickly lead and surely win. The drinking nations will steadily fall behind and finally drop out. Let patriots in every land ask themselves the question, to which group shall our nation belong?

Alcohol and National Exercise.

As fundamentally as drink affects the nutrition of a nation, so fundamentally it affects the exercise of national functions and faculties. Under exercise, in a national sense, we include all those vital activities and sentiments which develop and sustain the integrity of a nation, which develop the consciousness and the spirit of nationalism, patriotism, respect for authority,

and loyalty to national ideals. The most far-reaching of these activities are those applied to citizens-to-be in the plastic periods of childhood and youth, and are embraced under the word "education," used in its broadest sense.

Of greatest fundamental importance in the education of a nation is that part received in the home at the hands of father and mother through precept and example, under the prompting of love. We have seen before that drink is the deadliest enemy of the home, tending to incapacitate men and women for the duties of parenthood. As such, it strikes at the very foundation of the nation, at the heart of civilization. The blow is double: first, in depriving millions of the nation's children of the love and good example and teaching of a sober father, and, secondly, in dissipating the family substance, and depriving the children of the opportunity for education and of those necessities, comforts, and conveniences which create an environment in the home suitable for the proper development of the child. In many cases the child is not only deprived of its natural right to a good example and constant guidance from an affectionate father, but also is dwarfed by neglect and warped by bad example. Where the family substance is dissipated, it is the education of the children which first feels the blow. Even with compulsory education drink entails at the best laxness of compliance with only the minimum required by the law.

In families and communities where drinking

goes on in the home, even where the drinking is classed as temperate and is not characterized by drunkenness, it is surprising how many parents give their children beer and wine. School records in America and abroad show that even the most temperate of such practices cuts deeply into the scholarship of the pupil and gives a good indication of the blighting effect drink has in every way upon the young.

In the most abandoned communities there is usually some semblance of respectability in recognizing that saloons should be kept away from the schools. It is notorious, however, that the liquor traffic has no regard for such regulations and ordinances and, whenever possible, shoves its saloons within these forbidden areas. As previously pointed out, investigations indicate that one-third of the drunkards contract drinking habits by the time they are sixteen years of age. It has also been pointed out how disastrous alcohol is to all young organisms. The effect upon children and youth is utterly subversive, not only with respect to educational activities, but also as respects morals. This is notably evident in the high school period, the dangers extending to the girls, even though they may not drink themselves. Investigation will show, if general knowledge does not recognize, that most of the failures in college are due to the dissipation of the time and the substance of students through drink, and this, in many cases, where college opportunities have been given only by the heavy sacrifices of others.

The deranging effect of alcohol in the moulding of a nation's life is not confined to the educational system proper, nor to the plastic period of youth, but permeates the whole social atmosphere, injuriously affecting the nation's standards, its business ethics, its morals and religion, its politics and government, its liberties and institutions, its internal problems and its reactions to external dangers.

The foundation of business ethics is the willingness and desire to return in service full value for substance received. On this principle, gambling of all kinds is discouraged and usually prohibited. The liquor traffic not only does not give return in value but inflicts injury in proportion to the substance received. It is not exceptional for a man, with a pocket full of money on pay-day, to come to his senses later with all this money gone, whether he finds himself in a jail, in the sawdust provided by the saloon, or in the brothel over the saloon, or whether he has been taken to a saddened home. The central motive underlying the liquor traffic is the opposite of that of service. It is the motive of robbery by inflicting harm.

The natural attitude of men who rob toward other men and toward society is that of violence. It can be assumed that a robber, if necessary for success, will be a murderer. It is notoriously true that saloon men in a community will not hesitate to practice coercion and even blackmail upon merchants, bankers, and other business men. These men, by submitting, naturally lose

their business self-respect, and the business of the community lives under a demoralizing condition of suppression and intimidation, which extends from the wage-earners to the business men, the professional men, the press, the teachers, and at last, even to ministers and religious leaders. All this has a cumulative evil effect upon politics and government.¹ The liquor traffic is thus the great vitiator of the business standards and ethics of a nation, which standards, in a free people, must be high. No nation with debased business ethics will ever be able to maintain for long public liberty and justice. Irving Fisher said, "I think no student of American politics would deny that the most formidable as well as the most unscrupulous, the most demoralizing special interest in American politics to-day is the liquor interest."

All the social forces which influence national life are to be judged in the last analysis by their effect upon the average character of its citizens. Especially is this the case in a democracy. While the liquor traffic is a directly destructive, demoralizing, anti-social force, the most deadly havoc it wreaks upon a nation is in the degeneracy it inflicts upon so many of its citizens, seriously lowering the average standard of character and conduct. The extent of this degeneracy can best be realized by taking into ac-

¹ Irving Fisher, Congressional Record, Senate Committee on German-American Alliance and Anti-American Activities of Brewers, Brewers in Texas, Brewers in Pittsburgh, etc. Crowell.

count the fact that every one of the millions who drink in any form suffers degenerating results in direct proportion to the amount of alcohol consumed.

As alcoholic degeneracy progresses in a man he becomes less and less a social being. He is increasingly animated by brute instincts, and less and less by regard for his fellow man, for his country and for humanity, until he becomes at last anti-social and criminal. Every one knows how social gatherings become boisterous as drinking goes on, attended by disorder and at last by violence. Most of the mob violence in America and all countries, in our own day and those recorded in history, have been attended by, and manifestly have been largely the outgrowth of, general drinking. The first thing the authorities do in such cases is to close the saloons and cut off drink.

Every one knows that the saloon is the incubator and nursery for crime, plots, and conspiracies, and that drink attends directly, as a cause, the bulk of the crime of the world and nearly all the crimes of violence. Most people understand the brutal temporary transformation which heavy drinking produces in men at the time, but few realize its like permanent effect when oft repeated, even though in moderate quantities.

In view of alcohol's unescapable, degenerating effect on the individual, as set forth in Part One of this book, it is inevitable that widespread temperate drinking among the well-to-do and

capitalistic class is largely responsible for the anti-social and at least unsocial and sometimes criminal practices laid at the door of predatory wealth. It has played its part in the oppressive attitude which capital has so often taken toward labour, and in the cruelty it has sometimes visited upon child labour. On the other hand, widespread drinking in the ranks of the toilers is largely responsible for the unreasoning, and sometimes violent and destructive, attitude labour has at times taken toward capital. To the permeating, subtly degenerating influence of drink on both sides is primarily due the selfishness which has so largely interfered with the just settlement of the differences between employer and employee, preventing that mutual confidence and spirit of mutual concession necessary to close coöperation or, in other words, to modern organized society. Just as effect must follow cause, drink is a factor of importance in many labour troubles and other economic and social disturbances. It is, beyond doubt, a great impediment to the solution of the grave problems that industrialism has brought to all the great nations.

Alcoholic degeneracy prepares the way for immorality. As pointed out previously, the effect of alcohol is to deaden self-control and the moral sense and to paralyze the restraints which should be kept upon the lower animal nature and the passions. The inevitable result is immorality with its train of disease and death. The lapse from virtue is a terrific shock

to the character in man or woman. Add to this the direct undermining effect upon the moral sense of the nation this shock produces, as it strikes millions of citizens, and it is clear how deadly is the wound inflicted by alcohol upon the morals and good character of the nation.

Alcohol has the same deadly effect on the spiritual activities as upon the moral sense. In fact the spiritual activities, as the highest of all, weaken and disappear first under the effect of alcohol. There is no initial stimulation. Depression sets in at once. The effect of widespread drinking upon the religious life of a nation is appalling. Drink and true religion simply cannot go together. Millions have their relationship to God lowered by drink to the level of hope of reward and fear of punishment, while the natural attitude should be that of love and trust of a child toward a father. Other millions have had the spiritual world practically blotted out of their reckoning and consciousness. No one can measure the fundamental loss this is to a nation as a whole. History does not record a case of a nation which survived long after debauchery dissipated its good morals and banished religion from the life of the people.

The political life of the nation suffers similar dislocations. In autocratic governments the lowering of character of the sovereign, the royal family, and the aristocracy, takes away from them the sense of responsibility, the altruistic

motives of service and the guidings of conscience; and on the other hand, exalts the ego, the selfish motive which brings abuse of power and oppression in all its forms upon the masses of the people.

In democraecies this lowering of character and ideals in the electorate throws wide the doors to political corruption, and prepares the way for political power to pass under the control of sinister, predatory interests which seek the power of government in order the better and with less restraint to mulct and oppress the people.

History verifies what science and reasoning indicate as inevitable, that when the average standard of character of the people falls below a certain minimum level, permanent, honest, self-government becomes impossible. Liquor and liberty cannot live together in the same land. It is vain to sacrifice the present in the hope of establishing a world safe for democracy if we permit the liquor traffic to continue rampant upon the earth. When drink long debauches humanity, free institutions of necessity must wither and perish. To a limited extent we can see this verification in the past history of the big cities of America, and of other democraecies, where hundreds of thousands of voters place low estimates upon the franchise and where wholesale, corrupt practices are proverbial. The most powerful of all the sinister interests which capitalize politics after political honour droops is the liquor traffic. It is the

principal cause of political depravity. The liquor producers, rich brewers and distillers, influence government officials and the upper circles of society, and contribute heavily to the funds with which the political campaigns of all parties are financed; while the wholesalers and retailers influence the commercial world, the trades unions—as they are called abroad—and labour unions, and the rank and file of the voters, especially in the city slums. The first principle in liquor's code is to dominate politics and government. This is the prerequisite of liquor's continued existence. Government itself exists to promote the highest welfare of the people governed,—their prosperity, happiness, health and morals. Liquor is the deadliest foe to this highest welfare. It is a primary duty of government, therefore, to fight and destroy the liquor traffic; and, manifestly, the only way for the liquor traffic to escape the wrath of government, when the truth about alcohol becomes known, is to control the government and paralyze its true function. Speaking in general terms and making exception for towns and small cities, rural communities and states, it can be said, generally, that politicians, political parties, and the governments of the civilized world up to the time of the great war, in what relates to liquor policies, had been under the control of the liquor traffic. Up to that time the liquor traffic had held, literally, the power of political life and death. This sinister power's hand is seen also in the administration

and execution of laws. The liquor traffic is inherently an outlaw and works politically always for lax enforcement of law.

It is evident that drink is the great disrupter of the standards and activities which develop a nation,—education, business ethics, morals, religion, politics and government. It is particularly destructive to these functions under free institutions. Such activities truly constitute the exercise of a nation, considered as a social organism. We have already noted the liquor traffic's effect upon economic activities, the producing, distributing, regulating system which determines in large measure a nation's prosperity, health and vitality, and which constitute the nutrition of a nation, considered as an organism. Where both nutrition and exercise are sorely disturbed in a nation or any other organism we must expect serious disorder to appear, even to an extent threatening the very life of the nation or the organism.

While the life of a nation appears at a given time to be static, it is really undergoing a constant process of advance or retrogression through the germ plasm of its people. It has been previously shown that alcohol, a specific cause of degeneracy, impairs the germ plasm, enfeebles and decimates the people, while at the same time it eats away those social virtues and capacities which make for the life of, and promotes those anti-social characteristics which make for the death of, a nation. It is inevitable that when a nation becomes generally debauched

by drink its families breed degenerates and tend to become extinct. When the drinking is temperate but general throughout a nation the process of decline is slower, but it is none the less inevitable.

On the other hand, in a sober community the care and protection of homes will be normal. The educational advantages and general environment of sober communities will be normal and highly efficient. As a consequence we must infer that the general development will be normal, and that with natural conditions, each succeeding generation will tend to advance higher along the line of evolution of the species. Thus, assuming that the physical conditions for nutrition are normal and adequate, a sober family and a sober nation will continue indefinitely to have a natural increase, and to rise higher in civilization.

Other factors, of course, influence the rise and fall of nations, but no other factor is comparable to drink because of its determining influence upon the function of reproduction. Physiologically speaking, a sober nation should never die; but a drinking nation is doomed to decay and premature death. Besides disrupting the process of reproduction, drinking, in brutalizing the nature of its citizens, weakens the social bond which holds the population together, and thereby hastens national disintegration. The historians and philosophers of an elder day, not knowing the deadly nature of alcohol, have often been at a loss to de-

termine the cause of the decline of nations and empires. They have noted, however, that dissipation, particularly marked in the great cities, has usually preceded and accompanied the downfall of great nations. We know that drink is the chief cause and always the attendant of widespread dissipation. The historians have noted also the corroding effect of wealth. We know that wealth almost invariably has fostered drink. Modern science, in establishing the deadly nature of alcohol, has thrown a new light upon the history of the world.

It is the higher brain structure, the more complex nerve structure of the upper brain, with its enormous energy-generating, conveying and converting capacity which constitutes the physical basis of reason, the distinguishing attribute between man and the brute. It is this faculty which has enabled man to survive in all his struggles with plant and beast life. It is a higher average development of this central nervous system which enables one social group to survive in its struggles with other social groups. Alcohol, by its attacks upon the central nervous system, lowers the average energy-producing, conveying and converting capacity of this high brain-center in a nation's citizens, and dooms a drinking nation competing with a sober nation of equal development. We recognize here the operation of a universal law of physical evolution from which there is no escape. The moment scientific research estab-

lished alcohol's affinity for nerve tissue and its terrible effects upon the brain and central nervous system, that moment debate ended. The duty of every government and of every good citizen became established and imperative; for instantly it became evident that a nation must become sober or wither; that the human race must rid itself of the beverage use of alcohol or be forever toppling back from affluent political integrations capable of general saturation with drink, into disorganized and broken social fragments in which poverty and hard conditions of life will prevent such alcoholization as to produce extinction.

VII

ALCOHOL AND CIVILIZATIONS

FACTORS that are fundamental in the life history of the individual and of a nation must manifestly be fundamental in the progress of civilization and the general welfare of the human race.

While civilization ordinarily assumes the contemporary existence and intercommunication of more than one nation, nevertheless, especially in the earlier days of difficult transportation, as a rule one nation developed and dominated a civilization, as in the civilizations of Egypt, of Mesopotamia, of China, of Greece, of Rome, of the Aztecs and Incas, and of the ancient Pueblos.

Naturally as man has addedly dominated his environment, increased in numbers, extended the range of his habitat and improved his methods of transportation, civilization and the progress of the race have come to depend less upon any one nation and more upon a community of many nations. The entity of the human race, for the same reason, is growing increasingly like a single living organism, and must be found more and more subject to those same fundamental and elemental factors that determine the development of all organisms.

The failure of historians to realize this growing analogy of the human race to an organism has been the chief cause of their failure to establish any adequate philosophy of history, or fully to interpret the mysteries involved in the rise and the fall of civilizations. No historian seems to have endeavoured to establish scientifically the biological causes of the growth and decline even of individual nations.

Practically all historians have noted, however, as pointed out before, that dissipation, debauchery, and luxury attended the decline of nations and downfall of civilizations, but they have failed invariably to perceive the deep relationship of cause and effect. The strange march of degeneracy has been seen so uniformly to overtake the nations of the past that historians simply concluded that a nation only rises to fall, is only born to die. To-day a historian versed in the laws of biology and sociology, and possessed of the knowledge of the truth about alcohol as now definitely established, can readily convince the world that the supreme tragedy of human existence has not been due to the antagonism of nature's cold or heat nor of wild beasts, jungles, storms, volcano, earthquake, war, or pestilence; but overwhelmingly more than all these combined, to alcohol and its certain fruit, degeneracy.

Alcohol and the Physical Basis of Civilization.

Nutrition being the first requisite of life-domination over the forces of nature, it is the

first step in building any civilization. The physical conditions, the extremes of heat and cold, of dryness and moisture, of excessive vegetation and bleakness, place natural limitations upon the zone of advanced civilization.

These limitations are not rigid, particularly at the present day. With the development of transportation and nutrition, the protection of life, and the availability of comforts and conveniences as well as of necessities, the habitat of civilization is advancing into the sub-tropic and sub-polar regions and even into the tropics themselves. Though the highly civilized white man seems to be at a disadvantage beyond the temperate zone, this disadvantage is more apparent than real. It has been my observation that the white man, drawn to these border lands of civilization by the advantages of business, has always taken drink with him for consolation, as if it were a precious, indispensable possession, and that he has generally extended his drinking more there than elsewhere, thus undermining his vitality and strength. In the light of what we know about alcohol, it is evident that most of the liver troubles and other complaints which wear out the white man in the tropics and sub-tropics are due more to drink than to the climate.¹ The same reduced resistance to exposure is entailed from the same cause by the

¹Horsley & Sturge, Parker, J. Ronald Martin, William Ferguson, Borden Dickson, Renne, Jackson, Castellaine, Chalmers, Duncan, Rogers, Senator & Kaanmier.

white men who venture into the regions of extreme cold.¹

It is evident now that throughout the world's history and to-day, drink has always been a serious factor in limiting the bounds of civilization. The extension of the habitat of civilization and the development of civilization within that habitat have required from man that control of nature and nature's forces which can only come through the uses of mechanical forces and powers developed by implements and tools. Knowing as we do the enfeebling effect of alcohol upon the higher intellectual faculties required by invention and discovery, knowing its similar effect upon the elements of character involved in coöperation, we can hardly conceive, much less realize, what curtailments drink has wrought in the realm of mechanics, hindering the extension of human control of natural forces. We know that many important devices and forces have been lost and many inventions forgotten in the degeneracy and decline of past civilizations, some of which lost achievements have not yet been rediscovered.

Invention and mechanics should advance in geometrical progression, each acquisition serving as a base for further conquests. Knowing how rapidly the mechanic arts have developed in recent decades, considering the progress already made under serious social and physical handicap, one can imagine what would

¹ T. Lander Brunton, Horsley & Sturge, Sir J. Ross, John T. Rac, Dr. Nansen.

long since have been the position of man in nature had the human race been able to command its full intellectual powers. In this way drink has delayed even so fundamental a matter as the adequate feeding of the nations. By its disintegrating effects upon the constructive imagination of the race it has barred humanity from the full conquest of nature and the ample supplies of the necessities of life which would have resulted from such a conquest, thus preventing even physical foundations for general and enduring civilizations.

This curtailing influence of drink upon civilization is seen not only in restricting the habitat or zones of civilization, but also in the destruction of civilization within that habitat, blighting worst the lands that are fairest. Where nature is most favourable otherwise for building high civilization there, oftentimes, the vine flourishes best, and drinking has been more general. In less favoured lands, where the grape is not so abundant and drinking not so general but more of a luxury, inducing excesses on festival occasions, these excesses are more liable to be noted by the historian and observer, though they are far less destructive, coming as they do only at intervals, than the more temperate, constant drinking in the lands of the vine. The general result, through succeeding generations, has been the more rapid decline of civilizations in favoured lands and climes.

The appearance in commerce of concentrated distilled alcoholic beverages a few generations

ago has brought grain into general use for the making of liquors, and has vastly increased the total amount of alcohol consumed. Consequently modern civilizations will decline more rapidly than those of old if its inroads are not stayed. Furthermore, the profits from liquor in concentrated form are so great, the transportation so easy, and the markets so readily created, that this traffic, especially in the form of rum,—the first to take advantage of improved methods of transportation and the modern facilities of commerce—is sending cargoes of poison into all the corners of the earth. So the very factors which serve for the building up of civilization are turned into instruments of destruction. This is most marked in the case of backward peoples, whose more primitive civilizations literally vanish before the advancing lines of higher civilizations armed with rum.

The same general effect is seen in rich communities and great cities. Through the beverage traffic in alcohol instruments of progress are prostituted to the creating of a degeneracy and decay, unknown in like degree to poorer communities and scattered rural populations.

Serious effects are manifested upon what should be the naturally selective breeding of the race which would otherwise produce an ever-advancing civilization. The most promising families, those which get up in the world, are so frequently the conspicuous victims of drink, so that the best specimens, the most virile families, tend to degenerate and become extinct.

A moderatley humble lineage seems to be far safer than a proud one, when alcohol is at large.

And, as has already been pointed out, drink, in lowering the vitality and resistance of man, fills the world with disease and premature death, laying upon society heavy burdens of crime, pauperism and insanity and interfering with those forces which uplift and advance civilization.

From whatever angle we study man's relations to nature, we discover that drink has both hindered and perverted all of those necessary agencies of progress by which a civilization is built, and by the sound functioning of which civilization endures.

Alcohol and the Spiritual Basis of Civilization.

As the foundation of civilization lies in the relationship of man to nature, so the structure of civilization is built on the general relationship of men to their fellows. As drink undermines the foundation, so it both hinders and disintegrates the structure.

Justice between men and nations is the first requisite for that harmony and coöperation necessary to the building and sustaining of an enduring civilization. It is fundamental both to the adequate production and distribution of nutriment, and to the exercise of those faculties of mind and heart which keep a civilization spiritually renewed. Through good government alone can such justice be administered, and such international ideals be maintained,

but the foundation of good government is a high standard of character both in the governing and the governed. In autocracies and groups of autocracies the enforcement of justice demands especially high standards in the rulers; in democracies and groups of democracies it must inhere in the people who choose the rulers. We have noted how alcohol lowers the average of character, disintegrating the cell-machinery of the high faculties, such as the sense of right and justice, the passion for leaving the dominant reactions of life to be determined by that inferior part of the brain which man has in common with the brute and in which self-interest rules without the tempering overlordship of love, mercy, and self-sacrifice.

In the long centuries of the world's ignorance as to the nature of alcohol, with the rulers almost always addicted to drink in some form, often to an extreme degree, and transmitting their lowered vitality through heredity to their successors in power, the accumulated tyranny, oppression, cruelty, and misrule caused by alcohol transcends the imagination.

In a democracy, when drink becomes general among the people, patriotism necessarily declines, the electorate becomes venal; political control falls into the hands of selfish interests whose object in controlling government is for the purpose of preying upon the people and their patrimony and enriching themselves at the expense of society. It is natural and inevitable that when drink becomes general and

long continued among a group of free peoples the average standard of character will fall below the level necessary for honest elections. Corruption will become common. In time, liberty itself will perish, justice will fail and a blight fall upon the civilization. In the last analysis drink has been the primary cause of the repeated disintegrations of free institutions in human history. Drink is inherently destructive of individual self-control, the prerequisite to successful self-government. Any hope of building an enduring, free civilization with the beverage alcohol traffic as one of its elements must be vain.

The natural and just conception of civilized government is that the very object of its existence is to promote the highest permanent welfare of all the people governed. As knowledge of the true nature of alcohol spreads men realize that this object cannot be attained with liquor in the land, and that the first duty of such a government is to destroy the liquor traffic. Consequently the liquor traffic, impelled by the dictates of self-preservation, must actually control government at such a juncture or perish. That is why the hand of this sinister traffic is seen more and more in politics, as pointed out in a previous chapter. This modern extension of the political activities of the liquor traffic is so far advanced already that the future, for some of the units of modern civilization, is a grave problem. Constructive moral forces are now organizing in wide-flung

efforts to break the strangle-hold of liquor upon these existing governments. Destiny is waiting upon the success of their efforts. If liquor wins, good government will ultimately pass and justice disappear. When justice goes, not only the nations, but the civilization they have made, will topple to their fall. Just as surely as cause and effect continue, drink, if it continue, will repeat what it has accomplished in the past—the overthrow of the best systems, built up from the noblest philosophy. All democratic systems must fail when the peoples which compose them degenerate.

The development of an advanced civilization not only requires justice between men and nations, but that peace between men and nations, of which justice, tempered with love and mercy, is the corner-stone. Manifestly, no civilization can achieve its proper ends while a large part of the substance and vitality of the peoples which create it is destroyed by disorders and contentions within and by wars from without. Some writers have advanced the theory that war is necessary to the advancement of civilization. So it is as a purely scavenger process, analogous to the war going on in the human system between the white blood cells and antibodies and intruding enemies. The necessary basis for war is found in degeneracy. Remove degeneracy and there would be no more necessity for wars within the human species than within any other species in nature. Put an end to degeneracy, which is only another way of

saying put an end to drink, and wars will cease from the earth.

The degenerating effects of alcohol, in throwing the dominant activities of men's minds on the base of the brain where the more primitive brutal instincts hold forth, has the same effect in undermining peace between nations that it has in undermining peace between men. The relationship of cause and effect is precisely the same. Drink is so manifestly a social irritant, so notoriously the mother of the mob spirit, of violence, rioting, incendiarism, anarchy, wanton destruction, that in any great catastrophe the first act of intelligent governments, as pointed out before, is to close the saloons and shut off drink.

As transportation develops, and nations are brought close to each other, it is of fundamental importance to the peace of the world and to the progress of civilization that the "consciousness of kind" between men should broaden. If human evolution could follow its normal course, we could see a time approach when all men everywhere would realize fundamentally that they belong to the same species, that they are brothers, children of the same Father, treading the same path of life. But while a civilization is debauched by liquor, fear, hate, suspicion and all those baser characteristics which constitute the reactions of the lower brain cannot be eliminated from international relations. Closer proximity, under these conditions, instead of developing neighbourliness, only engenders fur-

ther distrust and augments the menace from other nations. It is physiologically fundamental that while a civilization is saturated with drink it will of necessity spend itself from time to time in recurring orgies and cataclysms of interdestruction. The attitude of one nation toward another will inevitably approach that of one wild beast toward another of a different species. Each will think the other is lying in wait for its life, that both cannot live in the same world, and that one must destroy the other or be destroyed.

With a world steeped in liquor, with the top parts of men's brains numbed and partly atrophied and the principal activities thrown upon the base of the brain, it was inevitable that the bridging of space and the improving of transportation should have brought, as it did, a swift growth of armaments and militarism, and the hurrying on of economic rivalries and trade wars until the world became a collection of vast military camps. When war finally broke it was almost inevitable that it should spread to the ends of the earth. It was inevitable that a thoroughly alcoholized nation should turn all the forces of nature to the purposes of destruction, that the philosophy of might should assert itself; and that the Hun should reappear on the earth with the policies of ruthlessness and wanton destruction characteristic of past barbaric ages.

Temporary order can be established in a drinking mob by a force acting on its brute-

instinct of self-preservation, but permanent order cannot prevail in society until drink is cut off and men become sober. Such a peace of the brute may be reëstablished ere long in the bleeding world, but it is vain to hope for abiding peace until the world becomes abidingly free from alcoholization.

Peaceful commerce between nations, in mutual service and mutual confidence, is necessary to any world-wide civilization. The highest civilization will only be attained when all nations and races coöperate in complementary and supplemental activities directed toward the highest common welfare of the whole race; and this highest welfare consists in the maximum advance of the race along the line indicated by its physiological evolution, the building up of those attributes and capacities which operate in the growing part of the race's intellectual machinery—the top brain. This ideal condition would involve the coöperation of the whole world in a systematic elimination of the agencies of degeneracy and destruction, and a systematic development of the agencies of uplift and construction.

Science, by the bridling of nature's forces, has practically removed time and space, the physical barriers, and has developed adequate agencies for universal intercommunication and coöperation. The barriers which remain are moral and spiritual, barriers of prejudice, selfishness, fear, hate, and distrust. Nations largely steeped in alcohol are and can be in no

fit physical or spiritual condition to eliminate these barriers. The only way to remove them is to remove everything which helps to create and maintain them, and alcohol is one of the chief factors. Confidence, good-will, and love—the attributes which enable the practice of the Golden Rule and which constitute “the fruits of the spirit”—can only attend upon high moral and spiritual development. They are, in fact, the latest and highest attainments in human evolution and, as we have already disclosed, are the first to have the brain cells in which they operate withered by repeated potations of alcohol. It is clear that while drink is at large, complete brotherly coöperation of the nations is impossible.

Every failure of the spirit of the Golden Rule between nations means a corresponding loss of harmony, a restriction of coöperation, and a loss of efficiency, with a commensurate decline in civilization. It is scientifically impossible for an individual, a state, or a nation growingly to apprehend and follow the teachings of Christ, and persist in drinking alcoholic beverages regularly, even though temperately. The general decline of religion among a people as the drinking of alcohol advances is marked. If this drug be left a free hand the Christian nations will destroy the un-Christianized nations with rum before they can convert them to Christ. Christian civilization and drink cannot abide together. A prime prerequisite to a reign of brotherly love between the nations, to the re-

moval of the barriers of hate and the development of full coöperation,—just as it is an essential to the establishing of enduring peace and liberty—is the suppression of the beverage alcohol traffic.

Drink has played and is now playing a major rôle in the drama of civilization. It limits man's relationship to nature, his relationship to his fellow man, and his relationship to his Maker. By its effects upon the human brain and the consequent lowering of average character, drink upsets the whole scheme of civilization and thwarts the spiritual evolution of the race.

It has lowered the powers of bodily resistance to physical enemies. It has limited invention and curtailed the development of tools and appliances, thus delaying the mastery of nature's forces and prolonging the period of insufficient production and distribution of nutriment, clothing, shelter, and the other needs of civilized man. Its heaviest blight has been upon the fairest lands and the largest cities, the naturally opportune seats for the highest civilization. It has seized every improvement of commerce and instrument of progress, and prostituted them to the furthering of its malevolent purposes. It has made its deadliest thrusts at the heredity of the great, the noble, and the kingly, leveling humanity morally and intellectually to a race of comparative scrubs. It has transformed rulers and leaders into tyrants and oppressors, liberty into license and patriotism into cor-

ruption. It has blighted the free institutions of the past, and is steadily undermining those of the present. It has upset natural cordiality between capital and labour, between employer and employee, and has augmented the industrial disorder of the world. Before its march, natural justice has waned. Myriads of men have been cheated of the full exercise of their physical and mental faculties and many denied nourishment for the body, the two primary factors of development and progress. Under its poisoning effect, disease and death multiply everywhere. Under its degenerating, desocializing influence good citizens become criminals by the thousands, the self-sustaining become paupers, and anti-social forces are let loose throughout society. When nations become largely saturated with it, all those base and selfish motives which it brings to the fore in an individual it makes dominant in nations, with results monstrously horrible because of the greatness of the destructive powers then unchained. Civilization must reckon with this vitiating, degenerating drug, for however fair the fabric, however high the degree of human brotherliness a civilization may attain, this drug can destroy it all. A thing which makes an individual man anti-social in the most intimate and tender of all voluntary relationships—that of wedded love—is a root-curse and deadly menace to all civilization.

History, as well as science, offers proof. There are no human records so old that they

do not speak of alcoholic intoxication, and we find it practiced in practically all the primitive tribes to-day. Some diseases of the body can be traced far back in history, but the oldest of these is youthful compared to the accumulated hereditary effects of alcohol. It was known and used in the time of Zoroaster, over six thousand three hundred years B. C. Its operations are discussed in Egyptian records reaching back to 5400 B. C., in Chinese records of the year 2207 B. C., in Hebrew records of the twelfth century B. C., in the records of India as far back as the Fire Worshippers, in the records of Greece in the ninth century B. C., and in the records of Rome beyond the beginnings of Roman civilization.¹

Throughout history we can trace the primary influence of the public attitude toward alcohol on the rise and fall of empires. Practically without exception we find the rises of empires to have been contemporaneous with abstemiousness on the part of the peoples composing them, and usually with prohibition as the law of the state. Particularly striking are the rise of Grecian greatness through general education of the people and strict prohibition of alcohol under the laws of Lycurgus, and the rise of Rome during its four hundred years of absolute pro-

¹Bible. ShooKing—"Chinese Bible." Laws of Manu—"Bible of India." Rig Veda. Homer (Iliad, Odyssey), Plato (Laws, City State), Aristotle (Politics), Herodotus, Pliny, Pliny the Elder, Castel de Foulanges, Dorchester, Legge.

hibition. In no case has an empire ever been built up by a dissipated people, and in no case where general dissipation appeared has an empire escaped decline and downfall.

I do not contend that other causes of degeneracy were not in operation, especially the vice diseases with their ghastly toll; but we now know that liquor is the principal inciter to the contraction of these diseases and is the dominant cause of social degeneracy.¹

In a general way great cities, the centers of civilizations, have supplied in their dense populations,—in the wealth of their upper classes seeking elation and in the misery of their submerged classes seeking oblivion,—propitious soil for the alcohol habit. But the less favoured frugal citizens outside could not afford the wines of the rich and, undegenerate and possessed of larger freedom and initiative, migrated to new lands, carrying the racial germ plasm intact. They regularly moved to lands lying in the temperate zone to the westward, and saw new empires gradually arise and repeat the historic cycles of their predecessors. Thus the hardy, rural peoples, of little culture but of sounder physique and greater initiative, have been moving westward ahead of the spreading cults of dissipation. They have preserved the integrity of the germ plasm of the species down

¹Dr. Douglas White, Forel, Haven Emerson, Mary Scharlieb, Victor Horsley, F. W. Mott, Saleeby. Report of Royal Commission on Venereal Diseases, London, 1916.

the ages and, in the physiological sense, have renewed civilization while the alcohol parasite has strewed the path left behind with the ashes of empire. With the filling up of America there is now no more virgin west.

Furthermore, the mastery of nature and the annihilation of space have brought the human race together into one organism anyhow. The whole world, with its heterogeneous civilizations in various stages of alcoholic degeneracy, has now become much like a single civilization of the earlier centuries. It was not only natural, but almost inevitable, that one of the early outcomes of this change should be an orgy of inter-destruction; that part of the world should challenge the rest of the world to meet it upon the battlefield and turn into channels of destruction the substance of the race,—the accumulations of the past, mortgages upon the future, and much of the manhood and vitality of the race. To free the future from such, or a yet more terrible, cataclysmic horror, no organized and panoplied mass of humanity dare be left to steep its gray matter in alcohol and so force its social reactions to be largely governed by the base of its composite brain. Brain-stuff—brain-stuff of the most delicate and highly developed order, fit for the uses and developments of those moral and spiritual capacities which are the only hope of an organized world, is the most precious possession and the most enlarging need of the whole race. Alcohol is its destroyer. Whatever the unsocialized eras of human his-

tory may have managed to endure of this drug's ravages, this era can no longer endure them. Speaking in terms of the entire human race, antiquity was the era of the body. The more immediate past has been the era of the mind. We enter upon the era of the soul of humanity. What the future holds in store of exquisite developments in the top brain of man we may only dimly dream. But this we know: A civilization which blights its top brains with alcohol will never attain them.

VIII

THE ONLY CURE

Alcohol's Appeals Reviewed.

THE previous chapters, setting forth the truth respecting alcohol and its effects upon individuals, nations and civilizations, furnish abundant information for a correct diagnosis of the nature of the disease. Alcohol has an appeal which creates the initial demand. It has degenerative qualities which increase and intensify that demand. And it has strongly commercialized sources of supply.

As to the first, we have noted that alcohol's quick suspension of the faculties latest in evolution, especially those of inhibition, causes a reversion toward lower types and a rising up of the suppressed primitive man within, attended by a feeling of expansion, of strength, of a fullness of life, of inspiration. Also, that the effect of the feeling of well-being and stimulation, thus falsely produced, appeals to a motive universal in mankind—the motive of elation, one particularly powerful with the young, with the rich, with the upper classes, and with young nations and rising races. We found, too, that the subsequent alcoholic narcosis, blurring con-

science and judgment, producing temporary forgetfulness of troubles, relief from physical, mental and spiritual suffering, and a feeling of rest and oblivion, appeals to a motive also universal in mankind—the oblivion motive, especially powerful among the lower classes, the down-trodden, the poor, the older nations and decaying races. As to the second item, that of alcohol's ability to increase and intensify its own demand, we have shown that the poisonous effect of this drug, as of other habit-forming drugs, is such that each successive dose must be larger than the previous one to produce the same sense of elation or of oblivion. At the same time the appeal of alcohol is thus enlarged, the powers of inhibition and self-control in the user decline under its effects. As the craving grows and the power of resistance declines, the victim tends to become helpless in the grip of the habit. Of course the power of the habit varies with the stage of its development and with the natural resisting powers of the individual, but all who drink are either full slaves or fractional slaves. This being so, any professed cure which leaves the drug accessible to its addicts is manifestly a fallacy. Pathological conditions produced by drink in the parent are intensified in the offspring and cause the second generation to be more susceptible and less resistant. The ultimate end is not in doubt. The disease becomes more and more difficult with the lapse of time and tends to become incurable.

These things are as true of society as of individuals. The alcohol appeal to society, in the absence of the knowledge of the truth, is closely analogous to its appeal to the individual,—the elation motive in the feeling of sociability and good cheer, commonly invoked in hospitality, in social gatherings, ceremonials, and propitious events; and the oblivion motive seeking relief from social ills, forgetfulness of suffering, poverty, squalor, wretchedness, discontent, and political and social wrongs. As in the appeal to the individual, both these motives are universal in organized society.

The effect of habit and heredity and of the lapse of time is the same with society as with individuals. The grip of the habit grows socially stronger with the lapse of time. The disease sinks deeper and deeper into the industrial, social and the political life, while the powers of collective resistance dwindle. The disease tends to become less and less amenable to treatment and finally to become incurable save by an impoverishing social cataclysm.

With its double appeal, both to the individual and to society, and with general ignorance of the truth respecting it, alcohol has a vogue as wide as humanity.

The Alcohol Supply.

While alcohol can be produced in the laboratory by many processes more or less difficult and expensive, its production in nature through the operations of a fungus parasite, the yeast

or ferment germ, is spontaneous and easily accessible. This fungus is found practically everywhere, and is ever ready for its scavenger operation, that of feeding upon damaged fruit, grain, vegetables, etc., and excreting its toxin, alcohol. The manufacture of alcoholic beverages, therefore, in one form or another, is naturally among the very earliest achievements of practically all peoples, even the most primitive. The manufacture in industrial and commercial nations is easily developed to gigantic proportions at a cost exceedingly low. With such an easy, cheap manufacturing process for this powerful, habit-forming drug which makes a universal appeal to humanity, there is no limit to the financial possibilities of its exploitation. Greed is so universal and in many cases so dominant and inconsiderate that, inevitably, the parasitic alcohol traffic tends to rise everywhere, at all times, and to continue sucking away the substance and vitality of its host until the host perishes. The idea of regulating such a parasite is ludicrous. The parasite itself will inevitably control the regulator and will proceed unchecked until the highly organized society which harbours it disintegrates and perishes. All history bears out this conclusion.

As the demand and the possible, unchecked supply are both coextensive with humanity, we must therefore recognize that this social parasite is always present and ready to become virulent in the body social, just as are some

disease parasites in the physical body. When inhibited we must realize that it is always ready to resume operations the moment the resistance of the host relaxes. It is also clear that the alcohol parasite tends to spread its operations from one point to another like an infectious disease that does not stop until it covers the whole system. This is natural, since susceptibility to its attacks is inherent in the individual and in society alike. We further know that society has a long history of drinking ancestors; that mankind has a bad alcohol heredity increasing the natural susceptibility and the difficulties in the pathway of successful treatment. Our conclusion is simple and alarming. The world is in the throes of a deep-seated social disease. With this knowledge, with an understanding of the nature of the disease and the characteristics of the parasite which produces it, we are prepared to take up the question of treatment intelligently.

The Cure.

The disease being organic, that is, one involving the very tissues and organs of society through its attacks upon the cells which make up the functioning tissues of society—individual human beings—any successful treatment must be organic, and salvage and safeguard these individuals. In the past it was physically difficult and intellectually impossible to effect a genuine cure. With the present knowledge of alcohol itself, and the facilities

for public education, we may say that it is now possible, within a reasonable time, to counteract the demand and shut off the supply. And to effect a cure we must really reach the sources of the disease and both neutralize the motives to drink and inhibit the activities of the parasitic traffic which creates and offers the supply.

While beverage alcohol appeals to the motives of elation and oblivion, the truth about this deadly, habit-forming, degenerating poison, in its warnings to the individual and to society, appeals to the motives of self-preservation, evolutionary development, protection of offspring and safeguarding the species. In a normal condition of health these truth motives are each and all stronger and more fundamental than the alcohol motives, and would more than neutralize the alcohol motives if brought in opposition. We see, therefore, that the truth about alcohol, if taken early to undegenerate peoples, would insure immunity. But the process would have to be repeated with each succeeding generation. In the world, as we find it to-day, alcohol-heredity and alcohol-poisoning are widespread, rendering the alcohol motives disproportionately strong and the truth motives unnaturally weak. These conditions incapacitate individuals for the effort necessary to resist the power of the habit even when the truth about alcohol is learned. We see, therefore, that in the late stages of the disease, such as we find throughout most of the world, the alcohol motives are so powerful, and so but-

tressed by the power of habit, that the truth motives alone are not adequate. Education must needs be supplemented by the removal of the presence of the drug itself. Therefore the true organic treatment for the world to-day must consist of two parts, education, which strikes at the demand, and prohibition, which strikes at the supply. These two instrumentalities must go hand in hand. The education instrument is the more fundamental and has largely to precede and completely to follow the prohibition instrument, but let us not forget for an instant that the prohibition of the traffic in alcohol is to-day an absolute necessity for the world.

In practice, successive campaigns for prohibition, wisely directed on a high plane, prove most effective in advancing educational progress; and the prohibition aim will be the sooner realized and the more effective and enduring on attainment according as the educational work has been extensive and thorough. On the other hand, the shrewd minds directing the policies of the liquor traffic know full well the transforming power of the truth about alcohol as it spreads among the people, so the great resources of the traffic and its political and governmental connections are always used to restrict or control the means of public information. When honest education begins the traffic does not hesitate to put forward misleading, confusing, and, in many cases, absolutely false utterances regarding alcohol. Consequently, just as we can only realize effective prohibition after

patient, widespread education, so we can achieve full education only after winning prohibition. Then, as untrammelled education advances public intelligence respecting the drug, the prohibition of traffic in it can be more effectively enforced. Thus these two instrumentalities, operated jointly, can effect an ultimate cure and insure immunity for generations to come. It must never be forgotten, however, that both instrumentalities will have to be maintained till the end of time.

In eradicating yellow fever and malaria the first step was to inform the people with the truth about the insect carriers of them; but this would not have been effective had it not been followed up by the screening of houses and by the enforced oiling or draining of pools and swamps, and the screening of tanks, where mosquitoes breed. On the other hand, screening and draining could not have been brought about, with the expense and inconvenience they involved, had not the people been instructed in the truth. Furthermore, coming generations will cease screening and draining if they fail to receive the yellow-fever truth from those who precede. The truth must be handed down as one great acquisition of the race along with the screening and draining. So the truth about alcohol must be passed on as a priceless acquisition of the race along with prohibition laws.

The Educational Objective.

The motives which the truth respecting alco-

hol will arouse are as universal as the drink motives, and the educational campaign will have to be world-wide.

With full appreciation of the value of the co-operation of those in authority and those of influence and power, it should be borne in mind that it is necessary to seek and convince the great masses of individuals who are subjected to the alcohol appeal. There is no royal road to this educational goal. The cure cannot come as a gift—not even from the most beneficent sovereign. It must be developed in the hearts and minds of the suffering myriads. The only adequate objective is to reach all the individuals of the world of this generation, and to insure that the same truth shall reach all the individuals in the generations to come. Such a campaign is the charter of the integrity of the race.

Prohibition of the Traffic.

As in striking at the demand, through education, so, in striking at the supply, through the prohibition of the manufacture and sale, the objective must be as comprehensive, thorough and organic in its nature as the disease itself. Because of the alcohol-impaired heredity of the race, and humanity's susceptibility and predisposition to alcohol's appeals and mastery, there is a sheer biological necessity for the universal inhibition of the parasitic traffic in the drug. The vast financial inducements to exploitation of the public with alcohol and the inherently

predatory nature and lawlessness of the traffic, together with the traffic's paralyzing effect upon legal and social restraints as time passes, make it inevitable that with any regular source of supply anywhere, the disease will spread from that infecting center throughout the whole organism. It is vain, therefore, to expect any curative results from license or regulation in any form. These only strengthen the traffic by adding to it the partnership of the regulating agency and a respectability which makes all classes of society its easy prey. License and regulation are the eager desiderata of the traffic itself, and have been the means by which it has accomplished widespread fetherings of governments and achieved vast political power for its own evil perpetuation. Prohibition is the only reasonable attitude for any government. Prohibition must ultimately be complete in each nation. No country can remain part "license" and part "prohibition." The law by which the prohibitory policy is decreed should be in each case the stable, organic law, not subject to rapid fluctuation; so that the young may have a chance to grow up without the appeal of alcohol. Enforcement statutes should be progressively drastic and their execution should have the unrelaxed vigilance of all enemies of alcohol throughout years and decades and generations to come.

Even the world itself cannot permanently endure half the slave of, and half free from, this drug.

Industrial competition between "wet" and "dry" groups of nations will, if the prohibition nations hold their status, at last bring compelling economic forces favourable to prohibition to the fore throughout the balance of the world.

The task is gigantic but it can be achieved. It constitutes a world-endeavour of almost staggering magnitude, when viewed without an adequate comprehension of how all the scientific, social and political progress of the race has fitted it for the triumphant prosecution of this vital labour.

Past Failures no Criterion.

The depressing failures of ancient prohibition régimes are no criterion of the outcome of the efforts now making. The elements of a true cure were unattainable then. Varying degrees of prohibition had their vicissitudes, brought their modicums of relief for a time, but accomplished no cure because there was no possibility of a stable attitude of either government or people.

Throughout all the centuries, while the fruits of alcohol in copious users were plainly apparent, its effects upon every user were not known. They were never known until now. The possibility of fixing such truth in the mind of every human being is of recent attainment. To-day, the poorest read, and print goes everywhere. To-day, alcohol is ousted from the category of medicines, boon stimulants and

things which can be moderately used with benefit and without damage. Its hoary deceptions are unmasked. It is known as the progenitor of formerly unimagined horrors. The truth respecting it has become irresistible provided it be known, and agencies for informing any entire people are available. To cap all, those portions of the human brain which alcohol first disintegrates are become primarily essential to the modern complex and socialized world. The truth, adequate means for its dissemination, and the motives which make that truth paramount are now conjoined.

Proof that the world-wide task can be done is found in the extent to which free peoples, such as those of the United States of America and the Dominion of Canada, have been convinced and are making the prohibitory policy their free and rigorous choice. Their attitude on this issue constitutes the greatest collective exercise of the will to be sober the world has ever witnessed, and the results which are being achieved under combined education and prohibition are startling indeed. In the United States these methods are producing laws more comprehensive and drastic than any ever known among a free people, and a public sentiment which supports and maintains them with crushing majorities. The world-wide cure can be achieved. It merely waits on a world-wide determination to use the only treatment which will avail.

We are now, so far as the present civilization

is concerned, facing this evil in a struggle which will be as determinative for the modern world as have been the attitudes of other, elder civilizations toward this drug to them. What we have achieved in a physical and intellectual way will no more permanently save us than such things saved them. We, too, can ebb, leaving as flotsam the things of science, literature and art which we have achieved and by which this age would thereafter be known. We can develop such internal conditions, through widespread use of alcohol, as shall inevitably, because biologically, result in the disintegration of the correlated social structures we have reared, or, we can lead on to the ultimate ending of these recurrent saturations with alcohol by which nation after nation and civilization after civilization have been aged, debilitated and made to pass.

All the laboured strivings of the past—the sweat of bodies, the toil of brains and souls, have culminated to-day in such an organized relation between the peoples of the world as to make spiritually perceptive brains imperative, and in such scientific intelligence as to yield an adequate knowledge respecting alcohol. The racial future to which the present state of world-organization points cannot be achieved by a maudlin, alcoholized humanity. We front another instance of the ever-recurring and divinely ordered situation in which a possible "Promised Land" is set before elect peoples of the race and they are invited to enter on behalf of all

humanity. This is the opportunity and responsibility which is now set before the intelligent nations of the world, and the choice of entering, or refusing to enter, will have to be made. The nations of the past made their choices without access to all the truth respecting this curse. But the truth is here. The forces fighting for the integrity of the race and for an unbroken onward march of civilization now have weapons which cannot be withstood. The disease is fully known. The cure has been tested and proved. What the final outcome of the struggle will be we cannot doubt, knowing the laws of the human mind. But whether the victory come soon or late depends upon the willingness of all those to whom the truth now comes to act as trustees of humanity's future and combine in power to effect the cure.

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