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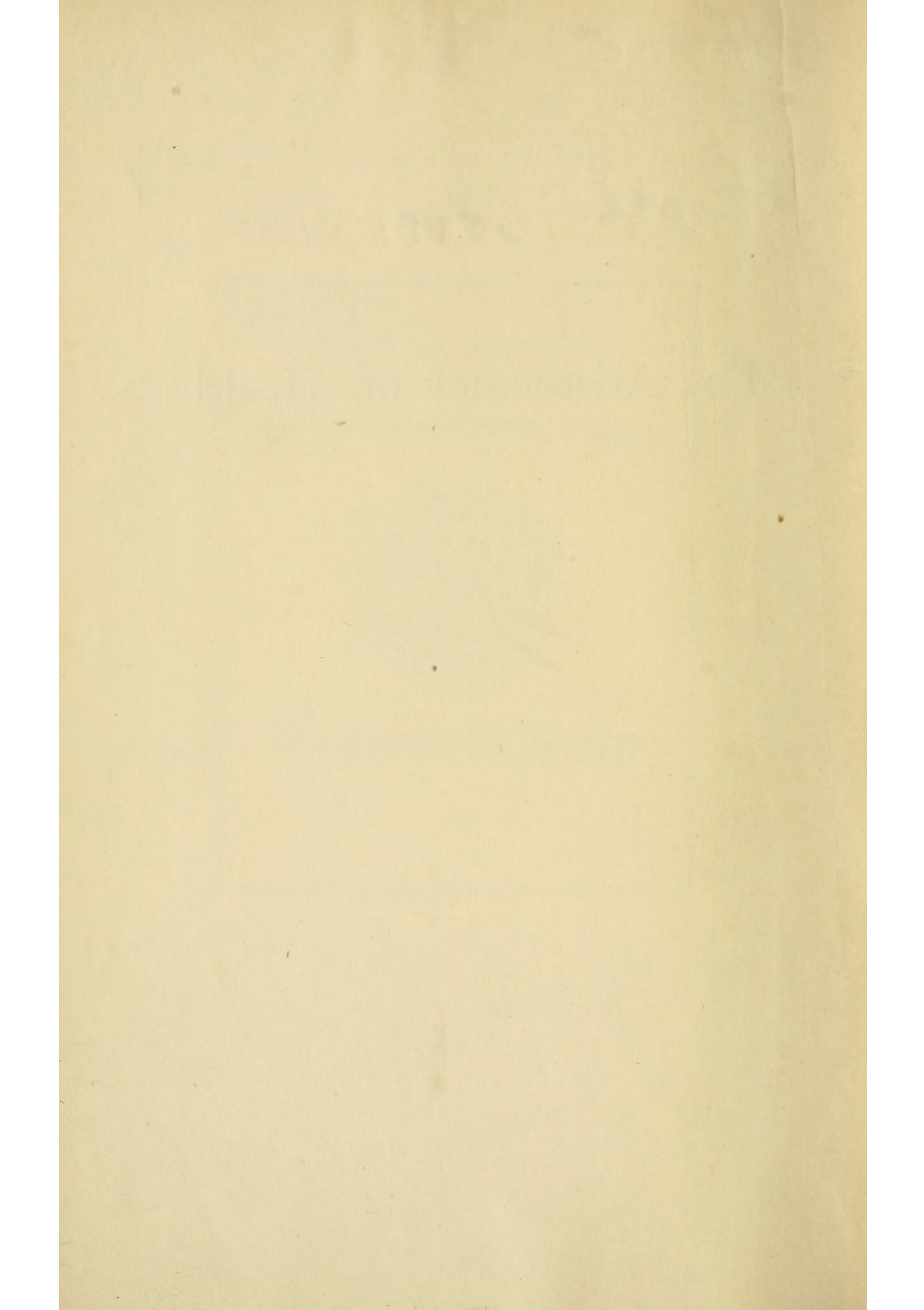
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The Aristocracy of Health

*A Study of Physical Culture, Our Favorite
Poisons, and a National and International
League for the Advancement of
Physical Culture*

By
Mary Foote Henderson

Washington, D. C.
The Colton Publishing Company
1904

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Preface

IT is delightful to catch a new view of the world as discovered by the physical culturist who has brought his health up to a certain standard. This is quite another world when seen through lenses which are not blurred nor improperly adjusted; when the fine machinery of the living organism no longer struggles either in self-defence or for repairs, but works easily and smoothly; when blood-corpuscles are no longer disintegrated, spiculated, and pale, but round, red, and rich laden; when membranes are no longer benumbed and inactive, as a result of irritating influences, but alert and absorbent, facilitating quick and easy building of tissues, and quick and easy elimination of natural waste products; when the body engine is no longer compressed by tight clothing, but is full in capacity; when the sensitized, photographic plates of the brain are no longer inert, but quick to receive and reflect correct, sharp, and lasting impressions; when the body-machine is no longer oppressed with the clinkers of surplus material; when reserve forces are no longer wasted or dissipated by avoidable devitalizing expenditures, but are rich in store.

Thus equipped with a living instrument in tune, the physical culturist finds the harmonies and symphonies of human existence infinite in kind and number. Problems not only of happiness, but of human nature generally, unfold their mysteries to him. He comes to believe that the world at large does not sufficiently appreciate how sound health, as gained and maintained by scientific living, promotes not only physical strength but moral strength, and that physical health scorning disease and mental health scorning sin, are mutually dependent.

Our health aristocrat who is strong, self-reliant, successful, influential, long-lived, and happy, finds that the continuance of youth depends largely on self; that old age is what we make it; that normal health is the richest prize of existence, and that this world is made for health and happiness.

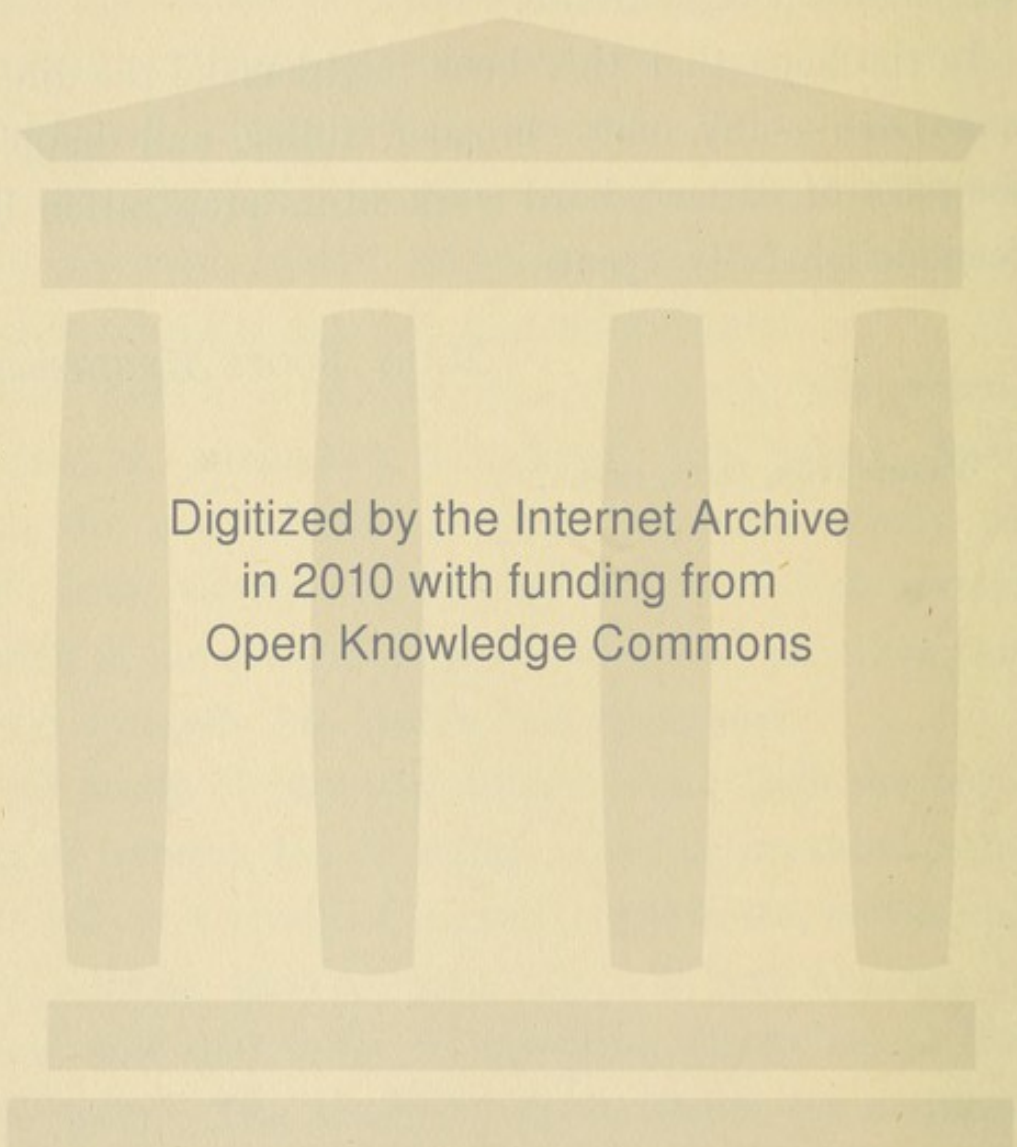
My study of physical culture began with the problem of tobacco, the so-called solace of mankind; and this led to a study of alcohol, opium, tea, coffee, and our favorite poisons generally. I was anxious to know how they differ in upsetting physiological law and order. The study of these agents for artificial happiness led to a realizing sense of their connection with the almost universal lack of sound health and happiness on the part of mankind. A comparison of human degeneracy in various countries along with

causes became also topics of absorbing interest. Problems of diet and other questions connected with physical culture naturally followed, as well as the means of relief from what is chiefly instrumental in robbing mankind of its birthright—health, happiness, and success in life.

In the hope that this book might make the life of some one—any one—broader, fuller, and happier, the time of earnest, hard work in its preparation has been delightfully spent.

MARY FOOTE HENDERSON.

WASHINGTON, D. C., 1904.



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The Aristocracy of Health

THE human race is ill. The human race is anæmic; and the world, which is a paradise but by man converted into a hospital, is seen and judged through the eyes of the invalid.

Dear reader, how many of your personal acquaintances are absolutely sound of health at fifty, at forty, at thirty? Three, two,—one? Mind you, do not place the standard of health too low,—not below that of a flock of birds, for example, each of which is equally whole physically and equally beautiful.

The birds of the air and fishes of the sea, the deer of the forest and lilies of the field, represent life of their kind in the fulness of its glory, but not so — man. A sound man -- a health aristocrat, a model for a Greek sculptor of old — is rare to see. Indeed, the violation of hygienic laws has been so general and long-prevailing that human degeneracy has come to be accepted as the appointed lot of humanity. Human life is but an apology, a makeshift, a compromise. The decadent condition of human life is such that some kind of a poison habit is supposed to be necessary in order to live presentably and contentedly.

And from a physiological point of view, what mongrel heredity! Oliver Wendell Holmes spoke of

man as a living omnibus, in which he carries all his ancestors. Who of us is not obliged to carry in that omnibus a flotsam and jetsam of human driftwood, which, in a shifting and decaying state, has been cast upon the shores of life?

And what training! With all our abundant conceit, our habits of life hygienically have been more than execrable. Our educational institutions have scarcely touched the edges of that training which the human race most needs, which promotes the respect due, and care for, the human body as a mechanism, a vehicle, the perfection or imperfection of which controls favorably or unfavorably every condition of life. Unlike aristocrats among the roses and the lower animals which man himself is pleased to train, he lacks the advantage of their superb development. He lacks that very culture he has given them,—the result of infinite care and study. In the training of the roses, the thrifty gardener relentlessly pulls by the roots all noxious weeds, and burns their seeds. He eliminates, as far as possible, all influences which deteriorate the life of his royal plant. What are we but the product of influences, good, bad, or indifferent, every one of which counts for good or ill? The physical training of man (so intimately connected with his moral training) has been left to chance and to passing fashions. Man's family, his college, his church, his town, his state, his country, have tolerated and encouraged the weeds and parasites which choke and devour the best of human life. For want of fostering care, how much of human flower and fruit has been lost to the world!

What is especially regrettable is the contracted narrow meaning of the term "health" when applied to mankind. This contentment with low physical standards has undoubtedly been the chief obstacle to the promotion of sound health. "I am well," says the man with his palsied palate, his want of relish for simple food, his defective eye-sight, his fatigues, his depressions, his pessimism, his indigestion, his colds, his avoirdupois, his sensitiveness to weather, his need of a drug, — alcohol, tobacco, tea, coffee, or pepper.

What is real health? Let us have a more expanded idea of its meaning. Health is more than mere unconsciousness of the existence of one's body. It is positive pleasure in having a body; positive pleasure in all activities which develop the best of life; positive dislike to all that degrades health. Good definitions of health are given in "Muscle, Brain, and Diet," an admirable book by Mr. Eustace Miles, M.A. (*Amateur Champion tennis player of England*).

"Good health," says he, "cannot be one-sided — merely appearance, merely appetite, merely big muscles, merely the capacity for hard work.

"True health like true virtue, is a combination of many things forming a harmonious unity. To be healthy one must be healthy from every point of view. . . . My new definition would supersede the old ideas of health by including them, by combining them, by correcting them and by expanding them. The really healthy man will not only look healthy, but he will be able to keep up with pleasure and without exertion, without stimulants, without fatigue, and for long stretches of time together, for many kinds of physical activity, many kinds of intellectual

activity, for which he will feel a positive tendency and desire. I consider good health to be not merely an absence of certain more or less definite signs of illness, but in being also a positive and active tendency towards whatever is good, the tendency to develop, as God meant man to develop, in every direction, both physical, mental, and moral. . . .

“The physical side is only one department of health. By brain work I do not mean simply the power of grinding and acquiring facts. I mean something more original and versatile than this — for instance, the power to see and apply in daily life whatever is useful in any given subject. . . . The standard of physical man depends upon activity, endurance, and skill.”

Mr. Miles again takes up the subject in “Avenues to Health,” as follows: —

“There has always been a tendency among Anglo-Saxon people to set up the mere athlete *quâ* athlete as the type of physical health, regardless of whether his intellect be developed and his morals pure and strong; . . . we do not consider the mere athlete *quâ* athlete to be a really healthy man. He has no more right to be called a healthy man than the foundations or scaffoldings of a house have a right to be called a house. They may become a good house; indeed, they are indispensable to a good house; but at present the good house exists only in potentiality.

“The anæmic saint has not the foundations or scaffoldings at all. It is true that he has never been set up before us as a type of all around health. But he has often been set up before us by the Church as a very ideal *man*. Hence some terrible misunderstandings and mistakes, especially among women.

“The anæmic saint usually falls short of our ideal in two

vital respects, namely, that he has neither an ideal body nor an ideal intellect. He is not necessarily well-informed or open-minded. . . . In setting up this so-called 'spiritual' person as an ideal, the saint praisers have usually implied that physical and intellectual health, activity, energy, endurance, adaptability, and attractiveness are of little or no importance. . . . The third and not the most undesirable extreme is the mere student, often a walking mass of useless information; . . . he may be neither physically healthy nor spiritually and morally healthy nor, indeed, is he necessarily even well-informed in important subjects, or open minded in any subjects. He also has been set up before us as a person not to be abused because he is unhealthy in body. We, when young, have been told to speak of him with respect, not as a brain merely, but as a whole man, and we have not been warned against respecting (and therefore imitating) his undeveloped bodily and spiritual state.

"Now there is great danger to the nation so long as any of those three extreme types, each with at least a third of the glorious nature more or less atrophied, be allowed to pass without censure. I mean, not that we should cruelly abuse the individuals, but that we should . . . allow to each his due credit in that one sphere in which he excels. But let us never permit the young and the uneducated to regard any one of these as the ideal. Let us always represent the three graces together, not as three individuals, but as three integral parts of one individual. Let us say to the young and uneducated, 'Be as healthy in body as is the healthiest athlete; be as healthy in spirit as the purest saint; be as healthy in intellect as the grandest genius. But do not be a foundation without a house, nor a house without a foundation, or without an intelligent and good man or woman to live in it and use it.'"

Mr. Miles considers that first and foremost among signs of bad health is the desire for stimulants, and perhaps even the liking for them. "I can go further," says he, "and positively assert that I consider my health to be not so good as it should be, if I can be even induced to take stimulants at all."

The natural, glowing, energetic fire of health — superb health — is seen and felt. It is magnetic. It makes for itself place and following. It is constructive. It is initiative. It is happy. It is humane. It is beautiful. It radiates strength and brightness. It agitates for the good of others. It compels pleasantly to be and to do one's best. Sound health denotes "pure, active, and strong" blood circulating easily in a body-machine, unclogged with waste products. It denotes membranes unbenumbed by poisons and readily absorbent. It denotes full reserve forces undissipated by deleterious influences. Sound health means not only vitality, action, and intelligence, but correct instinct and long life. As life advances and ripens, true health is always an increasing quality, for health feeds upon health; indeed, health must be largely judged by habitual tendencies, as they add to or subtract from physiological capital. Most fortunately nature always seeks to develop along normal lines, and struggles against health destroyers.

How to accumulate physiological capital is the study of the physical culturist. He must find best conditions, not as one stumbles across something in the dark, but scientifically through patient and careful experiment, observation, and study.

Again says Mr. Miles : —

“I believe that the search for health in its truest sense, and the maintenance and improvement of it when found, is among the first duties, if it is not the first duty, of mankind, and scarcely less, if at all less, urgent duty, is to help others by one’s own experience.”

And so the world is necessarily bettered for the health aristocrat. Each one raises the standard of the town and the country in which he lives. He is a reality and not a sham. Something in his quality strengthens faith in human nature. There is in him that royalty which is manifested in what is highest and best of everything, and which inspires and enriches all that comes in contact with it. To analyze him, one finds but nature unperturbed.

Civilization itself is but a process of evolution which improves and perfects the gifts of nature. It must, however, always hold to the laws of nature. If the foundation of civilization is not nature, not truth, not health, it is but a sham, and will not endure. Greatness of nations, in the majority of cases, has been but short lived, owing to contempt and abuse of nature’s laws. On the decline of physical health the suns of old civilizations have, indeed, all sunken into the night.

There was a time when men considered health a necessary qualification of true nobility. It was the time when “to be a Roman citizen was greater than to be a king.” It was during that wonderful era of Greece and Rome, before the stealthy entry of the devastating parasite of man and civilization — the poison habit.

We cannot say that wine, which has figured more

For less in all history, was not known in Greece or Rome during their periods of human splendor; rather let us say that in his steady western march, King Alcohol then had little hold in these countries, although his destructive work had been accomplished in Persia and other empires of the East. And let us also observe that in the devitalization and decadence of the peoples of the East, and later of Greece and Rome, they did not know in their wildest revels anything stronger than wine. It has remained for later generations to add to the list of human destroyers spirituous liquors, opium, tobacco, tea, coffee, and a host of other favorite poisons.

During the great eras of Greece and Rome, the highest possible estimate was placed upon health. Physical decrepitude was looked upon with abhorrence. Hygienic rules were enacted by the Grecian government, and it was required by law that every man, woman, and child should be so disciplined as to acquire strong and vigorous physical health. Of all possessions health was considered the richest; of all blessings, the greatest; of all virtues, the highest. In their opinion there could be no virtue without health—abnormal conditions of mind and instinct but following the upsetting of physical balances. Man, mentally and morally, depended upon man physically. The term “health” embraced health of mind and health of character, all concomitant with normal health of every faculty. They thought as Dr. Abernethy, who said that every man who is ill is a rascal, in that he has sinned by violating some rules of health. “*Mens sana in corpore sano*” (a

sound mind in a sound body) was their motto. It was the keynote for home training, for legislation, for art, for literature, for nationality.

What modern civilization most needs is the same reverence for the power and majesty of health. What the legislation of every country most ignores is the making of men.

But the world is again beginning to abhor physical weakness. Young men no longer boast, as in the days of Sterne and Samuel Johnson, of diseases which they do not possess, and feeble, fainting heroines of the early Victorian era are giving way to rosy and laughing products of hygienic conditions. The anæmic worshippers of nicotine, those knights of attenuated and spiculated blood-cells, will also pass away. The new blood-cell will be red of color and round of form. Indeed, the thought of illness becomes more than ever odious when one learns how to live, for disease is a waste of time, which consumes not only the time, energy, and happiness of self, but of others. Disease makes one helpless, unhappy, suspicious, ill to look upon, disagreeable, irritable, abnormal, — useless. In the incomparable human body, the most marvellous of all mechanisms, the nice adjustments are broken, the balances are upset. The machine is clogged with the non-eliminated and festering uncleanness of waste material. It is deprived of the building and maintaining qualities of pure blood. The mechanism is rusty and moves with difficulty.

“For performance of great work,” says Emerson, “it needs extraordinary health. . . . There is no chance in results. . . . With adults, as with children, one class enters

cordially into the game and whirl with the whirling world ; the others have cold hands and remain bystanders ; or are only dragged in by the humor and vivacity of those who can carry a dead weight. The first wealth is health. Sick-ness is poor-spirited and cannot serve any one ; it must husband its resources to live. But health or fulness answers its own ends and has to spare, runs over and inundates the neighborhoods and creeks of other men's necessities. . . . The advantage of a strong pulse is not to be supplied by any labor, art, or concert. It is like the climate which easily rears a crop which no glass, or irrigation, or tillage, or manures can elsewhere rival. It is like the opportunity of a city like New York or Constantinople, which needs no diplomacy to force capital or genius or labor to it. So a broad, healthy, massive understanding seems to lie on the shores of unseen rivers, of unseen oceans, which are covered with barks that night and day drift to this point. That is poured into its lap which other men lie plotting for. . . . Import into any stationary district . . . a colony of hardy people and everything begins to shine with values. . . . The friction in nature is so enormous that we cannot spare any power. It is not a question to express our thought, to elect our way, but to overcome resistances of the medium and material in everything we do. . . ."

Of the power of health and beauty Emerson says again : —

"It costs a beautiful person no exertion to paint her image on our eyes, yet how splendid is that benefit. . . . He is great who is what he is from nature. . . . I like a man standing firm on his legs of iron — well-born . . . handsome, eloquent, loaded with advantages, drawing all men by fascination into tributaries and supporters of his power."

Would that the records of our families could show generations of clean and honest blood, untainted by physical imperfections or drug habits! Could our beloved country establish an aristocracy of health, it could claim royal insignia worthy the immortal gods.

A country, whose national mentality is unperverted by the habitual use of poisons, would find its strength in peace and not in war; in order and not in riot; in law and not in anarchy. Its pleasure would express itself in industry; its religion would express itself in the care of health, and in kindness and justice to every living work of the Great Creator. In the utilization and garnering of its forces, the country dominated by sound health would express itself in great worldly prosperity. Nations too little recognize how methods of peace and sobriety command wealth.

Appreciating the fact that life in all forms and manifestations can be expanded in vigor, intensity, and duration under favorable influences, Lord Aberdare advocated extensive and accurate information regarding the subject of health, in the interest of the physical improvement of the British race. He set about to inquire thoroughly and systematically concerning the rates of growth, average stature, weight, etc., of men and women under normal and abnormal conditions. A committee was formed to collect facts on the subject.

The Rev. Charles Kingsley, Canon of Westminster, also studied this subject, upon which he wrote a book, "Health and Education." He considered ignorance of the laws of hygiene to be the chief drawback to physi-

cal development. Said he, "The people have too little knowledge for taking hold of the feelings and coercing the conduct." He thought vitality was weakened by bad air, bad light, bad food, bad water, etc., all of which engenders a craving for artificial strength. He argued that diseased habits of body engender dull, weary, and sordid habits of mind, craving any pleasure, however brutal, to escape from stupidity and emptiness. He found that the English population, degenerated by the free use of stimulants and narcotics, strove in vain to fight against the slower poison of bad air, bad food, etc. He considered that men stimulate with poison not only to prevent exhaustion, but to drive away dulness.

In Canon Kingsley's clever analysis of those suffering from *besoin de poison*, who would wish to be classed? First, ignorant; second, feeble of constitution and in need of artificial strength; third, dull, stupid, and requiring, for the sake of pleasure, brutal or abnormal sensations, which alone can reignite into a momentary glow the ashen embers of burnt-out sensations.

And yet what does it mean when a person is not at his best at dinner without a poison? Or after dinner without still another poison? Or in the morning, without a third poison? What does it say for stalwart manhood, when, in the heyday of youth, a young man needs any artificial support whatever to hold him straight, — possibly to prevent a feeling of collapse; possibly to prevent actual moroseness; possibly to prevent stupidity?

What does it mean if our youth is not beautiful and stalwart as an Apollo or a Perseus? Are all

our manly strength and beauty contained in fables? Is the majority of the human race anæmic, as a result, chiefly, of the self-imposed habit of some kind of poison taking, — possibly tobacco, possibly alcohol, possibly tea or coffee, possibly opium, possibly wrong diet, possibly poison in shape of the favorite drug taken as medicine?

“It aids digestion,” says the smoker. Why should one need an aid to digestion? Can one not naturally digest a meal? Are our heroes all decadents?

Dr. Cyrus Edson tells us how himself and some friends took it upon themselves to see how many absolutely sound and healthy women they could find. Three hundred likely specimens were questioned, — weaker ones not considered. Only eight out of the three hundred were found to be absolutely sound and free from physical blemish. “I am sure the proportion of unsoundness would have been even greater among men,” said Dr. Edson.

Dr. Sylvester Graham went still farther in his opinion, perhaps he went too far, when he said, “The grand experiment of the whole human family seems ever to have been to ascertain how far they can go in indulgence; how near they can approach the brink of death and still not die so suddenly and violently as to know that they have destroyed themselves.”

Success! Success! and the only vehicle for success is the incomparable human machine. If there is a manifestation of human life and feeling on this earth, apart from this mechanism, it is not known. Man is wholly alive or partially dead as the mechanism is sound or unsound.

"The world has little relation with poor mortals," says Felix Oswald, "excepting through their working physical machinery. The Prince of German philosophers is Fichte. Let his brain become congested, or his stomach decline to act, and what becomes of Fichte?"

What a rejoicing when humanity shall be reclaimed! The men and women of the future, from whose brain, blood and brawn, the taint of disease has been eliminated by generations of pure habit and untainted heredity, will be ashamed of weak nerves and poor digestion. The men and women of the future will not need the bolstering aid of poison to irritate or to paralyze, in order to live presentably or happily.

THE POWER OF RESERVE FORCE

WE are only as strong as our reserve force. It is the deposit to his credit that makes the rich man, and the credit deposit in the bank of life that makes the strong one. The strength of a nation is not so much indicated by a glittering army and navy, as by its reserve force which may command in time of need what suits its purpose.

Nature has so fashioned her living creatures that they are normally capable of exerting greater strength than the ordinary requirements of existence demand. There is a reservoir of vital energy, intended to be brought out for unusual necessities only. No function of the body is normally taxed to its utmost, except in moments of danger, for were it otherwise, death

would be possible upon the strain of any unusual exertion. This economy in nature's grand scheme of life is borrowed in the social law, as evidenced by man's desire to accumulate greater wealth than is actually necessary to support his simpler wants.

A hygienic mode of living keeps filled this reservoir of vital force, which enables its possessor, when occasion requires, to summon tremendous energies in the battle of life. It is this rich health aristocrat who scorns disease. It is he who endures. It is he who conquers.

There are, of course, many ways to dissipate one's reserves. For instance, all that one eats beyond the actual needs of the body-machine must be gotten rid of at the expense of energy. The power of relaxation — the power to *rest* while one would rest — which is acquired by physical culture, counts enormously in the conservation of forces ; worry, unnecessary tension of nerves, in fact any and every physical sin, must be charged in the account against reserves. Of all unsanitary conditions, however, there is none so potent for wasting reserves, or for weakening the powers of relaxation and normal sleep, as the introduction of actual poison itself into the body-machine.

Poison of any kind is an agent by which one may force the expenditure of reserve strength until exhausted. The anæmic — and he is one who poisons himself habitually, in however small a degree — draws more or less constantly upon his reserves, both for the temporary pleasures which his stimulant excites, and for the continual repairs of the body-machine which follow. And it must be remembered that the vital

activity used to get rid of a hostile element in the system, is *always* charged against the reserve account; that like any other kind of force, vital force is never manufactured from nothing, but from purely hygienic sources only; and that what is used to protect against unfavorable conditions, cannot again be used for other purposes. As Dr. Williams says: "Life forces are capable in each individual of enduring only a certain amount of resistance. If life forces are interfered with, just so much are they reduced in power."

Of course a man of high order of intellect and sufficient reserves may possibly gain success in the race of life, handicapped to a certain extent by the burden of devitalizing influences. Yet who can say how much greater would have been his success had he been free from the parasites which suck the substance of life?

The energetic and well kept machine that forces a steamer across the ocean, or a locomotive across the continent, is never pushed to its fullest capacity; neither is its force expended and wasted for useless or unnecessary purposes. Of how much finer workmanship is the machine that the reckless engineer of human life continually imperils! There is no subject in connection with physical culture at once so important and so little appreciated as this conservation of vital forces. Indeed, the only correct measure of health is the measure of reserves.

For the magnetism, the happiness, the power of an assimilative, easy-working, active, enduring, and attractive body and mind, the pursuit of health is pre-eminently worth while. It pays enormously to

respect it. How few have really ever known for a single day what the health aristocrat with his rich reserves, his superb energy, and restful repose enjoys continually!

The parallel of a financial and vital bank account does not hold in two respects. First: From the banker's books one may know the exact condition of affairs to the dimes and cents; but not so clearly or easily read are the journal and ledger entries in the bank of life. The computations there are but approximate, and the vital dimes and cents which add or subtract enormously are not counted at all. This habit of *spending and not counting*, so easily acquired, constitutes the most serious mistake of the inebriate. Second: One may or may not spend one's capital in drawing from the financial bank. In the expenditure of reserves from the vital bank one always expends vital capital. Baron Liebig touches this point as follows:—

“Brandy, in its action on the nerves, is like a bill of exchange, drawn on the health of the laborer, which, for lack of cash to pay it, must be constantly renewed. The workman consumes his principal instead of interest, hence the inevitable bankruptcy of the body.”

Reserve force at last rules the world. With health and training, the world is at command. While victims of the poison mania—the fatigued, the unhappy, the pessimists, the lazzaroni, the devitalized and demoralized of every country—are wasting time and opportunity, the health aristocrat, vibrant with life forces, mounts the wave of success. Difficulties

to others have been but pleasures to him — the enjoyment of surmounting them having given him his greatest and keenest delights.

The power of normal physical strength, untrammelled by weakening influences, is discussed in "Anglo-Saxon Superiority: To what is it due?" written by the Frenchman and patriot M. Demolins. As preface to a little story, here repeated, let it be said that seeing beautiful France on a down-hill grade, M. Demolins takes upon himself the patriotic task of finding the reason and means of relief. Misfortune usually comes so insidiously and gradually, especially when due to the siren of the poisons, that only acute observers notice it. All the late writers on the subject of French degeneracy (decrease in births, increase of insanity and crime, smaller physical stature, diminished longevity, lower standard of morals, etc.) are groping for the remedy. M. Depierris, along with a few others, grasps the truth, but M. Demolins and the majority of writers on the subject barely touch the main source of trouble.

If it is any consolation to France, I may here say that whatever may or may not be Anglo-Saxon superiority, the consumption of vital reserves that once devitalized ancient Persia, Greece, and Rome, modern Spain and France, now threatens to destroy this dominant race. Let poor France know that poor England, poor Germany, poor America, to say nothing of other poor countries, are busily at work sucking out their life forces through a tube of tobacco; they are pouring out the national life through a cup of alcohol; they are pricking out the national life with a needle-

point dipped in the juice of the poppy ; they are undermining the national life by the insidious means of any available poison that society happens to suggest, or that chance but casts in the way, and their evolution is also in reverse, as statistics abundantly show.

When one learns the exact physiological effects of poison-taking, one may justly declare that doom inevitably awaits the individual or the nation that delivers itself over to the habitual expenditure of reserve forces.

But to return to M. Demolins and what he says about English physical culture :—

“I have described a type of English school, which tends especially to train young men capable of taking care of themselves in life. Above all qualities, they train their boys’ energy, will, and perseverance ; the bodies are trained as well as the minds. M. de Rousiers and M. Bureau have described, in *La Science Sociale*, the same process of formation, whether in England or in the United States. They are taught to march forward and go ahead. . . . These terms do not frighten them, because they know exactly what they mean. They are not afraid of work. They know that their training has fitted them to surmount the difficulties of existence.

“And, indeed, that redoubtable Anglo-Saxon race has already ousted us from most of the advance-posts which we occupied in the world. . . .

“My aim, for the present, is simply to show that such a conception of existence (physical power) actually brings the greatest lot of happiness attainable, owing to the consciousness of superiority, and to the pregnant idea that it is easy for any man to surmount all the difficulties of ex-

istence. Here is an example as piquant as it is original, which I cull from *Le Temps* newspaper, under the signature of M. de Varigny :—

“ ‘Towards the end of last January, a number of young men of the best families were sitting together at a joyful supper in one of the fashionable restaurants of Boston. They were young graduates newly-ground from Harvard University, where all had distinguished themselves, both in their classical examinations and by their prowess at all kinds of sport. One of them expressed the opinion that only men who have no faith in themselves ever were, or remained, poor in the United States. He added that he himself, were he to lose the fortune left him by his father, would find it easy—even if he were to begin without a single dollar, and as naked as the babe just born—to pay his way around the world on a journey of one year, and return home at the end of his period rich up to \$5,000 (£1,000). A wager was made at ten thousand dollars a side, and it was settled that on February 22, Paul Jones should repair to the Turkish Baths of the Athletic Association, should there divest himself of all clothing, and at a stated hour start on his adventurous career around the world.

“ ‘The great difficulty was the start. Naked, Paul Jones could not start. He must find the means of earning some clothing, however cheap. Philosophically he forthwith began cleaning the boots of members of the club, and the humble compensation allowed for this kind of service permitted him to get his first food and then procure the indispensable clothing. This took him a fortnight—which was much, considering that he had only a twelvemonth before him. Once outside the premises, he had to live and put aside enough money to pay for the first expenses of his long journey. His plan was made: reach London, and thence start for India. He set up as an itinerant

news vender, a porter, a translator (for he knew French, German, and Italian). As a valet he obtained a free passage on an American steamer, and landed in London with fifty dollars in his pocket. He was now launched and destined to go on without stoppage. To his little capital he added the proceeds of some lectures which he delivered in London, and found it thus increased tenfold. He made an arrangement with some London newspapers which resulted in his making good all expenses incidental to his passage to India — one of which was the purchase of a judiciously chosen pack of goods, advantageously disposed of in Calcutta. This latter venture set him comfortably afloat. At the present time he is well on his way, and from the letters he writes to his friends and the reports he sends to the Press, it appears that he now regrets not having doubled the amount of his wager, even if he must also have doubled the amount which he is to bring back.'

"It seems," says M. Demolins, "that the laurels of this American self-made man disturbed the slumbers of the English, for *Le Petit Journal* informs us that two young Englishmen, wishing to show that John Bull is not inferior to cousin Jonathan in the matter of energy and the art of taking care of self, have just crossed France as the consequence of a similar wager."

Of course the young American who undertook his valiant enterprise needed for success a human machine in perfect working order. One can no more expect perfect and sustained work from an imperfect human organism than perfect and sustained work from an imperfect locomotive, an imperfect loom, or an imperfect sewing machine unendowed with more strength than is commonly utilized. Such physical equipment represents not only a competent instrument

for the accomplishment of any fixed purpose, but is a joy forever.

This "reserve force" has much to do with character. M. Pecant, in the *Révue Encyclopédique*, discusses character from a scientific point of view. What are its organic conditions? He tells us that character is the manner of thinking, feeling, and acting in presence of given circumstances.

"Let two men," says he, "have to confront the same condition, — total loss of fortune, for example. One is seized with despair, shame, remorse, shrinks from the effort which life under new conditions demands, and perhaps blows out his brains. The other springs up from his fall, strong with impatience to begin all over again."

Man, as a product, may be explained only by penetrating the inward springs of his action or feeling. "Literature," says Spinoza, "takes cognizance of our acts, but not the causes which make us act." It remains for science alone to treat personality as a definite thing, and character as a result of controlling conditions — physical health and social influences.

OUR FAVORITE POISONS

LIKE blight or rust, a poison habit of some kind or kinds, appears to have attached itself to the entire human race. The goddess of humanity should be called Anæmia. Indeed, somewhere on earth, almost every poison known to the botanist or mineralogist, is habitually taken in one form or another, for

one excuse or another, by mankind. That all mankind is not physically sound, nor happy, nor beautiful, nor successful, is little wonder. The choice of the agent for irritating or partially paralyzing the most delicate and wonderful of all mechanisms, the human body, is but an accidental circumstance. It is anything of a poisonous character, which is thrown conveniently in the way and tested. The special nature of the drug need not matter, since the general effects upon the human organism of all drugs are approximately the same. "There is an analogy of action in all poisons very similar," says the great Dr. Richardson,¹ "with certain differences — exactly similar, when they all produce death when carried a little further."

The invigoration produced by the taking of milder doses of poison, represents the system struggling to rid itself of an enemy, and the reposeful feeling of poison represents the system overcome and partially paralyzed by a stronger dose than it can for the time endure. Any and all indulgences in poisons are

¹ So many quotations are given later from Sir Benjamin Ward Richardson, M.A.M.D.F.R.S., that a word of introduction may not be amiss. He is the English scientist and physician to whom, perhaps, of all others, the world is most indebted for knowledge concerning the physiological effects of alcohol and other favorite poisons. The scientific researches of Dr. Richardson are among the most thorough, advanced, and important ever made. To enumerate the various investigations which he brought to a fruitful termination in the line of sanitary science would require a large volume. Although he wrote various books, his many treatises were generally published in magazines and in reports to the British Association for the Advancement of Science. He also possessed the happy faculty of stating his convictions in a clear and most felicitous manner.

mortgages on vital strength, which are bound to be paid later with compound interest. They compel always the expenditure of reserve force. Such is the story of all poisons.

The list of agents for producing coveted sensations beyond the normal is long. The decay of fruits and grains furnishes the poison alcohol of our wines, beers, and liquors. To deplete the life forces of Americans there are hundreds of mixed alcoholic drinks which are called American specialties. Aside from the use almost everywhere of alcohol, tobacco, and opium, the French especially prepare absinthe in sugared, alluring forms. A specialty of resined wines suits the palates of modern Grecians. The Koran forbids alcohol, but it has not saved the Turk from the equally pernicious tobacco and hashish. Bhang, distilled from juices of various shrubs and trees, and tasting like a combination of kerosine and sulphuric acid, consumes the vitality of the pepper-saturated Hindoo. It is said that bino, made from the juice of the palm-tree and used in Oriental countries, can induce a quicker "blissful state" and following madness and helplessness, and at less cost, than most destroyers of mankind. Kola and cocaine are specialties of South America, and arsenic is a favorite with the people of the lower Alps. The devotees of chloral, ether, and chloroform are far greater in all civilized countries than generally known.

"The Spanish and South American miners," writes Dr. Felix Oswald, "mistake arsenious acid, antimony, cinnebar, and acetate of copper for digestive tonics. . . . If intoxica-

tion were a physiological necessity it would indeed be folly to buy the stimulant at the dram shop, since cheaper poisons would serve the same purposes. A dime's worth of arsenic would protract the stimulant fever for a week, with all the alternate excitements and dejections of an alcoholic revel. A man might get used to phosphorus, and inflame his liver with the same lucifer matches he uses to light his lamp; he might gather jimson weed or aconite or fuddle with mushrooms, like the natives of Kamschatka."

In the interest of physical culture, too little importance is attached to the minor poisons, — the light wines, beer, tea, coffee, spices, the uric acid of meats, etc., all of which are discussed later on. One of the commonest and greatest of mistakes lies in supposing that these milder offenders are really healthy invigorators and aids to digestion. In fact, the poison habit is always progressive in that it always cultivates weakness, and the greater the weakness the stronger the poison necessary to produce coveted results. The craving for stronger artificial stimulants is, of course, in direct proportion to the general decline of health.

"The boy who begins with ginger beer ends with ginger rum," again says Dr. Felix Oswald, "the medical 'tonic' delusion progresses from malt extract to Mumford's Elixir; the coffee cup leads to the pipe, and the pipe to the pot-house. Wherever the nicotine habit has been introduced, the alcohol habit soon follows. . . . International statistics have revealed the remarkable fact that the alcohol vice is most prevalent, not in the most ignorant or most despotic countries, . . . but in the commercial countries that use the greatest variety of milder stimulants — Great Britain, West-

ern France, and Eastern North America. . . . The tendency of every stimulant habit is towards a stronger tonic. Claude Bernard, the famous French physiologist, noticed that the opium vice recruits its victims chiefly from the ranks of the veteran coffee drinkers ; in Savoy and the adjoining Swiss counties, Kirsch-wasser prepares the way for arsenic ; in London and St. Petersburg many have relinquished high wines for a more concentrated poison ; and in Constantinople the Persian opium shops have eclipsed the popularity of the Arabian coffee houses.

“ We see, then, that every poison habit is progressive, and thus realize the truth that there is no such thing as a harmless stimulant, because the beginning of every unnatural appetite is the *first stage* of a progressive *disease*.”

Dr. Newton especially abhors the condiments. When criticising the diet ordinarily given to children in contradistinction to that given the lower animals, which is throughout life equally simple and always devoid of poisons, he said, “ The healthy stomach of young children naturally rebels against pepper and spices. They have to be fed such health destroyers gradually. Here the mischief begins. What gets an early start with pepper and other condiments naturally leads to liquor, and the palsied palate and unabsorbent membranes of the liquor taker can scarcely get enough of peppers.”

We are so accustomed to the word “intoxicating,” that we do not realize its full meaning. Toxic is, of course, another word for poisonous. It is unfortunate that the expression “poison beverages” is not used instead of “intoxicating beverages.” It is unfortunate that poison itself is not more thoroughly

recognized as something inimical to nature. If it is not inimical to nature, it is not a poison.

Are not most of us slaves to some tyrannical drug master? Are we not all squandering funds from the vital bank? Are we not all preparing food of ourselves for the germs of extermination, which manifest themselves in disease? And should one expect an abused human instrument to be in tune?

For obvious reasons, no one can possibly be sound, in the highest sense of the term, who habitually takes poison of any kind whatever. One may deny this, but let the habit suddenly be stopped to determine the question. What means the depression of the habitual tea and coffee drinker, the alcohol or tobacco inebriate, deprived of his stimulant? What means that fatigue, that craving, or that gnawing, but lowered vitality—the appeal of abused and devitalized organs in distress for the accustomed irritant to reawaken them into action?

One sometimes encounters a man who boasts that he can take an unusual amount of his drug without perceptible consequence, regarding it as evidence of physical strength. He does not know that a perfectly sound man cannot take any poison whatever, without instant effects and symptoms such as would be produced in the absolutely healthy organism of a child or lower animal. To be able to do this without these excitements tells a sad physiological story of palsied membranes and perverted functions. In sound health, the alert telegraphic system of nerves quickly responds, as do the absorbent glands and the circulation of blood. The degenerate organ alone fails

in duty. Rather should one take pride in not being able to endure any poison whatever, — in not having been physically weakened to that extent, either by self-indulgence or through a degraded inheritance!

The temptation to impose upon nature is very great. The capacity for the endless wealth of enjoyment the Creator has given his highest animal in health, tempts to further indulgence and so the vital spendthrift spends doubly to-day, mortgaging what should be spent to-morrow. He acts under the delusion that nature *can* be imposed upon without cost. He seems not to understand that in the economy of life the reserve force, which he spends for the purpose of defending the system from an unnecessary evil (poison), cannot be again used for better purpose. He has yet to learn that the conservation of rich reserve forces is the first law of physical culture.

“In the tragedy of errors, called the history of the human race,” still again says Dr. Oswald, “ignorance has often done as much mischief as sin. . . . They have made the poison-vice all but an incurable evil. They have helped originate the dogma of natural depravity.”

LONGEVITY

To die of age, is a rare, singular and extraordinarie death.

MONTAIGNE.

BEFORE a brave day's work is half completed, one is overtaken by the night. “Oh, had I but time!” exclaimed Pasteur.

Life is too short for the full attainment of highest

purposes. The season is ended before the natural harvest is begun. In a life of fifty years, twenty of it are spent in sleep. The first twenty-five years are simply preparatory — learning how to live. Five years out of fifty are spent in that famous occupation alleged by a French officer as his cause for suicide. On his prostrate form, whence the spirit[s] had fled, was a paper on which was written the reason for his weariness of life, — he was tired of “buttoning and unbuttoning.” Ten years out of fifty are consecrated to the nourishment of the inner man, — the time for eating and drinking. Not that any of these duties are unpleasant, — quite the contrary; yet, all the same, they consume the years, and how much time is left for the ripening of fruit, and contribution to the world? In the majority of human lives such time is never reached.

That delightful writer, Felix Oswald, again says :

“As the world is constituted, it takes a certain number of years for a new industry to take root and yield its first fruits; it requires a certain period for a new opinion to penetrate the crust of society and reach the fertile sub-soil of the lower strata. Before the end of that period, the planter of trees has to fertilize the soil with his own bones. . . . Nothing seems wanting to aggravate the injustice and incongruity of the existing arrangement. But a minimum lifetime of ninety years would reconcile all contradictions; two-thirds of it would be enough for the adjudication of every claim, and the remaining third could be devoted to rewards or retribution.”

But Dr. Oswald's suggestion is quite too modest. A hundred and fifty years — yes, full two hundred —

are clearly our due. This period is even too short for justice to this wonderful and beautiful world. For what was the world made? For what was man, with his marvellous equipment, created? There is probably nothing so ignominious in human life as our contemptible way of leaving it, — like stupid young dunces expelled from school.

Man is the only animal that loses half his progeny in early youth; indeed, nature's avenger of physical sins destroys a third of the human race before the anniversary of its first birthday, and the average human life is but thirty-three years of more or less physical imperfection. Is it not a sad contemplation?

Man has never enjoyed his allotted opportunities. He has never received his full and splendid heritage designed by the Creator. At the threshold of existence he is cursed with ancestors who squandered and mortgaged life at the expense of progeny. By careless living they converted youth into old age and transmitted their kind to their children. Instead of profiting by the cumulative advantages of organs improved by favorable conditions throughout several generations, man has, on the contrary, suffered enormously by the cumulative disadvantages of unfavorable conditions. Of all seeds, the seeds of human life have become, indeed, the most withered and defective which nature will recognize. Like defective seeds of grain planted in barren places, there comes forth an occasional perfect stalk, — the vast majority imperfect.

And yet we may all be encouraged by the fact that

the elements of growth and progress are contained in every living organism, needing but proper cultivation to develop and expand into still glorious conditions of life. Regardless, however, of these rich and abundant resources for improvement, man has persisted in disregarding hygienic laws. He has consumed his heritage by forced conflagrations; has sowed seeds of disease, which not only shorten life, but add labor and sorrow to it. Man has persisted in cultivating death rather than life.

If one man can live one hundred and fifty years under favoring hygienic conditions, the physiological law is established that others under the same favorable conditions may live equally long. There are scientists who believe that perfected man may live five hundred years. In his enthusiasm, Professor Virchow, President of the International Board of Surgeons, which met at Moscow in 1897, said:—

“Life has no other origin than life itself, and this is one of the great truths which the labors of pathologists and biologists of the present century have established beyond the possibility of a doubt. If the life that is taken from life is taken from a highly-developed life, so will be the life that is taken. My earnest hope and belief is that the final mystery of life, the key to life, the principle which keeps life alive, will be solved by the biologists and pathologists before all the members of the present Congress are dead.”

At the same Congress, Nicola Tesla, another biologist, advanced similar views, insisting that perfected man might live for centuries. To what age might not human life extend, were the seeds sound

and the training skilful? Why should human lives of two hundred happy years, in full vigor and usefulness, be more remarkable than the conquests of the horticulturist, who, by careful selection and expert training, expands the modest wildflower into new standards of perfection, and wild and acrid fruit into new glories of form, color, and flavor, scarcely traceable to the unassuming original? Or, when in the hands of the scientific farmer, horses, for example, acquire not only prolonged life, but new ideals of strength, speed, disposition, and beauty, unknown and unimagined by our fathers? Mark also man's conquest in obtaining power and skill from dumb machinery, made on rough principles of organic life! What have the engine, the electric battery, and the loom to show, as a reward for infinite study and care? How may one measure the span of human life, when, instead of skilled development, that greatest of all mechanisms — the human body — is made but a slave to artificial appetites and deteriorating fashions?

What may one expect when one's apparel overheats, burdens, blockades, and constricts? Or when one's breath of life is choked, not only by corsets, but by tight windows and unsunned apartments? When one's dietary is chosen as if to kill? When day is converted into night and night into day? When, indeed, the hygienic principle is withdrawn from every habit of life? How can we know life's limits, when man has so surrendered to unfavorable conditions?

"Few men, indeed," says Flourens, "reach the normal life of man, . . . for how many do what is

necessary to reach it? Man no longer dies, but kills himself."

Nature rejoices in improvement and lends her glad and willing aid. Nature meets half-way the seeker after health. In course of time, and with better knowledge of the laws of nature, why may we not see a distinctly stronger and nobler type of man, equal, if not superior, to the highest conceptions of Greek art? After successive generations of sound men and women, with vital organs unclogged and unbenumbed, blood pure, and reserves rich, why not a race of which the world now scarcely conceives? Necessarily these perfected types of humanity would avoid all death-producing habits; indeed, the new and normal instinct would spurn all enemies of the better life, for true health enjoys only that which conduces to it.

Man has persistently ignored the all-important fact that life is mechanical and dominated by simple scientific principles and inexorable laws; that nature's laws will never be repealed by the whims of mankind; that as one sows one reaps. Man has treated the mechanism of human life sentimentally, — rather as an insignificant gift of unknown or supernatural origin than as an embodiment of principles derived from a source of incomputable power and majesty. Man has treated life rather as an art than a science. Even Lord Bacon believed that the ancients had some secret art (afterwards lost) of prolonging life.

There seems to have been but one short period in which the study of human life was accepted as a science. During this time the Greeks and later the Romans, though insignificant in numbers, dominated

the world. They were eventually overtaken and conquered, not by a foreign enemy, but by domestic vices, and we shall never know what happiness, what physical and mental glories, were lost to mankind, when those splendid beginnings in human culture were so quickly terminated by that famous victory of the poison habit. It was a cruel triumph from which the world has not recovered up to our present century. We are now, however, just entering upon a period when the disabled lords of creation are once more seeking those physical laws which best develop a healthy, happy, and prolonged existence. Man is again beginning to realize that in all the eternity of the past and eternity of the future, mortal life, short at best, is his but once. Man is beginning to reverence life as an inestimable gift, and in compliment to his Maker, is now more willing to strive for the best and the longest of it. The physical culturist now desires the privilege of living his full, allotted time of existence, and dying a natural death. He has finally discovered that we are ill and decrepit, not on account of Divine preference, but because we have sinned against natural laws. He has found that illness is a product of his own culture, to be remedied only by a culture in reverse. He has learned that health means continued youth and harmony, and harmony means continual joy and happiness; that the invalid at twenty is old, and the sound man at ninety is young, and that a long and normal life is the highest prize of existence. He now realizes that no one is at his best unless his organism, his mechanism, is perfect in all its parts. He has discovered

that the Creator intended his living creatures to be sound and well; that God is the source of health, and that man is the maker of disease. Finding that every disease is but the manifestation of a broken natural law, he is now seeking to know how that law was broken, and how the consequences may best be remedied.

The inebriate prefers to follow seeming exceptions to general hygienic rules. I say *seeming* exceptions, for there are no exceptions to the rules of nature. Nature is an exact book-keeper. The poor *ingenu*, however, has been placing his faith on that unusual man of inherited strength, who, under more favorable conditions, should have lived to be one hundred and fifty, but who narcotized himself with tobacco or opium, or bewitched himself with arsenic, or besotted himself with alcohol, or steeped himself in tea and coffee, or saturated himself with uric acid all his life, and lived to be eighty. That aged inebriate is so conspicuous that the following chapter will be devoted to him alone.

The physical culturist cares but little that an exceptionally strong seed sometimes thrives and blossoms in unfavorable soil or without the sunshine; he wishes rather to know whether favorable soil and sunshine are beneficial to seeds generally, and why; and whether the seed which blossoms without sunshine would not have blossomed more gloriously under its vivifying influence. The "art" of longevity is simply the science of living.

It is pleasant to contemplate how strictly hygienic habits of even a single generation would prolong and sweeten life.

Dr. Kellogg thus speaks of the physiology of old age :

“The cause of old age is . . . the accumulation of *waste matters* in the body. Under the influence of these poisons, nutrition is impaired, the ordinary functions of life are disturbed, and the arteries, as well as other tissues, take on degenerative changes, and result in a calcareous condition. The smaller branches of the arteries shrivel up, thus interfering with the circulation of the blood through the organs of digestion and the heart itself, and the mental and physical feebleness of old age supervenes. . . . It is the disturbance of the nutritive processes that results from the over-accumulation of tissue poisons.”

In other words, the body-machine of the physically old has lost its fine working order on account of the drying, benumbing tendencies of poisons, and the stiffening, unabsorbing calcareous (chalky) conditions of all the membranes which follow. Even if the blood of the physically old could be “pure, active, and strong” the system could not make proper use of it when membranes are comparatively unabsorbent and inactive. Could a fine balance between proper nutrition or repair of the body and proper elimination of waste be maintained, along with proper kind and amount of food to supply the needs of the system only, the span of life between the two eternities would not only be greatly lengthened, but life itself in its highest, finest sense would be correspondingly happy and useful.

That old people in health, as well as young people in health, enjoy a membraneous activity in which supply and waste are equally conducted, was the sub-

ject of a paper read by Sir Duncan Gibb before the London Anthropological Society. He gave an interesting account of the examination of six centenarians. He found the organs of circulation and respiration like those in the prime of life. In nearly all, the special senses were unimpaired and the intelligence perfect. "We are as old as our arteries," says Virchow.

How delightful if we could have no counting of ages, except as we are physically young or physically old! One's tenure on life depends upon how far the body-machine is worn out. Physiological age would give us eighty years young or twenty years old, according to conditions.

Let us find the reasons why the processes of nutrition and waste are impaired. What are the habits of life that dry and harden the moist and resilient membranes of youth, blockading both the incoming vivifying fluids of repair and the outgoing materials of waste? Instead of pure water, that nature designed as a medium through which to carry on the functions of repair and waste in a most perfect and admirable manner, man has substituted other beverages more or less pernicious. This has been one great and fatal mistake.

The second greatest mistake may be understood by reading (page 74) Dr. Richardson's account of the action of poisons on the moist, sponge-like membranous filters of the body, through which waste and repair to and from all parts of the body must be perfectly or imperfectly conducted. Internal contact with irritating poisons producing great losses of vital

fluids, soon causes a drying, hardening process to the membranes themselves. There is no doubt that the principal factor in the degeneration of the human race and the shortening of human life, is the almost universal use of poisons of one kind and another taken as a luxury or a medicine.

“Pure food, pure water, pure air, are the means by which the vital forces are perpetually kindled and maintained,” again says Dr. Kellogg. “Food constitutes the life fuel; oxygen breaks the bonds which hold life in latent form, and makes it living, active energy; water transfers the life fuel from cell to cell, and carries away the ashes which might clog the vital forces. Hence to eat well, to drink well, to breathe well, are the three conditions most essential to long life. Other conditions are important, but these are absolutely essential.”

Varnhagen von Ense thus exclaims on this subject of fresh air: “Let us reflect on the fact that, while we are surrounded by a respirable atmosphere of more than eight hundred million cubic miles, civilization has contrived a famine of air.”

The admirable articles published twenty-five or thirty years ago by Felix Oswald in the *Popular Science Monthly*, on the subject of fresh air, should be re-published and read by all. He has much to say about the “night air superstition.”

No one knows the luxury of sleep who has not slept in the open air. He alone best appreciates the chagrin of Shamyl Ben-Hadden, the almost unconquerable Caucasian chieftain, who was captured by the Russians in 1864. For political reasons he was cast into a comfortable sleeping room at Novgorod. After a

week he demanded to see the commander of the armory, and offered to subsist on bread and cabbage soup, and also surrender some valuables he had secreted on his person, if he could only be allowed to sleep in the open air. "One more week of such nausea and headache as the confinement in a closed room has caused me," exclaimed the mountaineer, "would force me to suicide; and if my request is refused, God will charge the guilt of the deed to my tormentors." We are told that after due precautions were made against the possibility of escape, he was permitted to sleep on the platform in front of the guard house; and that Colonel Darapski, the commander of the city, informed his government in the following spring, that the health and general behavior of his prisoner were excellent, but that he had slept in open air the last hundred nights.

As one becomes discriminating and exacting after the habitual use of absolutely pure and wholesome water, one becomes equally discriminating and exacting in the matter of absolutely pure and wholesome air.

One may consider one's self a *connoisseur* on the subject of air after a six weeks' experience of sleeping in what is called an "open camp" in the Adirondacks. The popular idea of outdoor sleeping is a vain attempt to discover the soft side of a stone. But there is progress in this as in other things. The "open camp," as now evolved in many of our Adirondack homes, is the acme of luxury, — a three-sided construction with perfect roof and floor; a plateau before the open front for huge log fires when so

desired ; a possible lining of red cretonne to match rugs of similar hue ; comfortable beds which, with colored cushions, serve the purpose of luxurious lounges during the day. When caught in town on a hot, sultry day, one's fancy turns fondly to the odors of the hemlock and the balsam ; to the music of the waves lightly lapping the verdure-clad shore of picturesque Raquette Lake ; to dreamless sleep and an awakening amid the voices of birds and the light murmuring orchestral accompaniment of the forest. One remembers the delicious repose and the succeeding vital energy insured by that perfection of air. Poor humanity, that has never slept in all its life in pure air !

A remarkable air is also that crisp and delightful product, mixed with odors of the pine and the sea at Bar Harbor.

“Lightly steals o'er my sense
The fragrance of the pine,
Sweeter by far to homesick heart
Than draughts of sparkling wine.
Again I see thy sea girt isles
Where sylvan beauties reign,
And dreams of thee come back to me,
O Mother land of Maine ! ”

In case of no suitable place on the premises for the building of “open camps,” every country house should contain upper loggia so arranged after the manner of open camps that they may be utilized for sleeping. Bedrooms in city houses may also be converted into “open camps” by the use of large window-doors reaching to the floor, such as are used almost univer-

sally in France. "Open camps" in connection with roof gardens will some time be the rule in city homes that have no grounds about them. The latest cure for consumptives — outdoor living and sleeping — adds a new proof of their benefits.

There are still existing certain cave-dwellers. Their offensive sleeping apartments lack sunshine; and of course no air is wholesome devoid of that vivifying influence. They lack also proper change of air. It may be said, indeed, that the "favorite poison" of the cave-dweller is carbonic acid gas, a product of air once breathed. Our physiologies tell us that every exhaled breath vitiates three-fourths of a barrel of air. It need scarcely be said that these cave-dwellers are a dwarfed, sickly, and debased set of people; and yet what better represents their unventilated caves than the frequent sleeping rooms of our houses, unexposed to sunshine, and with heavy curtained beds and windows!¹

Dr. Gardner, in the *Popular Science Monthly*, thus speaks of this cause of degeneracy: —

¹ "Air that has been breathed by man once should not be breathed again; such air having lost five per cent. of oxygen, and gained four per cent. of carbonic acid, if breathed twice, will give up but little oxygen to his economy. Indeed, as shown by Lavoiser, air having lost about ten per cent. of oxygen, becomes absolutely irrespirable. . . . It is not the want of oxygen alone that causes death in breathing bad air, but the simultaneous increase of carbonic acid as well; also, a certain amount of organic matter which is also exhaled. In breathing in the open air where the atmospheric air is out of all proportion to that expired by any one individual, at no moment is any want of fresh air experienced. . . . In churches, theatres, . . . where large numbers of people are congregated together, the proper supply of fresh air should never be left to chance." — *Human Physiology* (Chapman).

“Many try to see how little air they can breathe, air being their chief and possibly only economy. What dressmakers cannot accomplish by tight clothing is further accomplished by curtains and hangings. Woman’s lungs are rarely ever fully inflated, thus lessening their capacity for expansion. . . . Men and women are more flat-chested and round-shouldered than should be the case. Take the men of New York to-day, and not one in five hundred can make a difference in the dimensions of the chest, from a full inspiration to a complete expiration, of five inches, nor will the majority show an expansion capacity of even three inches. With the women it is still less. Probably they have never taken a full breath in the daytime since the romping days of childhood. Portions of the lungs are scarcely used, and are ready, like stray corners of a room, to gather dust; or stray neglected spots in fields left to the riot of weeds, whose seeds are wafted by every light winged breeze, and ready again to spread their myriad progeny of evil over the adjoining land. How aggravated is this condition when the air, too, is deteriorated, shut in from sun and breeze, and breathed over and over again by both the well and the sickly. In the days of old, heat came chiefly from the vigor of the system, or by open chimney fires; contrast them with the tight windows, never-ceasing furnace fire, and air poisoned by tobacco smoke.”

It is said that the ancient Greeks lived much in the open air, and that the patriarchs of the Bible suffered no windowed apartment; that, in fact, all of those long-lived generations of the past lived in the light of the sun. Warmth came from the vigor of the system.

I am not advocating the abandonment of heated apartments, although American houses are kept at altogether too high a temperature in winter, and too

little attention is given to their proper ventilation. We are told over and over again how the overheating of American houses, creating a debilitating climate, tends to weaken the health of the people. Our grandfathers were, and Europeans are, comfortable in houses warmed to sixty, or sixty-five degrees. Americans are literally dried and baked by a constant temperature between seventy and eighty degrees.

"Americanitis" is a very disrespectful name given to a compound illness composed of dyspeptic and nervous conditions, and this overheated and impure atmosphere is supposed to be one cause of it. No air could be worse polluted, however, than that containing the poison of tobacco smoke, and no true physical culturist will submit himself to its influence. Future sanitation will also require better ventilation of places for public assemblies. An interesting experiment was made by Doctors Longstreet, Shakespeare, and Webb, of Philadelphia, to test the quality of air in the ordinary theatre. They placed sterilized cotton in the ventilators of the dome, and, after the departure of the audience, subjected it to a critical analysis. Large numbers of "mounts" were prepared, and in every one of them were found colonies of bacilli of the tuberculosis type, besides a large number of other pathogenic germs.

To insure good health and long life, physical exercise, *which develops equally all muscles of the body*, is, as we all know, of paramount importance. It brings about active circulation and aëration of the blood, toning all the vital functions. Muscular activity

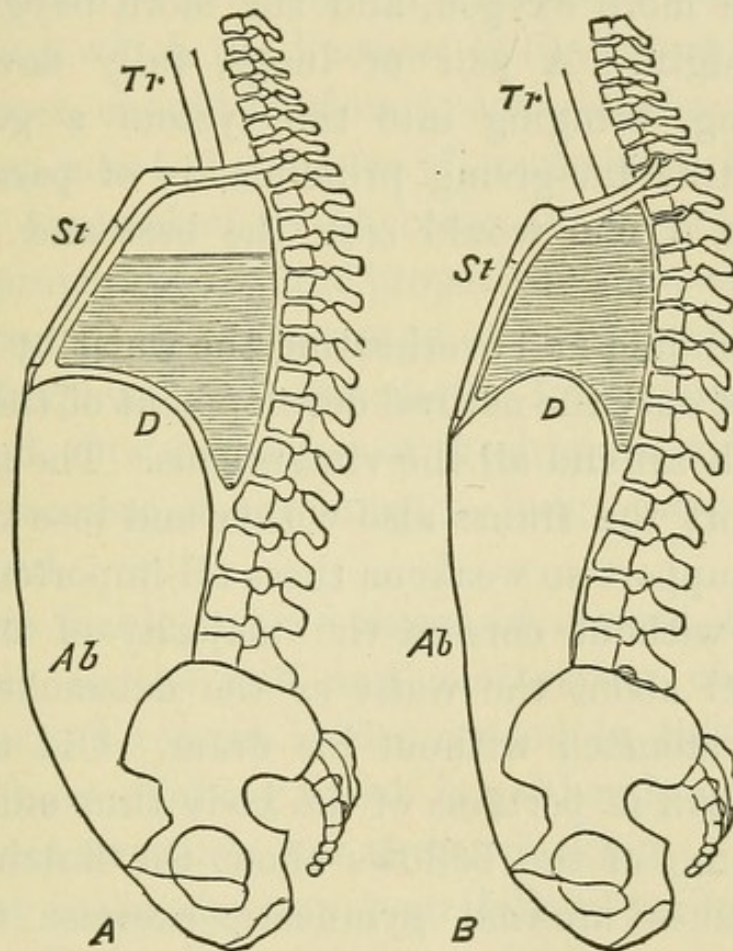
also serves to build and repair the system and to carry off waste products. The law of life is activity. Inactivity is stagnation and death. Professor Arnold said that the men controlling the destiny of England to-day are the old members of the foot-ball teams at Rugby. Indeed, the habit of walking, and physical exercise generally, have contributed very largely to the health of the English and Germans.

Another requisite for longevity is expanded power of all vital organs. The trees with long, thick trunks and comparatively small limbs have invariably the longest lives. The same is true of animals and men. The lungs, heart, digestive organs, in fact, all the vital parts, should be well developed. Lung capacity is largely a test of physical strength and endurance. M. Pignet's method for choosing soldiers depends chiefly upon lung measurement in comparison with weight and stature. He tells us, for instance, that a man five feet three inches in height, one hundred and ten pounds in weight, and measuring but thirty inches around the chest, is physically unfit.

What women have most lacked in physical development is lung capacity, owing to the use of corsets.¹ The lungs need space for breathing, not only in

¹ "For the last eighteen hundred years," says Dr. Oswald, "the females of our species have been barred from the privileges of physical culture. The girls of some fifty generations have been physically atrophied, dollified, cribbed, hampered, and confined, till in many millions the capacity and almost the very love of bodily vigor have been permanently eliminated. . . . But now the era of her physical emancipation and the predicted equality of the sexes assume a new and comprehensive significance." *Physical Culture* (Phy. Pub. Co., N. Y.).

the chest, but all the way to the bottom of the waist. The floating-ribs need absolute freedom to expand and contract like bellows. The journey of a long life can no more be accomplished with the human engine compressed by corsets, than a locomotive can accomplish its normal work by curtailing the working capacity of its engine.



Sections of the body in inspiration and expiration. *A*, inspiration. *B*, expiration. *Tr.*, Trachea. *D.*, Diaphragm. *Ab.*, Abdominal walls. The shading indicates the stationary air.

The above cuts, taken from "Human Physiology" (Chapman), indicate the space needed for breathing. Of course the lungs are never entirely free from air, and the stationary air (continually renewed, how-

ever) is contained in the chest, while the bellows for respiration and inspiration is chiefly below. Of all the inspiratory muscles those of the diaphragm are the most important. In the male sex gentle breathing is accomplished almost entirely by the action of the diaphragm.

The more we breathe the more we live. The more breath, the more oxygen, and the more oxygen, the more strength. A pair of lungs, fully developed, fully acting, bringing into the system a generous supply of this life-giving principle, is of paramount importance if one would seek the best and longest of life.

Again, binding and overheating the waist by corsets prevent not only the natural development of the lungs, but of the heart and all the vital organs. The muscles that support the frame also wither and lose vitality. Artificial support so weakens these all-important muscles, that without corsets the majority of civilized women feel about the waist as the debauchee feels about the stomach without his dram. Old age has already begun in portions of the body thus enfeebled. The pumping of the bellows about the floating ribs also furnishes internal gymnastic exercise for the bowels, and this is absolutely needed for their vigor of function. We are told that the great men as well as the long-lived ones, are always great breathers. This is natural when oxygen is the great life-giving principle.

The cultivation of lung capacity is a subject now claiming much attention in all the recent literature on physical culture. Some authorities go so far as to say

that the "corset curse" is the very worst of all the curses that have ever afflicted physical womanhood, and that one of the greatest reforms of the new century will be the elimination of the corset and the cultivation of a new artistic sense that will look upon a stiff and compressed corseted waist as a physical deformity and a horror. Even without the corset, a proportionally too small waist indicates weak vitality, something which the Venuses of the future, like those of the past, should be slow to acknowledge.

Young man! the chance of marrying a hospital is greatly diminished by choosing for a wife a woman with a proportionally and properly developed physique, as illustrated by every statue of recognized beauty.

By frequent and systematic lung gymnastics, — deep and slow breathing of fresh, pure air, into the lowest recesses of the lungs, — lung power is quickly developed.

Before leaving this subject of corsets, let us call attention to the stiff and overheating neckwear of our men. A reform is also needed in this direction. Let us have clothing which is neither lung compressing, street sweeping, nor throat choking.

"And make the sun your fellow-workman, . . ." says Dr. Richardson, "doing as little work as possible by artificial light."

The most pathetic of all things is the sight of a broken human life, of a being only partially alive — an old person in the flower-time of existence, without enjoyment, without energy, without ambition, without beauty, without hope. What a mistake to feel that the greatest happiness must end with youth!

In spite of more comprehensive views of hygienic laws, we still exaggerate the comparative delights of youth. The buds and shoots of springtime offer but little to gather. They are but nature's promissory notes for the glorious autumn and winter of a normal life. Their eloquence is rather of expectation than of acquisition. The keener happiness of youth is chiefly due to better health, which later on is generally undermined or prematurely exhausted by unsanitary habits. If we strip our trees of their bloom, how can we expect the rich fruits of a natural development later on?

It is largely due to this great blunder of mistaking the springtime of life as the only season of happiness that has encouraged us to burn the candle of life in drafts, and rush through a short career. Many deliberately make up their minds to grow old, becoming despondent with the flying years. Let us no longer underestimate the later happiness when the mind is well stored with knowledge, when the judgment is ripened by experience, and when affections are fixed on enduring realities of life. Let us prepare for this long journey of life in the same physical and mental mood as we would prepare for a hundred mile walk, rather than as we would prepare for the walk of a mile. Let us brace ourselves with the more enduring effort, which evolves unconsciously a deeper volume of energy and determination.

Of course, youth like all ages has its glories, but the precise hand of the artist, the strong and lucid reasoning of the jurist, the logical and deliberate judgment of the statesman, seldom come before middle

age. Would that this vigor, this knowledge and experience freed from the thralldom of passion, these finer capacities, refined and sublimated by time, might endure for all the years allotted to normal mankind! May the popular conception of old age — an aggregation of infirmities, a legion of diseases, a senile crumbling of the faculties, a gilded dotage, soon belong to the past!

A noted statistician (Haller) collected data on the subject of longevity for all England a few years ago, and within its boundaries he found authentic records of one thousand persons who had lived from 100 to 110 years; sixty from 110 to 120 years; twenty-nine persons from 120 to 130 years; fifteen persons from 130 to 140 years; six persons from 140 to 150 years, and one who celebrated his 169th birthday.

Biologists generally believe that with the inheritance of a sound constitution, and barring accidents, it is one's own fault to live less than a hundred years; while the special students of longevity generally consider that the normal length of human life is that of those who have lived the longest. The German physiologists have given great attention to this subject. Professor Haferland, in "Art of Prolonging Life," tells us that everything which hastens vital consumption beyond the normal energy, shortens life, and that human life under favorable conditions may be prolonged to the ages attained by the patriarchs of old, computed according to our measure of time. He assumes that animals live eight times as long as it takes them to reach full maturity,

and man becoming an adult at twenty-five, should live at least two hundred years. Professor Karup, Dr. Buschner, of Darmstadt, and others, who have written on the subject of life-insurance, advance the same opinions.

Mr. Thompson ("Curiosities of Longevity") furnishes also much information on this most interesting subject. One of the most remarkable cases of long life is that of a peasant who died near the middle of the seventeenth century, aged 172, and who had the honor of being buried at Westminster. He also tells us of one Henry Jenkins, aged 175.

Lord Bacon, in his book, "*De Vita et Morte*," speaks of the death of contemporaries at the ages of 150 and 160, which he said were proved by judicial documents quite worthy of credit. According to Dr. Isidore Bourdon, Greenwich Hospital had in 1806 one hundred and twenty centenarians.

Calculating upon the given age at death, it is computed by M. de Solaville that the percentage of those dying at 90 and more is, in Great Britain, 9.73; in Sweden, 7.39; in France, 6.58; in Belgium, 6.07; in Switzerland, 6; in Holland, 4.47; in Italy, 3.76; in Bavaria, 3.42; in Prussia, 3.06; in Austria, 2.61. These latter figures speak volumes against the general habits of beer and tobacco.

Dr. Humphrey, Professor of Surgery at Cambridge, made extensive researches in relation to old age. In his "*Report on Aged Persons*," containing an account of 824 persons between the ages of 80 and 100, 48 per cent were poor, 42 per cent in comfortable

circumstances, and only ten per cent in affluent circumstances.

The advantages (reported in centenarian statistics everywhere) of limited wealth as conducing to longevity are easily understood. The diet of the poor is far simpler. They take more physical exercise, are more exposed to the fresh air and sun, their sleep is sounder, their digestion better, and less poison-taking gives them the advantage of a richer vital reserve force. Rich in gold, poor in vitality, would seem to be the rule. Again, definite objects in life add to vital strength. Some one has said that an occupation, an interest, a hobby, is a sort of winged Pegasus on which one may ride over the rough paths of life. In supporting the hobby, the hobby supports the man. Idleness stagnates and rusts the sources of life.

A noted illustration of simple life versus luxury, is given in the history of the famous Thomas Parr, that centenarian-and-a-half who was also buried with honors at Westminster Abbey after a mundane existence of 152 years. All honor to such a vital conquest! Let us Americans erect a monument to every centenarian-and-a-half!

Various chroniclers relate how Thomas Parr was enticed away from his frugal fare (chiefly coarse bread, vegetables, and milk) and from his rural town (Shropshire), and taken as a curiosity to court by the festive Earl of Arundel; and how, as a broken shaft, his life was prematurely cut off on account of adopting the diet and life of the majority of men. An autopsy revealed the fact that the internal organs of this aged hero resembled those of youth in their elasticity and

vigor, and that with a continuation of former habits his life might have been considerably prolonged. *À propos* of heredity, two of his grandsons lived to be each 127 years old, and a third grandson 109 years old, and Robert Parr, a great-grandson, died in Shropshire in 1757, aged 124 years.

“If it were possible,” says Dr. Ayre, “to have fifteen or twenty generations of men living strictly temperate lives, with the total abandonment of vicious habits and total abstinence from coffee, tea, tobacco, and alcohol, together with the marriage of only such persons as are physically perfect, then I believe the last man of the line would compare favorably in age with Methuselah.”

It has been popularly supposed that, owing to improved sanitary laws and a more general interest in hygiene, we are advancing in physical vigor and long life. But, unfortunately, we find from authorities that such is not the case. The average life of infancy is greater, that of middle and old age is shorter, and the general tone of health is lower; going to show that the increased and general use of tobacco and other poisons is cutting down adult life.¹ Addressing the

¹ Says Dr. Kellogg: “The average life is longer than a generation ago; that is, more sickly children are saved. Two hundred years ago artificial means for limiting the natural operation of epidemics and pestilences were almost altogether unknown, and consequently these death-dealing agencies operated as a means of natural selection, — a weeding out of weak, weakened, constitutionally tainted, and feebly resistant individuals, and a keeping alive of the strong, vigorous, pure-blooded, and strong-lunged. Public sanitation, quarantine laws, and general hygienic regulations serve a most useful purpose in the prevention of epidemic and endemic diseases; but the result of this protection is the keeping alive of the poorly organized, con-

British Association for the Advancement of Science,
Mr. Strahan said:—

“Of course all the deterioratory influences of modern civilized life tend towards the reduction of vital energy and to the degeneration of the race. It is now admitted on all hands that the poor toiler in our great cities deteriorates with every generation, and if not revitalized by fresh blood becomes extinct in three or four generations.”

SEVEN RULES FOR LONGEVITY

1. Study the laws of nature for health and the remedies of nature for cure.

2. Avoid all poisons.

3. Take abundant exercise in pure air, but always short of fatigue. So exercise that every portion of the body is equally benefited. As it takes a strong engine for a long journey, cultivate lung power by slow, deep breathing exercises.

4. Eat only the amount of food that nature needs, and study what to eat from a scientific point of view.

5. Cultivate normal sleep. Live and sleep only in rooms that are well sunned, well ventilated, and not overheated.

stitutionally weak . . . individuals who would otherwise die, and so the average length of life is increased; but the race is not thereby benefited, but is, instead, weakened, for these defectives are kept alive only to intermarry, and by the inexorable law of heredity their weakest deficiencies are transmitted, and thus the actual constitutional vigor of the race is diminished. . . . Let us not, however, suggest less attention to public hygiene, but favor heartily public as well as private sanitation; let us give more earnest attention to the hygiene of the individual physically, mentally, and morally.”

6. Cultivate the habit of work in connection with some worthy ambition, for healthy exercise of body and mind is as strengthening as repose, and should balance it. Work while you work and rest while you rest, avoiding all worry. Make yourself useful to the world and feel that you have a mission in it.

7. Avoid bad environments, the worst of which is the friend who encourages you to poison yourself.

THE MAN WHO SMOKED AND DRANK ALL HIS LIFE AND LIVED TO BE EIGHTY YEARS OLD

HE is the most famous man living. Every smoker and every drinker has not only heard of him, and knows all about him, but with a religious fervor places in him his trust, hope, and faith. If that famous man inherited so strong a constitution that he could deliberately poison himself for eighty years, what a superb existence, what a continuance of years might have been his, had he but lived hygienically! A thousand pities that the beneficiaries of such constitutions should not cultivate life in its fullest possibilities, and give to the world, as well as themselves, the benefit of it, in all its breadth, depth, and length.

It has been estimated that every alcohol and tobacco inebriate who has lived for eighty years has,

by his example, prematurely killed at least a hundred people.

Dr. Farre, of London, told a story to the Parliamentary Committee about drunkenness, which is here worth repeating. He had met a ruddy old man of eighty-four, who declared that for thirty years he had been a reformed character, in that his daily allowance now consisted *only* of one pint of brandy and six glasses of Madeira. He was Chairman (being the greatest drinker) of the most notorious drinking club in London, and contended that drinking did not injure him. "I was anxious," says Dr. Farre, "to inquire how many of his companions were yet living." He had to acknowledge that there was not one alive, candidly confessing that he had buried the whole club three times. "Dr. Hewitt used to call such old drunkards," continued Dr. Farre, "the Devil's decoy ducks."

"One long-lived glutton or drunkard," says George Cheyne, "kills more by his example and the flattering hopes that those who know not their strength and what they were made to bear, entertain, than Hippocrates ever saved."

"You are killing yourself smoking," said I to a friend one day.

"Now I know that it must have been tobacco that killed my father," he smilingly replied. "He lived until eighty, and smoked all his life."

Not having made a serious study of tobacco at that time, the reply had upon me the usual satisfying effect; but a few short years proved that the superb

vital power abused by the father could not be equally transmitted untainted to the son — a fact often tested by experiments with animals. The rule is inexorable that the poison habit always causes deterioration, and that weak inheritance becomes weaker in each succeeding generation. If it were possible (which it is not) for Mr. Smith to smoke for half a century without tremor of nerve, without impairment of digestion, without strain on the heart, without loss of perfect sleep or acute memory, the questions would arise, what capital of health did he inherit from his ancestry, and in what condition did he transmit it to his son?

Like cultivated animals and plants, men should improve rather than deteriorate. Indeed, were it not for the accursed poison blight upon the human race — worse than the weevil on wheat, the locusts on corn, the dry rot on potatoes — that paltry eighty years old would rather mean eighty years young and not beyond the half-way station of life.

There are long-lived people who have dwelt in miasmatic and pest-infected localities; there are Sheffield needle-grinders whose steel-powdered but yet superb lungs have been known to do their faithful work for many years; but the rule is to the contrary. How ridiculous it is to argue seriously that poisoning one's self habitually, even in the slightest degree, conduces to health or long life! and yet it is most amazing to find how many, fortified by the famous old man at the head of the chapter, will declare that drinking or smoking is not only harmless but positively beneficial and conducive to longevity. It

would be equally ridiculous to assert that tobacco and alcohol cause all the premature deaths ever recorded, and to ignore the many physiological sins of mankind. Of course, there are the sewer gas poisons, the poison of tainted water, the poison of malaria infested swamps, the poisons of yellow fever, cholera, plague, and smallpox, — all feeding naturally and easily upon an organization devitalized by any cause. But it is not going too far to say that tobacco and alcohol, those prime ministers of destruction, have killed more of the human race than war, pestilence, and famine, and all other pestiferous causes combined.

When these defenders of the poison habit say that they smoke or drink and are in absolute health, they are mistaken. Ask them if they would feel no inconvenience in suddenly stopping the habit; or watch them later. The need of poison is a disease in itself. The very fact of craving artificial strength proclaims a lack of natural strength. He alone craves poison-stimulants who lacks vitality. Any sound animal would quickly reject with disgust the offer of a dose of pepper, of tobacco, of alcohol, or other poison. What need or desire has he for the fire of a poison?

Although smokers and drinkers will, on most occasions, insist upon the innocence of their habit, it is amazing how their minds change on the subject when it comes to a question of training for athletics. Thomas W. Higginson, in an admirable article ("The New Counterblast," *Atlantic Monthly*), declares that the most irresistible argument against tobacco is in

the fact that college boys (those most inveterate smokers), when in training for athletic strength, and the same with city roughs who would be prize-fighters, straightway abandon tobacco and all poisons.

“Such a concession from such a quarter,” says Mr. Higginson, “is worth all the denunciation from good George Trask. Appeal, O anxious mother, from Philip smoking to Philip training. What your progeny will not do for any consideration of ethics or economy . . . that he does unflinchingly at one word from the stroke-oar or the Commodore. In so doing he surrenders every inch of the ground, and owns unequivocally that he is in better condition without tobacco. There is not a regatta or a prize-fight in which the betting would not be seriously affected by the discovery that either party used the beguiling weed. The prime devotees of tobacco voluntarily abstain from it when they wish to be in best condition. But are we ever, any of us, in too good condition? Have all the sanitary conventions yet succeeded in detecting one man in this high pressure America, who finds himself too well? If a man goes into training for the mimic contest, why not for the actual one? If he needs a cool head and steady nerves for ‘sporting,’ why not for the earnest? Moderate training is simply a rational and healthful life.”

MRS. GRUNDY

Cursed be the social wants that sin against the strength of youth;
Cursed be the social ties that warp us from the living truth.

TENNYSON.

Asketh, How long shalt thou stay
Devastator of the day?

EMERSON.

A man's growth is seen in the successive choice of his friends.
For every friend whom he loses for truth, he gains a better.

EMERSON.

In private places, among sordid subjects, an act of truth or heroism seems at once to draw to itself the sky as its temple, the sun as its candle. Nature stretches out her arms to embrace man; only let his thoughts be of equal greatness. — EMERSON.

“He that feeds man, serveth few;
He serves all, who dares be true.”

Le temps, qui change tout, change aussi nos humeurs,
Chaque âge a ses plaisirs, son esprit et ses mœurs.

BOILEAU.

AFTER all, it does not require so much courage to abandon the serving of poisons to guests, — even dinner guests; for the fashion is changing. Mrs. Grundy has taken to studying physical culture.

Mrs. Grundy is not always wrong, though at times she is most singularly ignorant, perverse, and, let us say it with bated breath, — wicked. When so perverted she is as bad a tyrant as King Poison himself. King Poison lords it over the physical side of human nature, and Mrs. Grundy over the moral side, and when Mrs. Grundy is wrong they can together ruin a universe.

Mrs. Grundy, of course, has always her very charming characteristics. She is well groomed, artistic, alive to one's comfort and pleasure, agreeable to look upon and listen to, and possibly the most satisfactory of all to invite to dinner.

Mrs. Grundy has her spasmodic moods for religion and charity. They are too often an affectation and a superficiality, as she seldom includes reforms in her charities. She prefers to relieve rather than to prevent. To relieve, confers pleasure and requires small effort. To prevent, demands more serious thought and possible opposition. Mrs. Grundy's favorite charity is the hospital. This she erects, maintains, and decorates with divine flowers. What made the necessity for the hospital has been too often quite beyond her interest. Mrs. Grundy knits socks for orphans. What made the orphans, or what would operate against the making of orphans in general, she does not know or care.

"Good morning, my little fellow," says she, "you have not been to get cold victuals lately."

"No, my papa has signed the temperance pledge, and now we have plenty of warm victuals at home."

"What a very good joke," says Mrs. Grundy.

Possibly a vote of Mrs. Grundy's might shut up the dram shop around the corner, which made the orphan, also the beggar child, and the candidate for the hospital.

That was not included in Mrs. Grundy's religion.

But, as before said, Mrs. Grundy is not always wrong, and when she gets fairly on the right side of any question she cheerfully makes up in zeal for all

mistakes. Her heart is right. Ignorance and a faulty training at home and at church were the trouble. Most fortunate is it for the world when Mrs. Grundy reaches the root of affairs.

"The liberation of humanity," as Goethe calls it, has needed the aid of Mrs. Grundy. It has needed the aid of the head of the family to show, by example and precept, that self-poisoning is not the principle of the family; it has needed the aid of the head of the town to show that physical degeneracy is not the keynote of the town; it has needed the aid of the head of the country to show that physical and moral debasement is not the policy of the country. It has needed beacon lights to direct the lesser lights.

How universal is Emerson's understanding:—

"We love to associate with heroic persons," says he, "since our receptivity is unlimited; with the great our thoughts and manners become great. We are all wise in capacity. There needs but one wise person in a company and all are wise, so rapid is the contagion. . . .

"There are vices and follies incident to whole populations and ages. Men resemble their contemporaries. . . . Assimilation goes on between men of one town, of one city, of one sect, of one political party, etc. One keeps the other in countenance. . . . The shield against the stings of conscience is universal custom. . . .

"Again, it is very easy to be as wise and good as companions, . . . but we stop where they stop. . . . The great . . . or such as . . . transcend fashions by fidelity to . . . ideas, are our saviors from these errors, and defend us from our contemporaries. . . . Thus we feed on

genius . . . and exult in the depth of nature, in which he leads us. What indemnification is one great man for populations of pigmies? . . . The smallest acquisition of truth or of energy in any quarter is so much good to the commonwealth of souls."

The sciences are saving Mrs. Grundy. What she scorned in the name of principle she is now embracing in the name of health. The science of health is now becoming distinctly the fashion. Illness is anything but interesting in the social world. Mrs. Grundy has come to want the best of everything.

It is cruel to rake up old delinquencies when a sinner is penitent. All the same, and with the promise of never mentioning it again, I must unburden myself by saying that Mrs. Grundy has heretofore been a distinct menace to health and morals by her slavishness to the favorite poisons. Those who have escaped the deteriorating touches of civilization owe little to her. She has been little better than the man behind the bar,—only more refined, and more seductive. Mrs. Grundy has created more drunkards and physical and moral wrecks with her favorite poisons than she has ever cured in her hospitals. She has made her highest social functions the mediums for evil,—slippery paths that lead to corruption.

The acme of all entertainments is the dinner. An invitation to dinner is a bidding to the very best one can give—not only of viands but of friends, who come with their best of raiment and most agreeable of manners. The perfect dinner would be indeed a product of highest art and an honor to the social

world, were it not that, to enjoy its good cheer, its privileges of deliberate conversation and choice acquaintanceship, one must run the gauntlet of a dram shop, a narcotic joint, or even what is worse than a hospital of contagious diseases. A bad habit infects all who come in contact with it, and habits are catching. Far better catch scarlet fever or smallpox than the alcohol or tobacco mania.

There is really no reason why a dinner should not be strictly hygienic. As the perfect dinner should represent only the best, health as well as brains should be considered in its make-up. A dinner company, like everything else, flourishes on health. Let the votaries of poison, the victims of polluting social forces, discuss their rheumatism, their gout, their Carlsbad, their nerves, their indigestion, their brands of wine, cigars, and other medicines at the hospital! Let men and women whose stagnant blood and palsied nerves can be stirred only by artificial stimulants and narcotics dine in private! Let the offering of poison to a healthy man be as doubtful a compliment as the offering of spectacles to a bright-eyed maiden, or of crutches to an athlete! Are our men really so decadent that they cannot enjoy or digest a dinner without a poison? Let us not believe it. Let us not agree with Schopenhauer, who declared that the brains of society were too dull and unelastic to be aroused into action without the aid of a poison stimulant, and that to be in harmony with "society" one's most respected self must shrivel up. The pessimistic philosopher was, of course, in his worst humor, and yet it is

undeniably true that the favorite poisons can pollute everything, society included.

Again, Mrs. Grundy has torn and ravelled out the finest fabrics of humanity, and, when the work was half accomplished, promptly thrust them away. She could ruin, but never forgive.

It has been said that the nineteenth century will be quoted for its barbarism. The man of the dram shop, the tobacco, and opium dens, and Mrs. Grundy together, brought it about.

My own atrocious sinning, in converting the dining-room into a dram shop and the library into a tobacco joint, was as execrable as the bad taste of mentioning self. With freedom from the poison vice in one's immediate family, one is apt to become thoughtless of the dangers and troubles of others. Must misery be always an ingredient in the brewing of human sympathy?

It would have been easy to serve dinners without wine or cigars if I had been in the habit of entertaining Americans only. One saving grace of our country has been in the fact that Americans are not habitually addicted to drinking wine. They do not serve it at the family dinner as a rule, and consequently do not miss it at the formal dinner. Living in Washington, and enjoying the hospitality of foreigners, and wishing at the same time when entertaining them to conform to their habits, was the chief reason for serving wine. There has been an indefinite impression in America that a foreigner at the dinner table might undergo some mental or physical catastrophe — some embarrassing kind of collapse — with-

out his alcohol or his nicotine, the danger of which could not for a moment be risked; then, of course, one wishes one's guests to enjoy themselves, and that dreadful feeling boldly thrust itself forward that a foreigner was incapable of a "good time" without the aid not only of one but several drugs. That idea has not attached to the rank and file of their own countries. The rank and file of country districts have furnished the cleanest blood of nations generally.

Many episodes in Washington life have served to show how reform in the use of poisons has taken hold of foreigners as well as Americans. A pleasant surprise occurred several years ago, when a letter of introduction brought to our dinner-table a delightful young Englishman, travelling in America with an equally attractive young friend from Scotland. Several wine glasses fringed about their plates. In old times, before the ebb-tide set in, Mrs. Grundy dictated more wine glasses than now. I noticed that the young Lord Morpeth drank only from his glass of water. Curiosity getting the upper hand, I asked if he did not take wine.

"Never," he replied.

"Is it possible that there is an Englishman who does not take it because he does not believe in it?"

"Plenty of them," said he. "My father (Lord Carlisle) never serves it. My friend, travelling with me, never touches it. Indeed, our poor England has suffered so much from the ravages of alcohol that many of our most prominent families have arisen to the importance of the subject, and have ceased to

66 The Aristocracy of Health

serve wine on any occasion. It is no longer a matter of surprise to see the finest formal dinners without wine."

When one comes to think of it, England is really in advance of America in the practice of public hygiene. Systematic sanitation began there about sixty years ago, and in America only about thirty years ago. The first American State board of health made its report in 1870. We are rapidly becoming informed, and are making a swift headway towards the most advanced sanitary thought. Indeed, some of our newest Western towns have sprung into life with an entire equipment of pure water supply, perfect drainage, electric lights, houses built on the most healthful models, and with *prohibition* intrenched as solidly as the rock of Gibraltar.

In the selection of young men for the British diplomatic service the competition is very great, and the flower of Great Britain is alone considered. The flower of England is not drugged England.

To return to Washington episodes. Seated next to one of these sturdy young English diplomats at a dinner-table, I again noticed that he drank water only. "You do not take wine?" I asked.

The young man slightly colored, as if not quite understanding how the answer might be considered.

"No, I have hard work to do, and I find that my health is better and mind clearer if I abandon all alcohol."

"And how about tobacco?"

"I consider tobacco worse than alcohol."

Hardly a week passed before almost the same con-

versation was repeated with another fine specimen of humanity and a student of physical culture from the British Embassy. The star of England would not be on the decline if all her officers of State were of the same mould.

I have several times asked *compagnons de table* who drank only from their glasses of water, "You do not take wine?" The question was once addressed to Prince C——, then Russian Minister. "*Non, ça brouille la tête. J'ai beaucoup à faire.*"

And he also considered tobacco worse than alcohol.

In entertaining the members of the South American (Pan-American) Conference in Washington several years ago, I found that fully half of those diplomats (for hygienic reasons) took neither wine nor tobacco; the same experience was repeated with the English and Canadian members of the Joint High Commission, who lately came to Washington to consider certain diplomatic questions.

It is now no longer a matter of surprise in Washington to see the dinner habitués eschew all wine and cigars. Indeed, among the older men of high official position, the majority take neither wine nor tobacco.

Not many years ago men smoked almost universally after dinner. Now they repair to the separate room for the after-dinner chat, but very few, and often none, touch the tobacco.

There is no doubt as to the power of Mrs. Grundy, and most fortunately Mrs. Grundy is now in a transition state, which fact is certainly an auspicious omen. Dinners are becoming much shorter and

more simple, and the spirit of Hygeia pervades the social atmosphere.

Queen Victoria conferred upon the world the blessings of a wholesome influence by her interest in hygiene. The redeeming grace of humanity lies in the fact that it still responds to what is right. The vital spark of truth still kindles the best in all of us, and sooner or later the truly wise and worthy receive their rewards. The Queen's Jubilee was the greatest public manifestation of esteem ever given to the ruler of any country. The exaltation of feeling so genuinely displayed was not alone English. The wide world laid its gratitude at the feet of Queen Victoria, and for what? Not because she had reigned sixty years; others have reigned equally long. Not because she was a woman; other women have reigned. It was a tribute to wholesome influence.

Surrounded by that great rival, King Poison, Queen Victoria strove to promote hygienic methods of life. She always fought against tobacco. Would that she had set the fashion of serving her dinners without wine! It is said, however, that it is owing to King Edward that old-time English drunkenness is no longer tolerated in society, and that only one or two wines at most are now served at fashionable dinners.

Another son, the late Duke of Clarence, was President of the Church of England Temperance Society, and in a public speech made a pertinent and much quoted remark. "Drink, drink, the only terrible enemy England has to fear."

Another son, the Duke of Connaught, in a public

speech, ascribed his good health, during his Egyptian campaign, to his total abstinence from intoxicating drink of any kind.

What could the English-speaking people not accomplish if their physical vigor and moral sense kept pace with their intellectual activity, industrial habits, and commercial energy?

From a lately published character sketch of the present Princess of Wales, the following is taken:

“In one respect the Duchess of York sets an example to the philanthropic women of the world. She is not content with merely relieving distress and poverty, but endeavors to seek the cause of the evil, and lends her influence to the various schemes for remedial social reform.”

Mr. Robert Rae said at a Scottish Temperance convention (April, 1884): —

“I am glad to state that a good number of the Queen’s guests at dinner are teetotallers; especially is this the case amongst her chaplains; and to show that the temperance movement is spreading in the Queen’s establishment, I may say that the last two chaplains who were appointed were total abstiners. It is a significant fact that nearly all the new Bishops recently created in the Church of England have been total abstiners.”

Mr. Gustafson, alive to every phase of the temperance question, speaks of this subject: —

“Thus it is seen that drink-customs are no longer a matter of rigorous observance at Court. The Queen herself has done the temperance cause the inestimable service of removing from the relations between host and guest, from social etiquette and good manners, the burdens of an irksome obligation in the exchange of social amenities.”

It is also said that the senseless custom of drinking to the Queen's health in alcohol had become no longer *de rigueur*.

Could Queen Victoria have seen proper, years ago, quietly to abolish alcohol and nicotine from her own table, it would have accomplished more for the health, the morality, the civilization of the world, than could be laboriously eked out with tons of literature, years of hard work, or even the carnage of war. Yet we must give her credit for much in the cause of temperance.

It is possibly due to Queen Victoria's influence that the entire world now receives the benefit conferred by the high principled and clever young Empress of Russia in her crusade against tobacco. Rays of light shine afar, and the influence of this patriotic and peace-loving Empress is felt to the ends of the earth.

The world is again most fortunate for the royal family of Sweden and Norway. The Queen of Sweden (Queen Sophia) is the leading spirit of the temperance movement in Scandinavia; and her second son, Prince Oscar, President of the temperance societies of Norway and Sweden, devotes much time to delivering public addresses on the advantages of total abstinence. He not only conducts these temperance meetings in his own country, but extends his field of operations to Denmark, where he has spent some time in the arduous work of public addresses furthering temperance organizations.

The Queen mother, Queen Emma, of the Netherlands, is also a total abstainer, due to principle rather than considerations of diet.

And what shall we say of Queen Wilhelmina, whose message to the Dutch Parliament urged the necessity of measures to stem the tidal wave of evil influence which, as elsewhere, is so rapidly gaining on the people of Holland? It is said that this charming young Queen is also a total abstainer, markedly refusing on all occasions to take wine. It is a tribute to sterling qualities that of all Holland's monarchs this young Queen is one of the most popular. It proves again that conscience is in the majority.

In a clever article written on "Temperance in Europe," the Marquise de Fontenoy says:—

"In Europe the habits of Executives in connection with the use of stimulants are now subjected to the keenest scrutiny, and are made the object of public observation and comment. So fierce, indeed, has popular criticism become in the matter, that to-day abstemiousness constitutes the predominant note at every one of the royal and imperial courts of the Old World, and the rulers who now occupy the thrones of Europe are as distinguished for their temperance alike in drinking and eating as their predecessors were the reverse. Several, indeed, restrict themselves exclusively to water, some on the score of health, others, again, on the ground of principle."

This radical transformation in the old world may be said to have been brought about by the generation now living.

At the most exclusive clubs of New York, Boston, and Washington, "treating" is discouraged. As in England, the practice is considered atrociously vulgar as well as dangerous.

It is quite time that Americans should consider it a duty to family, to society, and to country to abolish the use entirely of at least those poisons which have brought the greatest curses upon mankind — alcohol and tobacco. If one's friends in this hygienic age are physically too defective to enjoy social functions without poison, let them carry pills in their pockets, or, as before remarked, take to some cure for treatment before going into society. In any town or city the combination of a few social leaders may easily put an end to any odious custom. The majority already desire wholesome changes, and will hail them eagerly.

Dr. J. G. Holland, in *Scribner's Monthly* (an article on "The Wine Question of Society") said: —

"Society bids us furnish wines at our feasts, and we furnish them just as generously as if we did not know that a certain percentage of men who drink them will die miserable drunkards, and will inflict pitiful sufferings on those who are closely associated with them. . . . What we need is a declaration of independence. There are a great many good men and good women who lament the drinking habits of society most sincerely. Let these all declare that they will minister no longer at the altar of the great destroyer. Let them declare that the indiscriminate offer of wine at dinners and social assemblies is not only criminal but vulgar, as it undoubtedly is. Let them declare for the sake of the young, the weak, and the vicious — for the sake of personal character and family peace, the social purity and national strength — that they will discard wine from their feasts from this time forth and forever, and the work will be done. . . . If men and women of good society wish to have less drinking to excess, let them stop drinking moder-

ately. If they are not willing to break off the indulgence of a feeble appetite for the sake of doing a great good to a great many people, how can they expect a poor broken down wretch to deny an appetite that is stronger than the love of wife and children, and even life itself?"

THE TWO CHIEF EFFECTS OF THE FAVORITE POISONS IN THE HUMAN SYSTEM

THE two principal kinds of injury which poisons produce in the human system are first, what might be termed the filter phase, and second, the oxygen phase of poisons.

THE FILTER PHASE OF POISONS

relates to the drying and hardening of the membranous tissues of the entire body, caused by the habitual drain from them of liquids which they are obliged to pour forth in order to flood out and rid the system of irritants which tend to destroy it. A continued imposition of this abnormal duty upon these highly organized and delicate membranes produces, as a matter of course, a marked impotency of function. This may be more particularly noticed in the throat of the habitual smoker, who is no longer obliged to expectorate when smoking, owing to the deadened condition of the salivary glands, which no longer respond to the touch of poison. The acute sense of taste is lost, and flavors delicious and all-satisfying to the normal palate are imperceptible to the inebriate with-

out the fiery touch of pepper, spices, and other biting irritants to quicken the palsied mucous membranes of the throat to action.

Our highly sensitive membraneous tissues envelop every organ of the body. They line the entire digestive tract, surround the bones, cover the air surfaces of the bronchia and the air-cells of the lungs; they constitute the inner coatings of the entire system of blood-vessels; they cover the sheaths of the nerves in all their minutiae, and their office is of supreme importance in the economy of life. These membranes form continuous filters through which the liquid nourishment of the blood passes to be distributed by the blood-vessels to every cell of the body. These filters serve another equally important purpose in that, through them, all waste particles of destroyed tissue must pass to be eliminated from the body. These two processes of secretion and excretion, called "metabolism," when well balanced and acting together in healthy unison insure perfect health. There should be no impediments or blockades which prevent proper nourishment of the body and also the escape of waste products. They clog the system and tell a story of fatigue, colds, headaches, gout, rheumatism, kidney troubles, etc., to say the least, and cancerous affections to say the worst.

Dr. Richardson gives a most comprehensive statement of this matter. He says ("Cantor Lectures"):

"There is contained about the nerves, as about every other organ of the body, a membraneous covering, being a sort of filter through which the proper nourishment for

building and sustaining all the vital organs of the body passes. . . .

“Although these membranes are passive, separating all structures into their respective positions and adaptations, yet, like any filtering agent, they must be in proper condition, or injurious or fatal results follow. First, they must be soft and porous, like the most responsive of finest textured sponges, and also always fully charged with water. They must not become thickened or dried or shrunken or clogged with foreign material, fat among the rest.

“We have seen the action of poisons in forcing extra supplies of important fluids from all parts of the body. Upon all these membraneous structures, alcohol (all other poisons as well, Ed.) exerts a direct perversion of action. It produces in them a thickening, a shrinking, and an inactivity that reduces the functional power. That they may work rapidly and equally they require to be at all times charged with water to saturation. If into contact with them any agent is brought that deprives them of water, then is their work interfered with; they cease to separate . . . constituents properly, and if the evil that is thus started be allowed to continue, they contract upon their contained matter in whatever organ it may be situated and condense it.

“The perverted condition of the membraneous covering of the nerves gives rise to pressure within the sheath of the nerve, and to pain as a consequence. To the pain thus excited the term ‘neuralgia’ is commonly applied. . . . Lesser pressures produce nervous irritability.

“The membranes enveloping the nervous substance undergo a thickening; the blood-vessels are subjected to change of structure by which their resistance and resiliency is impaired; and the true nervous matter is sometimes modified by the softening or shrinking of its texture, by

degeneration of its cellular structure, or by interposition of fatty particles.

“These deteriorations of cerebral (brain) and spinal matter give rise to a series of derangements, which show themselves in the worst forms of nervous disease, — epilepsy, paralysis, local or general insanity. One of the first effects of alcohol (tobacco, etc., Ed.) upon the nervous system, in the way of alienation from the natural mental state, is shown in loss of memory — in forgetfulness of commonest things — like that which indicates in the aged second childishness and mere oblivion.”

This feature of all poisons is so extremely important, and so little understood, that I quote again from the famous “Cantor Lectures:” —

“The parts that suffer most from alcohol are the membranes which are colloidal (fibrous) structures, and every organ is enveloped in them. The skin is a membraneous envelope. Through the whole of the alimentary system, from the lips downward and through the bronchial passages to their minutest ramifications, extends the mucous membrane. The lungs, the heart, the liver, the kidneys, are folded in delicate membranes which can be stripped easily from these parts. If you take a portion of bone you will find it easy to strip off from it a membraneous sheath or covering; if you open and examine a joint you will find both the head and socket lined with membrane. The whole of the intestines are enveloped in them, also all the muscles and the bundles and fibres of muscles. The brain and spinal cord are enveloped in three membranes. The eye-ball is a structure of colloidal humors and membranes, and of nothing else. To complete the description, the minute structures of the vital organs are enrolled in membraneous matter.

"They hold all the structures together in the most perfect order, but this is only a small part of their duties. The membranes are the filters of the body. In their absence there could be no building of structure, no solidification of tissue, no organic mechanism.

"The animal receives from the vegetable world and from the earth the food and drink it requires for its sustenance and motion. It receives colloidal (which makes fibre) food for its muscles; combustible food (emulsified fats and sugars) for its motion, and water.

"See, then, what an all-important part these membranous structures play in the animal life. Upon their integrity all the silent work of the building up of the body depends. If they become condensed or thickened or loaded with foreign material, then they fail to allow the natural fluids to pass through them. They fail to dialyze (dissolve), and the result is, either an accumulation of the fluid in a closed cavity, or contraction of the substance enclosed within the membrane, or dryness of membrane in surfaces that ought to be freely lubricated and kept apart. In old age we see the effects of modification of membrane naturally induced; we see the fixed joint, the shrunken and feeble muscle, the dimmed eye, the deaf ear, the enfeebled nervous function."

When the natural means of elimination are thwarted, and the body becomes saturated with effete matter, one may see how the system is prepared for the numerous filth diseases before mentioned, — a tendency to "catch cold" and all other fevers, rheumatism, gout, various types of eruptions, cancer, etc. The system is poisoned by the retention of waste matter.

As Gustafson¹ says on this subject:—

“Putrid matter accumulates, and the clear-flowing river has become the feeding ground of the microbe, — a turbid and stagnant stream.”

Again, in the case of alcohol, we find a second method of robbing the system of its liquids. This popular poison has a rapacious affinity for water. However alcohol may enter the body — by the mouth, the skin, or by inhalation — it almost instantly permeates every avenue of the system.

“The mobility of the particles of alcohol is so great,” says Dr. Richardson, “that one drop can be perfectly mixed with a pint, a quart, or a gallon of water. . . . It, in fact, grasps water as fire grasps oxygen. . . .

“When alcohol is taken into the system it is absorbed there; but for absorption it will have to undergo a proper degree of dilution with water, for there is this peculiarity respecting alcohol: when it is separated by an animal membrane from a watery fluid like the blood, it will not pass through the membrane until it has become charged to a given point with water. It is itself, in fact, so greedy for water, it will pick it up from watery textures and deprive them of it, until by its saturation its power of reception is exhausted, after which it will diffuse itself into the current of circulating fluid.”

¹ Axel Gustafson built an enduring monument to his fame when he wrote “The Foundation of Death,” the Bible of the students of alcohol. While preparing this book he devoted several years to study in the library of the British Museum, where he was assisted in his work by almost the entire staff of that institution. The book is republished in America. He is also the author of several other valuable books.

Dr. Richardson showed by experiments with a bladder containing alcohol and water, and immersed in a fluid which represented an artificial serum of the blood, just how much water the alcohol took up before absorption into the blood. It is very considerable.

To sum up, therefore, we find that the disabilities placed upon us through the "filter phase" of the poison habit are as follows:—

Owing to drying and partial paralysis of the lining membranes of the entire body, the vital processes of nourishment are interrupted. The membranes are less active, absorbent, and assimilative. More food is craved by the anæmic than satisfies the health aristocrat, whose organs are normally active and membranes absorbent, and whose richer blood, being free from the debris of poison waste products, runs without friction, engendering greater vitality, activity, clearness of perception, and happiness. As extra energy is required to operate any rusty machine clogged with ashes, so the reserve force of the anæmic is more quickly dissipated, and fatigue or depression sooner follows than in health of the higher standards.

The gamut of ailments resulting from the clogging of the membranous filters is long. The invariable results are want of endurance, impairment of the senses, and premature old age. In the interests of æsthetics we may mention loss of beauty, undersize of stature, obesity, dulness of eye and skin, and a certain expression which invariably marks the nervous fatigue of constant inward struggle.

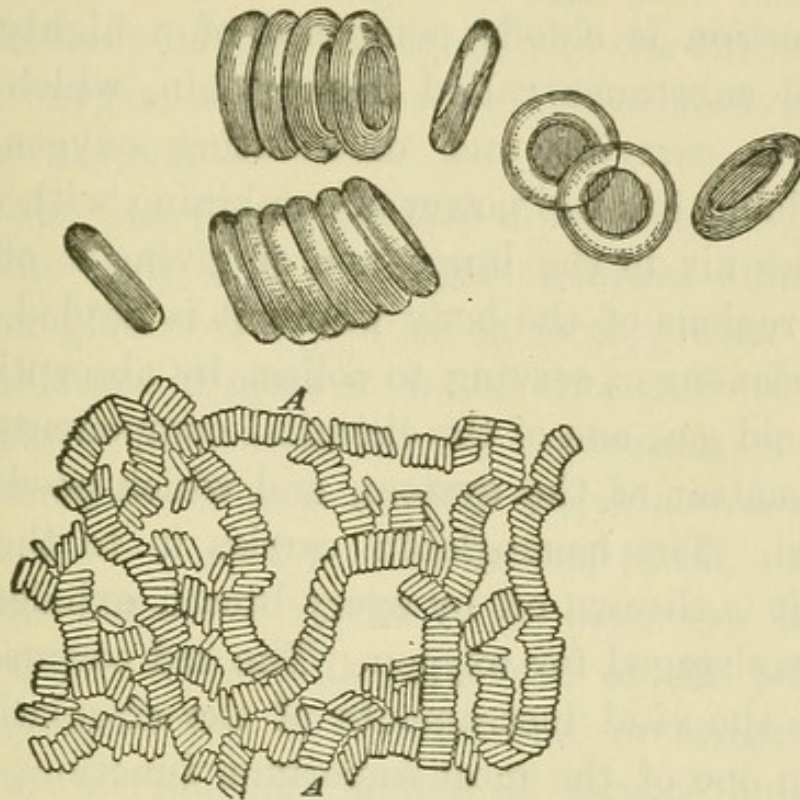
THE OXYGEN PHASE OF POISONS

The second chief mischief which poisons accomplish in the human body is to rob the blood of oxygen—an element of supreme importance in the vital economy.

Let us first speak of the use of oxygen in the body. There is frequent mention of the similarity between the human body in motion and the steam-engine,—the motive power of both being heat. One remembers that in the living body a fire is always burning, which, as in case of the furnace, needs its supplies of fuel; that the fuel for the furnace is wood or coal, while that of the body is food; that in both cases the fire would soon go out without a constant supply of oxygen, which is, so to speak, the god or spirit of fire; that the oxygen is let into the furnace of the engine by a draught of air through an open damper; that it is let into the body through the lungs by every breath inhaled; that in the case of the furnace, heat and force are generated by the chemical union of oxygen with certain elements of wood or coal (carbon, etc.), and in the case of the body, by a chemical union of oxygen with certain elements of the blood; that what remains after the combustion of wood or coal are ashes and certain gases, which latter escape through the smoke-stack, and that what remains after combustion in the body is likened to ashes, and also certain gases (carbonic acid gas, etc.), which escape through the lungs at each breath exhaled; that these resultant products are cast away as not only useless but

poisonous as far as future service in the body is concerned.¹

We must, then, depend entirely upon properly oxygenated blood both for warmth and for the motive



A. — Red blood-corpuscles magnified about 400 times, and arranged in rouleaux. The larger figures are the red corpuscles more magnified and seen at different angles.

power to run the body-machine. It is the office of the red corpuscles of the blood to absorb oxygen taken in at the lungs, and to distribute it to all parts

¹ The tobacco smoker, by the way, reverses this order by inhaling a smoke containing the same poison as that contained in coal-gas together with other poisons, expecting the lungs and vital organs to re-absorb their own character of excreta, and to assimilate the multi-poison excrement of an originally poisonous weed. It is as if the draught in the furnace of the steam-engine were suddenly reversed, and the glowing coals were choked by the non-combustible materials they had already given off.

of the body. These corpuscles are circular and a little hollowed on each face, as shown in the cut on page 81.

Each red corpuscle is of a soft and jelly-like consistency, containing a large percentage of water. Its solid portion is chiefly composed of a highly sensitive red substance called hæmoglobin, which is the agent for carrying and distributing oxygen. The hæmoglobin has the power of combining with oxygen from the air in the lungs, and of giving it off again in the regions of the body where it is needed. It is also a scavenger, serving to collect by absorption carbonic acid gas, one of the chemical components of the waste matter of the system, and which needs to be expelled. The hæmoglobin carries it to the lungs where it is thrown off by every breath exhaled, there to be exchanged for oxygen. The red corpuscles are in fact the vital instruments of the circulation, and perform one of the most important functions of life. They must be in good working order to insure purity of blood, without which full vitality and best mental and muscular activities are impossible. It has been said that oxygen is the key of life and hæmoglobin is its keeper.

The exact manner in which the various poisons rob the blood of oxygen differs somewhat. Claude Bernard (France's greatest physiologist) shows by accurate experiments how this robbery is accomplished by the poisons of tobacco. We are told, in short, how the highly sensitive hæmoglobin absorbs certain poisons more quickly than it does oxygen, and that just in proportion as the poisons are absorbed is

so much oxygen crowded out, producing just so much asphyxiation. This condition may be better understood in cases of full asphyxiation, when death occurs by closing windows and turning on gas from the gas pipe. The coal-gas in that case has taken full possession of the hæmoglobin to the entire exclusion of oxygen, and the victim dies of suffocation — want of oxygen.

A poison is a poison because it is something inimical to the body, and this fatal chemical affinity for the hæmoglobin of the blood is largely what constitutes the curse of most of the favorite poisons.

Dr. Hare (University of Pennsylvania) is one of many who have made exhaustive experiments to demonstrate the action of tobacco on the blood. For the particular one here reported he took the lives of twenty dogs. One dislikes to read of the poor animals sacrificed by the numerous investigators to prove the physiological action of tobacco and other poisons, all of which are repeated over and over again. The physical actions of all the favorite poisons are so nearly alike, as shown by endless experiments, that it is to be hoped that animals may be spared further sufferings. Says Dr. Hare:—

“Death then occurs in nicotine poisoning by the failure of the hæmoglobin to carry oxygen to the various portions of the body.” He had said previously: “The effects of the drug on the corpuscular elements of the blood are quite interesting. The writer found that (after habitual use of tobacco) the red corpuscles were always crenated (notched), and if the amount of the poison was very large, partial disintegration appeared to take place.

“The corpuscles, instead of arranging themselves in *rouleaux*, formed themselves in rows, as ducks walk one behind another. When the poison was added on the stage of the microscope, the red corpuscles seemed to shrink and decrease their diameter, losing to a great extent their biconcave shape, and shortly becoming colorless and transparent. Occasionally, a corpuscle would seem to be spiculated, resembling somewhat a horse-chestnut, but with fewer spicules.

“On the white or colorless corpuscle the action of the poison is marked. When this corpuscle is moving on the warm stage, the addition of nicotine instantaneously arrests its movements and breaks it up into eight or more divisions or segments, which now and then become detached and float off by themselves.”

Among the many experiments by M. Rosé on the effects of tobacco on the blood, is the very simple one of merely mixing the healthy blood of an animal with some of the condensed smoke scraped from a pipe. Said he: “The globules become changed in form (*crénélées et déformés*) very rapidly.” He demonstrated at length how the hæmoglobin when exposed to carbonic oxide (a constituent of tobacco smoke) takes it up to the displacement of oxygen, and that whatever it takes of this carbonic oxide means practically that the system is deprived of so much oxygenated blood.

Experiments with alcohol have given substantially similar results in producing degenerative changes in the blood-corpuscles. In all cases of slow alcohol or nicotine poisoning, before this stage of blood degradation is reached, the vital fires have only smouldered

with the dampers partially closed. Passing to the later stages of blood change, Dr. Richardson says in regard to tobacco :—

“Inasmuch as the first impression made by the use of tobacco is in the blood, and inasmuch as the whole volume of blood courses through the body in three to five minutes, the first symptoms of tobacco smoking are felt universally. On the blood, tobacco produces changes which are very marked in character. The fluid is thinner than is natural; being thin it also exudes freely, and a cut surface bleeds for a long time, even in opposition to remedies.¹ But the most important change is exerted on those little red bodies which float in myriads in the blood and are known as the red globules. These globules have naturally a double concave surface, and at their edges a perfectly smooth outline. They are soluble in alkalies, and are subject to change of shape and character when the quality of the fluid in which they float is modified in respect to density. The absorption, therefore, of the fumes of tobacco necessarily leads to rapid changes in them; they lose their round shape, become oval and irregular at their edge, and instead of having a mutual attraction for each other and running together, a good sign of their physical health, they lie loosely scattered before the eye, and indicate to the learned observer, as clearly as though they spoke to him and said the words, that the man from whom they were taken is physically depressed and deplorably deficient both in muscular and mental power.”

I again quote from Dr. Richardson on the action of alcohol on the blood, regarding its affinity for water:

¹ Dr. Richardson also explains conditions in which poisons tend to coagulate the blood, making it thicker than normal.

“With all these parts of the blood, with the water, fibrine, albumen, salts, fatty matter, and corpuscles, the alcohol comes in contact when it enters the blood. I have watched the disturbance very carefully on the blood-corpuscles, for in some animals we can see these floating along during life, and we can also observe them from men who are under the influence of alcohol, by removing a speck of blood and examining it under the microscope. The action of the alcohol . . . is varied. It may cause the corpuscles to run too closely together and to adhere in rolls; it may modify their outline, making the clearly defined smooth outer edge irregular or crenate or even star-like; it may change the round corpuscles into the oval form, or in very extreme cases it may produce what I may call a truncated form of corpuscles, in which the change is so great that if we did not trace it through all its stages we should be puzzled to know whether the object looked at were indeed a blood-cell. . . . These changes are due to the action of the spirit upon the water contained in the corpuscles; upon the capacity of the spirit to extract water from them. During every stage of modification of corpuscles thus described, their function to absorb and fix gases is impaired, and when the aggregation of the cells in masses is great, other difficulties arise, for the cells united together pass less easily than they should through the minute vessels of the lungs and of the general circulation, and impede the current, by which local injury is produced.”

This latter effect, becoming permanent, is often seen on the surface, in the congested looking skin of the inebriate's hand or face, all of which but represents similar interior conditions. It is the result of this blockade of small blood-vessels in the lungs and the consequent deterioration of surrounding tis-

sue that often produces a cough and prepares the way for consumption.

“Be rather afraid,” says Dr. James Paget, “of operating on those of whatever class who think they need stimulants. Many people who mean no harm are thus daily damaging their health and making themselves unfit to bear any of the storms of life.”

The manifold duties of this wonderful stream of life — the blood — are better appreciated when we realize that during its rapid course, its varying chemical processes are sufficiently nice to make different materials for different parts of the body. In the muscle, to make muscle; in the nerve, to make nerve; in the bone, bone; in the glands, their proper secretions; in one gland, saliva; in another, gastric juice; in the liver, bile; to the bone, the products for strength; to the brain, the power to reason; to the muscle, the power to contract. Again, that its rich store of combustible material, and its great draughts of oxygen for burning it, must not only be sufficient to supply motive power, but enough in extra quantity to keep the body comfortably warm.

Physiologists tell us how one set of blood-vessels (the arteries) carry the red blood, charged with its materials for renovation, for building, for heating; and how a second set of blood-vessels (the veins) carry away the darker and impure blood charged with the waste of the system for expulsion, the minute threads of the different sets of blood-vessels (the capillaries) meeting and exchanging commodities.

To recapitulate, the essential element for rebuilding,

heating, and propelling the human machine is oxygen, breathed from pure air into the lungs.

The devitalizing effects following the arrest of oxygen from any cause may be readily perceived. The result is a process of asphyxiation. This "oxygen phase" of the favorite poisons, when carried to its rational end, accomplishes the degeneration and final destruction of all the blood elements.

The rapidity with which this degenerative process is brought about is especially great in case of cigarette smoking.

GENERAL PHYSIOLOGICAL EFFECTS OF POISONS

IT is much easier to mention the general physiological effects of poisons than the particular ones. The latter are altogether too numerous. There are, of course, as many diseases resulting from the use of poisons as there are organs and functions of the body, and combinations of organs and functions.

"An advanced stage of alcoholism," says Dr. Richardson (or of any other poison habit, Ed.), "leads to direct disorganization of all the vital structure, not one organ of the body escaping the ravage."

Dr. Shaw's list of eighty-five special and distinct diseases resulting from the use of tobacco, shows that he does not know how to count either diseases or poisons. The eighty-five diseases enumerated, and

other new ones to suit the occasion, should decorate the escutcheon of all the poisons, since accidental choice and individual pre-disposition furnish the chief differences between the poison and the disease. Nature abhors any poison; nature can endure but a certain amount of imposition; a little poison excites nature into abnormal activity to get rid of it—called stimulation; more poison overcomes and paralyzes the system, and this is called repose; one poison is stronger than another; individual pre-dispositions differ, *voilà tout!* How can diseases be counted if, for example, the blood which nourishes all, itself becomes degraded? A general anæmia must follow, a general starvation, a general fatigue, a lower standard of vitality, a universal decrepitude.

Possibly one vital organ suffers more than another, and what is then the general result? How could one count upon the efficiency of a machine manufactured by man, were it obliged to operate with one screw loose? As a chain is only as strong as its weakest link, and a machine as strong only as its weakest part, a general collapse is liable to follow any extra strain. The ordinary wear and tear of a machine are also proportionally greater on its weak parts.

Like the gardener who exterminates the sickly plants from his garden, nature destroys her degenerates by sending forth her scavenger germs. A chapter is given to this subject later on. Every poison victim is a degenerate. The person who simply is uncomfortable without his poison is a

degenerate. Nature goes still farther in her treatment of degenerates. She not only prematurely removes them as a failure in the scheme of nature, but she scorns their progeny. A poor seed brings forth poor fruit. Something is never made from nothing. A chapter is also devoted to this phase of the subject — Heredity.

Just how different favorite poisons act physiologically on the different organs of the system is now well known, thanks to the indefatigable work of scientists and the untold sufferings of poor animals, sacrificed too often and far more than is necessary to emphasize certain results. Let us in future test the values of good things rather than the iniquities of bad ones. We have already enough proofs concerning the injurious effects of poisons.

We have many works on the effects of tobacco on the eyes, on the heart, on the throat, lungs, liver, digestive organs, kidneys, etc., and we have works galore on the effects of alcohol on all the various organs, and works on the effects of opium on every vital organ. We are now reading more about the physiological effects of uric acid resulting from the eating of meat.

There is also a new and valuable literature describing the effects of the tea and coffee poisons, mentioning at the same time something about the accumulation of the littles, which count more than the world realizes in the general devitalization of mankind.

The first general and pleasant effect of a poison in the human body is shown in the effort of nature to

get rid of it,—in the attempt to flood it out by an augmented flow of liquids from all the glands.

What is observed in the increased flow of saliva at the mouth is induced in all other glands of the body. The stomach pours forth an increased measure of gastric juices in the effort to dispose of the irritating substance; the liver is induced to act with an abnormal energy to rid the body of the incubus; the kidneys are forced to operate at a higher pressure to hurry the elimination of the toxic elements from the blood; the alert nervous system telegraphs the alarming news to all the bodily forces, that every integral part of the internal economy may hasten to the rescue. The system is taxed to its utmost to regulate and enforce this unhealthy activity, while the poor heart, like the racing engine of an ocean liner, uses the reserve force at command to pump with more haste the circulating fluids of the body. A sharp call upon the reserve fund of vital energies has been made, — to dissipate it in a physical debauch.

Now it so happens that the increased activities of all the bodily functions, superinduced by contact with a poison, cause a certain feeling of exhilaration, a sense of well-being — of warmth, of mental vigor. The machine working under high pressure moves more rapidly, and life in consequence seems more interesting. While this process is going on, the owner of this physical link to mortal existence enjoys the condition ordinarily known and pleasantly termed — stimulation. The body itself accepts it as a condition of irritation. The immediate pleasure of the stimulation is the first reason why poisons are

taken. In the desire to gain this unearned pleasure regardless of cost, man deliberately introduces into his system the enemy of his life, in order to experience the thrill of ejecting it. He is willing to mortgage the future for the present; to spend the vital capital of life over and above its income. A corresponding fatigue follows, as every unnatural excitement is necessarily followed by corresponding depression—the depressions continuing to increase as physical strength becomes impaired.

The amount of reserve force which any individual may command is indicated by the amount of his vital bank deposits (accumulated alone from hygienic sources) minus the amount of his expenditures. This balance of vitality should be reckoned, of course, as man reckons his financial wealth,—by comparison of his credit and debit accounts. Some inherit great wealth of accumulated vital forces,—a precious and magnificent heritage. Others build their vital fortunes from more meagre beginnings, adding always, instead of spending.

By the use of a poison in comparatively small but repeated doses (see chapter on “Moderation”), one’s power of resistance to disease is continually weakened. The nervous system, lashed into daily abnormal activity, becomes more or less a chronic grumbler, expressing itself by uneasiness or fatigue. To relieve this uncomfortable condition, some poison is chosen sufficiently noxious to partially paralyze or benumb this faithful telegraphic defender of the human organism. The poisons of tobacco, opium, etc., are sufficiently virulent for this purpose, and the condition of semi-

paralysis so enjoyed by the partakers of these and other fascinating drugs of the same power is called — repose.

This is the second reason why mankind poisons itself — to induce the soothing effects of semi-paralysis. It represents a second stage in the progress of a poison mania. It marks the partial depletion of the vital treasury, and places on record a heavy mortgage upon future life.

The sound man, the health aristocrat, needs no poison to experience either enthusiasm or repose.

Later on the drinker or smoker takes his glass or pipe or syringe to “steady” his hand, which is inclined to tremble. The morphine taker injects his drug because otherwise his life would be insupportable. The body is stretched upon an invisible rack until the nerves, the messengers of pain or pleasure, are overcome in stupefaction and their warnings of danger silenced.

It is, therefore, first to enjoy the pleasures arising from irritation, and then the pleasures derived from semi-paralysis, that the human race is willing to mortgage itself, — to enslave itself to a poison.

The third stage of poison taking is not for the purpose of pleasure. The time for that has passed. It is rather to procure a surcease from pain. Exhausted nature calls out in desperation, because the suspension of payments of the vital bank is near at hand.

When, like a prostrate beast of burden, the human machine has become so exhausted that it cannot act its part without the lash of a poison whip, then comes the time when the son forgets his honor and

the mother forgets her child. Pitiab! human failures! dead, yet alive! Other vices admit the hope of reform, — not so easily the poison vice, which extinguishes in the system the power of will.

Dr. Isaac Jennings mentions the case of a young man of great promise whom a friend attempted to dissuade from the poison habit.

“Hear me first a few words,” said the young man, “and then you may proceed. I am sensible that an indulgence in this habit will lead to loss of property, to loss of reputation, to domestic unhappiness, to premature death, and to the irretrievable loss of my immortal soul; and now with all this conviction resting firmly on my mind and flashing over my conscience like lightning, if I continue to drink, do you suppose anything you may have to say will deter me from the practice?”

Before proceeding to discuss the effects of certain poisons on particular organs, let us stop a few minutes to consider

THE HUMAN BODY AS A MACHINE

The modern conception of the living body, whether plant or animal, as essentially a physical mechanism, is largely the result of discoveries in the domain of physics and chemistry, begun, indeed, but not perfected, before the recent century. With the single exception of the change effected by the acceptance of the theory of organic evolution, there has probably been no modification of human opinion within the nineteenth century more wonderful, or more profoundly affecting the general conduct of human life than that in our attitude toward the nature, the

causation, and the prevention of disease. — WM. T. SEDGWICK, Ph. D. (*Principles of Sanitary Science*).

The fundamental conception of the living body as a physical mechanism . . . is a distinctive feature of modern as contrasted with ancient physiology. — HUXLEY.

I will praise Thee, for I am fearfully and wonderfully made.
— THE PSALMS.

A man hardly knows how much he is a machine until he begins to make telegraph, loom, press, and locomotive in his own image. But in these he is forced to leave out his follies and hindrances, so that when we go to mill, the machine is more moral than we. Let a man dare to go to a loom, and see if he be equal to it. Let machine confront machine, and see how they come out. The world mill is more complex than the calico mill, and the architect stooped less. In the gingham mill a broken thread or shred spoils the web through a piece of a hundred yards, and is traced back to the girl who wove it, and lessens her wages. . . . Are you so cunning, Mr. Profitloss, and do you expect to swindle your master and employer in the web you weave? A day is a more magnificent cloth than any muslin, the mechanism that makes it is infinitely more cunning, and you shall not conceal the sleazy, fraudulent, rotten hours you have slipped into the piece, nor fear that any honest thread or straighter steel or more inflexible shaft will not testify in the web. — EMERSON.

THE human body is a bound volume, illustrating every known and unknown rule of mechanics, every revealed and unrevealed principle of science. It represents the divinest of forms and colors. It contains of cells and tubes and of lives within lives an almost incomputable number. It is said that the human structure, as a machine, is capable of more than 1200 different motions, performed by muscles and bones in combination, and that there are 208 distinct bones and 522 voluntary muscles, each of which has

been accorded the honor of a special name. It is also said that in its minute ramifications, and in connection with the brain, there are over 10,000,000 lines to supply the telegraphic system of nerves. The heart beats in health 70 times a minute; $2\frac{1}{2}$ oz. of blood pass through at each beat. This means 175 oz. a minute and $7\frac{7}{8}$ tons a day. In normal vigor, each drop of blood makes the entire circuit of the body in between two and three minutes, — a daily trip of about 168 miles, through grand canals and endless tributaries. Physiologists also tell us that for the purpose of distributing nutritive matter, and of carrying away effete material, an eighth of a horse power of energy is daily manufactured. This is chemically accomplished by the blood taking up oxygen in the lungs (from the air we breathe), and carrying it to the stomach, liver, and intestines, where it combines with certain digested foods (carbon, hydrogen, and nitrogen), the combination producing heat — the propelling power of the living mechanism.

Should not such activity satisfy any reasonable owner and possessor of that wonderfully intricate organism, that gift of divine invention and workmanship, a normal living body? It seems not, when one takes a poison to make it, in self defence work faster and still harder.

Considerable force is used in the processes of circulation and respiration. In a year the number of respirations is over nine millions, and one hundred and twenty-five thousand cubic feet of air carried through the lungs purifies at least five thousand tons of blood. Yet so perfect is the apparatus that we are

almost unconscious of its action, unless warned by symptoms of disease. Indeed, in perfect health we are not conscious of the workings of any vital function. Happy is he who, without paralysis, knows the mechanical working of neither head, nor nerves, nor heart, nor spinal column, nor stomach, nor any part of the machine, so perfect is the harmony of the incomparable living organism.

Volumes without end have been devoted to a description of the intricacies and wonders of the human body — indeed, to each single member of it. To treat learnedly one function alone now requires the study of a lifetime.

There is a reverence due this superb structure, this marvellous living mechanism. Some religionists go so far as to consider it sacred and call it the temple of God. They say it is a God-given habitation on earth, in which mortal man may carry out an allotted work to the glory of mankind as well as the Maker; that this divine gift, undefiled, makes this work and this individual existence happy and glorious, while the debasement of it brings mechanical disaster and misery. They aver that God has pledged Himself to keep this divine machinery, this earthly tenement, in healthful action if the tenant will but co-operate with Him in keeping the fine works in order. They think (if I am not mistaken) that one need not take the trouble to ask the Lord to bless people whose habits of life here below but throw away that heavenly trust — vital power — upon which depends our work, our character, our influence, our happiness. Perhaps I should take that back and say that I am

not quite sure what they think on this point, but they could not seriously have studied the subject of physical law, and the poison curse in all its phases, without drifting in that direction. Neither am I sure just what they think about asking the Lord even to forgive such tendencies, for as Emerson says, "everything we weave into each hour of the day counts in the woof." A premature cutting off of mortal existence for physical sins, before the allotted time of old age, is clearly not a divine compliment. It is rather an expression of divine scorn. We may at least all be quite sure that physical law is *law*. What, indeed, would become of this superb world and the vast systems of worlds, did the Great Father conform His laws to the individual sins of mankind? Without natural law, the planets would fly at random through space, the beneficent elements of nature would clash in diversity of purpose, the harmony of the universe would be broken. Let us not pray for health, but rather pray to deserve it. If there is no church or school which teaches the length and breadth and limit of physical law, the more the pity.

But aside from considerations of duty concerning a divine gift, and from a purely selfish, ungrateful, and unthankful point of view, the more the science of life is studied, the greater care will be taken to guard the integrity and harmony of one's own body, that each and all apartments of this human habitation may be kept in order, realizing that health, strength, power, and happiness depend upon immutable, physical laws; that all our enjoyment or suffering may be traced to obedience to or transgression of them; that if we are

to have health we must live for it; that the more perfect the health the more perfect are work and play, and that to secure the highest possible development of mind and body requires constant watch and practice of the rules of hygiene. And, moreover, when, in the light of knowledge, the health improves and the great world unfolds itself in all its beauty and opportunities, the popular tolerance of the almost universal abuse of vital powers becomes more and more distasteful.

Asking pardon for digressions, let us return to the human machine itself. Let us consider, for instance, the skin, moistened by means of 2,500,000 glands which empty their fluid secretions through diminutive spiral channels, scarcely conceivable. It is said that there are 2,500 pores to the square inch in the palm of the hand, which, if united end to end, would form a channel over three miles long; it is said that such are the marvellous convolutions of the lungs with their 1,700,000 air-cells that, if the sensitive, delicate, and moist breathing surface were spread out flat, the area would cover 2,000 square feet.

Dr. Mary Rossiter in an article in *Good Health* says of the ear:—

“The most interesting part of the ear is the organ of Corti, found in the spiral portion of the internal ear. It is especially concerned in receiving and transmitting sounds. From a side view it looks like a harp; seen from above, it bears striking resemblance to the keyboard of a piano. The inner row of the organ of Corti contains 10,000 cells, and the outer part 16,000 cells. All these cells rest upon a membrane made up of 24,000 fibres.

"It has been estimated that in the average man there are 22,500,000,000 red blood-cells, and 53,000,000 white cells.

"According to a German writer there are, all told, 26,500,000,000,000 cells in the adult human body."

"Have you ever thanked God," asked Dr. Talmage, "for the arch of the foot? The twenty-six bones of the foot are the admiration of the anatomist. The arch of the foot fashioned with a grace and a poise that Trajan's arch at Beneventum or Constantine's arch at Rome could not equal. Those arches stand where they were planted, but this arch of the foot is an adjustable arch, a yielding arch, a flying arch, and ready for movements innumerable. The human foot is so fashioned as to enable man to stand upright as no other creature, and leave the hand that would otherwise help in balancing the body free for anything it chooses. The foot of the camel is fashioned for the sand; that of the bird for the tree branches; that of the hind for the slippery rocks; that of the horse for the solid earth; but the foot of man may cross the desert, climb the tree, scale the cliff, or walk the earth. With that divine triumph of anatomy in your possession, where do you walk? Where have you left the mark of your footsteps? . . .

"Was there ever such a complete bundle put together as the human being? What a factory! What an engine! What a mill race! What a lighthouse! What a locomotive! What an electric battery! What a furnace! What a masterpiece of the Lord God Almighty!"

Very wonderful indeed are the functions of this royal establishment, and very intricate are its interdependencies. There is nothing superfluous, nothing unimportant. We appreciate the mechanism, the nice adjustment, the frailty, and the utility of the

watch. We guard it jealously from all harmful influences, knowing that without care, the watch becomes useless; and yet the majority of people little appreciate either the mechanism or the utility of the grandest, most complex, most exquisite, most delicate, most marvellous piece of machinery that the Creator of the universe Himself ever conceived or made, and which He has intrusted to our own keeping. I am its possessor. It is my medium of life and my only means of earthly existence. It is my medium of action, of thought, of memory, of love, of appreciation, of happiness. All depends upon the excellency of it and the care of it. I am the sole possessor and owner of a body which, if about to be lost forever, even were I a billionaire, even were I the greatest king or potentate on earth, I would eagerly and thankfully give all to save.

We know that, without eyes, the sky, woods, ocean, flowers, our children and friends, are covered pictures; literature and art, closed volumes; and yet the eyes are treated like play balls in a game of cricket. We know that without integrity of brain we lose the power to think, to comprehend, to appreciate, to remember. We know that the loss of memory is the first stage to full idiocy; that the mentally defective are objects of pity and aversion, and yet we abuse the nerves; we push aside with a light hand what makes and supports the brain. The mechanism of the watch we respect, the timepiece of life we scorn, and all in the interest of loose desires, passing sensations, or senseless fashions, finding sooner or later that genuine pleasure as well as genuine power for use-

fulness comes only with sound health, and that perfect health is but the result of infinite care and attention.

Digressing again. The story of our human body, and of our mistakes in poisoning it, is told in every language, by the folio and the ton. It is told in all its phases, as the results of long and indefatigable study, coupled with untold sacrifice of thousands of poor suffering animals, dissected alive, poisoned, and tortured in the interest of medical science.

Gustafson, in his fine work before alluded to, gives a bibliography of about five hundred of the most important books treating of self-poison (principally by alcohol), which are contained in the library of the British Museum. He states that the works on the general subject which appeared in this library from 1870 to 1884, the date of the publication of the "Foundation of Death," are simply legion. And they tell the same story over and over again in all its hideousness.

One is scarcely to blame for ignorance of facts which are not brought to one's attention; and these subjects so ably and so abundantly treated by scientific writers, are too little taught by our parents, our schools, our colleges, our clergymen, and our physicians; more the pity when in the school of experience, and with the best of intentions, it costs at least three mistakes to learn one fact.

Professor Beard quite loses his patience on this subject, and in an article, "Brains and Nerves," published in the *North American Review* (September, 1880), thus speaks of it:—

"The need of the hour is a work on the stupidity of animals (human animals), showing how little they know ; how sadly they miss their noble opportunities for culture ; how low and capricious their ambitions ; how stolidly content and conceited they are in their ignorance ; how easily they are cheated and trapped by their own instincts, and then become at once the game, the servant, the food, and the philosophic wonder of man ; . . . the demonstrably true perishes or is forgotten . . . while the demonstrably false is renewed day by day ; . . . all human philosophy is but a circle of non-expertness ; the universe in which we crawl is a wheel in which the science of the demonstrably true is but a little hub, while the false and undemonstrable extends towards an infinite periphery. . . . Not ideas, not truth, not reason, not the demonstrable, but the undemonstrable and the demonstrably false have ruled and are destined to rule all the higher . . . animals. The need of the age is to . . . analyze and organize its weaknesses, its blunders, and its diseases."

THE RELATION OF THE FAVORITE POISONS TO DEGENERACY

THE early student of human degeneracy was the French Dr. Morel, who, in 1857, first introduced into medical science its characteristics and causes. Since then the subject has been most industriously pursued by many investigators, especially French and German, and there is now a large amount of literature on the subject.

Human degeneracy is, of course, a deviation from the normal man, who represents the soundest and

highest development of all bodily organs, maintained in a well-balanced state.

The scientists group the degenerates into classes, the lowest being, of course, the idiots and maniacs. One group includes those who are simply weak minded. The highest class includes the intelligent degenerates, whom Max Nordau most enjoys discussing.

Dr. Nordau's standard of physical, moral, and intellectual perfection is high, and according to it few of us wholly escape his sharp discriminations. For the purpose of instituting proper comparisons, however, it is a great advantage to have set before us a perfect standard of the highest development.

We must assume that man is perfect only with full integrity of cell and tissue structure, as well as form and color of blood-corpuscles. He should be free from blemish, and his organization should present a perfect harmony and balance between every organ of the system. This alone furnishes the perfect standard of physical strength, of mentality, of beauty, happiness, and longevity.

William R. Thayer, in an article, "Longevity and Degeneration" (*The Forum*, February, 1900), takes issue with the scientists, and attempts to prove that the "counterfeit progress towards decadence" is partly a mistake.

"Man has been summoned before a dozen sciences," exclaims he, "each of which has investigated, cross-examined, and condemned him. . . . Every variation from the Normal Man must be condemned. That is their gospel.

"But who is this Normal Man? So far as I know, none of the morbid psychologists has ventured to draw a

portrait of his wonderful creation ; and yet we can get a glimpse of him by collecting the hints which they have scattered through their works, and particularly by reversing their description of abnormal men. As in photography, we must rely on negatives for a likeness.

"The normal man is 5 feet and 6,173,958 inches tall, and weighs 148 pounds, 7 ounces and 3 grains. His pulse never exceeds 68 beats, nor his respiration 16 breaths per minute. He requires 300 cubic feet of fresh air per hour. He chooses his food by weight, taking care that the proportion of proteids, fats, and carbohydrates shall not vary by a milligram. Watch him at his meal ! How conscientiously he masticates ! How regularly he sips his tumbler of water ! You might imagine you were witnessing a religious rite. A clock measures his stint of sleep, a pedometer his walking. His features are so regular that they might have been drawn with a pair of compasses. Both sides of his face, both hemispheres of his skull, correspond. . . . The normal man is a convenience for reckoning and no more."

This description is delightful. It would have been less amusing but far easier had the facetious professor attempted to describe a normal bird, a normal fish, a normal invertebrate, for they are the rule and not the rare exception, as is the case with man. To prove that "civilized society is not withering at the top," the Professor deserves our thanks for investigating the physical conditions of 530 of our greatest public writers, statesmen, scientists, inventors, philosophers, agitators, musicians, poets, etc., of the last century. He found that they possessed unusual vitality and a greater average longevity by thirty years than the ordinary folk. He found that even the poets, who

are supposed to die young, lived in full vigor to an average three score and six years.

"Surely, we need to reverse our conception of the pathology of poets," exclaims he; "the poet is not a man who dies young, but a man who keeps his imagination, sympathy, and emotions young as long as he lives."

Of course he does, for it requires a superior human machine to do superior work. If a poor rickety machine of any kind can do superior work, it is an exception to the rule, and the regrettable feature remains that if much could be accomplished with an imperfect machine, so much better results could have been accomplished with a perfect one.

As a rule it is not the workers who are the gnarled growths of society. They are rather its rare blossoms, the results only of hygienic conditions. The normal man does well anything he undertakes. He was not born tired. He wastes no time in repairs. He expends no force unworthily. The normal man is great, not in spite of physical drawbacks, but in the inevitable fulfilment of natural laws.

Says the cynic: "Being human, one may not escape imperfection and suffering."

"Why not," asks the hygienist?

The normal man scorns disease, as well as failure of worthy accomplishment. But to return to the scientists and to the science of Degeneracy. As before remarked, the defectives are divided into classes.

"The signs by which the degenerates are recognized," says Charles L. Dana, "are called stigmata, and they are

of three kinds, namely, the physical or bodily, the physiological, and the mental stigmata. An enormous amount of interest has been excited chiefly through the work of Lombroso, about the investigation of bodily stigmata. The matter is being overdone, but there is a fundamental truth in the significance of the bodily anomalies supposed to characterize the degenerates. They consist of peculiarities in the development of the bony system, the shape of the head, the conformation of the ears, the palate, the hands, the toes, and other parts of the body."

Most works on "Degeneracy" are profusely illustrated, showing the imperfections most commonly seen in the various features of the human body. The study, though disagreeable, is wholesome, for by training the eye to an appreciation of soundness and beauty, and in studying the causes of physical, mental, and moral deformity in all its stages, one comes more than ever to despise and abhor our almost universal unsanitary practices which so pervert nature and so mortgage progeny to conditions of the unfit.

A volume could be written on the peculiarities of feature and expression of the tobacco, alcohol, opium, arsenic, tea, and other poison takers. It requires no great expert to read in the face the story of any kind of poison habit. One may read not only the story, but each chapter of it, the habit being always marked as it is always progressive. In truth, one should study degeneracy in order to overcome and remedy it. Poor humanity is becoming devitalized so gradually and imperceptibly that a halt should often be made

for the purpose of taking an inventory of health, beauty, and character.¹

Dr. Nordau classes all artists and writers who do not move us in moral directions as degenerates.

"Some critics say impatiently," declares Dana, "that they do not care for the man if only his work be beautiful; but the things cannot be entirely dissociated. If the man is really a form of decay, his art will show it in time; like the putrid fish, it may shine, but it smells."

One might say of the higher-class degenerates that they are undertoned. They are the semi-failures in life, who just miss success. They lack the acute perception, the sound judgment, the desire for close application or for arduous or continuous work so keenly enjoyed by normal man.

Again, the degenerate is cruel. The spirit that enjoys killing, and, more than ever, killing what harms him not, is more or less abnormal and vicious.

¹ Again says Mr. Dana:—

"The degenerate has also some peculiarities of bodily function, such as weakness of the circulation, lack of power to endure fatigue . . . sterility, and allied weaknesses. These form the physiological stigmata. The two most characteristic are an extreme emotionalism and impulsiveness. . . .

"The degenerate in all cases has defects in moral sensibility which are noticeable in all who have morbidly deviated from the type. Underlying all is an instability of mind, a lack of mental equilibrium. The intelligent degenerate is one who makes the judicious grieve. . . . Associated with all degeneracy, again, is the inherent weakness of reproduction of the species. The children of the degenerate, if any exist, are more degenerate, and the family dies out. No pair of degenerates can surround themselves with healthy children. Insanity, criminality, inebriety, imbecility, are the expressions of lower types."

It comes under the head of mild insanity. The extreme type of insanity seeks to kill and destroy.

In the study of degeneracy, the relationship of criminals and degenerates is especially interesting, and when more is understood on the subject there will be more pity for criminals and less of it for the causes of degeneracy. It is now an accepted fact that habitual criminals and the insane, — including the half insane, the hysterical, the inebriates, the dipsomaniacs, and other victims of nervous disorders, — have all something in common in that they are degenerates and not physically and morally sound.¹

¹ As Dr. Morel says: "It is impossible to study human degeneracy without seeing the intimate connection between insanity, the dwarfing of the species, and all nervous and other bodily disorders, with vice and crime; and in devising comprehensive measures for prevention, one becomes involved in the questions of sanitary legislation, education (religious and intellectual), the prevention of crime, diet, lodging, amusements, occupations, and a host of subjects."

After visiting the principal lunatic asylums of Europe, and having conducted scientific correspondence with leading physicians, Dr. Morel again says: —

"The incessant progression in Europe, not only of mental alienation, but of all those abnormal states which are in special affinity with physical and moral evil in mankind, struck my attention. Everywhere I heard physicians complaining of the increasing number of the insane, and the criminal and moral statistics of not only France, but all Europe and America.

"The uniformity of physical defects indicates the pre-existence of causes which agitate in an invariable manner, and which create types of a determined character. Distinctive characters result from fixed and invariable rules.

"The constantly increasing number of suicides, of crimes, of offences against propriety, the debasement of the race, which in many localities can no longer fulfil the conditions formerly required for military service, are indisputable facts. These are proved by figures

In the study of the deterioration of races, one turns with pleasure to the most perfect that ever existed, when physical superiority was the fashion. The ancient Greeks and Romans not only delighted to immortalize their physical glory in marble and color, but to honor it in all phases of life. To gain a prize at the Olympian games raised a man and his progeny from obscurity to fame. Physical development was the subject of most serious study on the part of both the individual and the state. What they accomplished in art, literature, and world power resulted from the dominant idea that physical, mental, and moral strength go hand in hand.

We shall not, like the Spartans, cast weaklings aside to die, or treat them when grown with such open contempt that they will wish to be dead. We must recognize, however, that all imperfections exert

of such import that the solicitude of European governments has been justly alarmed. In so serious a moral and physical position, it has been incumbent upon me to search on my own part . . . the general causes which endanger the health of the present generations and menace the future welfare of generations to come."

Dr. Morel explains how experimental philosophy can elucidate the subject of degeneracy, as in the action of poisonous agents upon animals, in the observation of degenerate conditions, infractions of physical law, bad air, wretched consequences of alcohol, and other of the favorite poisons, diet, etc. He found it impossible to isolate physical man from moral man.

"Man," says Morel, "is not the production of chance. . . . There is fear that the conditions which assure the duration and progress of the human race may be overpowered by those which co-operate in its destruction."

"Such," writes Bichat, "is the mode of existence of human beings that all which surrounds them tends to their destruction. The difficult question of degeneration in the human race must be studied from its source, and pursued scientifically."

a baneful effect on the race; that degenerates are debasers of the race, and that the great principles of humanity have received a serious injury on their account.

"Men," says Francis Galton ("Race Culture"), "have long been exempt from the full rigor of natural selection, and have become more mongrel in their breed than any other animal on the face of the earth."

Darwin shows us how health, strength, and beauty determine choice among the lower animals, and of the natural beneficent results to race culture. Other writers also tell us how man, who would scorn the idea of breeding animals with disease or even weakness, will still advocate marriages into families of hereditary taint or with habits of self poison, equally pernicious to race culture. The need of stimulant is itself a taint. It is an ugly sign of decadence. The normal man does not need poison.¹

If the human stream is tainted and the human soil impure, one object of this book is to show how considerably the poison habit is responsible for it. The vast army of poison takers who are conscious of nerves, of heart, of digestion, of the fatigue of devital-

¹ "The only way to begin to stamp out hereditary disease," says Dr. Preston, "is to direct the tide of public opinion toward it. . . . Those who are to become the fathers and mothers of our next generation, should be warned before they take a step into the dark, and should feel that it is a duty not only to themselves, but also to their country, to propagate a pure race. Now the strongest point in a selection must be first and foremost pure, healthy blood. We know that the race can be improved, as is shown by analogies among the lower animals, and yet we continually see the rapidly increasing mass of impure blood poured into the general current."

ized blood, all those, indeed, who feel that they need some poison stimulant, however small, are the weeds that choke national life. The perversion of the race is greatest from this source. However, the more one studies these questions the less pessimistic one becomes concerning human life. In fact, one is forced to believe that the great Creator intended this world for an earthly paradise, and that health, beauty, happiness, and success are the natural birthright of man. In this new light the problem of human misfortune is an easy one, and we learn that the chief duty of mankind is physical culture; the chief duty of the educator, the preacher, the parent, and the legislator is to teach and circumvent what most contributes to the degeneration of mankind.

Of course the field for the study of degeneracy is large. It includes not only personal habits, diet, exercise, mode of dress, air, light, climate, and all questions of sanitation which are under the control of every intelligent being, but the study of physiology and inheritance. It includes, in fact, the consideration of all the causes and agencies which serve to change the physical organization for better or for worse.

Lankester says: "Degeneracy is a gradual change of structures by which the organism becomes adapted to less varied and less complex conditions of life, as progression is a gradual change of structure in which the organism becomes adapted to the more and more varied and complex conditions of life. In other words, life is poorer and poorer or richer and richer as forces exist which are preservative or destructive of the race."

Degeneracy is oftenest felt in the want of endurance. The reason for the laggard by the wayside, the unsuccessful, is physical. He may have been born tired, or he may have been the spendthrift of his own vital forces. However a degenerate condition may have been acquired, the integrity of cell and tissue structure is lost, and along with it has departed the force of physical and mental power.

A recent writer says that Mr. Gladstone was free to confess that in his opinion the brains of the modern generation of Britons showed a deterioration of power as compared with the brain power of the Elizabethan period.

"It is generally agreed among scholars," said he, "that the ancient Greek brain represented the high water tide mark of the human intellect, from which the tide is now steadily receding."

The accumulation of centuries of acquired knowledge should, of course, result in elevating the human race to an ever higher physical, moral, and intellectual standard. The hosts of King Poison, however, like swarms of devastating locusts, have swept the earth in a westward march. They conquered the peoples of the East, and then took to Ancient Greece and Italy and Spain. They have partially conquered France and Belgium, and with relentless hold are now fastened on other countries. Have they left enough of the great Anglo-Saxon race to decide what shall be done with it? It is time that dominant race should take the matter in hand. The hour is already late. It boasts a leadership in civilization. It talks of its love of peace, and yet the spirit of the middle

ages did not turn more readily to war. It talks of morality, and yet church, college, and State are moral contortionists before this poison king of hosts. It talks of physical health, and yet in both England and America there is now per capita three times as much idiocy, lunacy, and disease as fifty years ago.¹

In examining literature on the subject of degeneracy, it is interesting to note the various reasons given for its cause. A vast library tells us how alcohol is the chief cause of the degeneration of the human race. A newer literature is springing up to divide that place of demoniac honor with tobacco. In China the reigning potentate of degeneration is opium. Let it rather be said that the commander-in-chief of human degeneracy is our favorite poison. Poison of any kind can accomplish all that is necessary towards the decadence of man.

The remarks of several writers on the causes of degeneracy will be given further on ; but, meanwhile, let me again add that French statesmen, French scientists, and French thinking people generally, are becoming greatly alarmed concerning the rapid decrease of the population of France, and the rapid increase in what pertains to demoralization and physical degeneracy.

¹ In an article published in *The Nineteenth Century*, by H. Elsdale, in which he discusses the question of degeneracy, he notes that while the world's stock of knowledge is increasing, brain power itself is decreasing, and in conclusion expresses a not very vivid hope that "great world movements are even now in progress under the surface, which will in future eventuate a new order of things, set up worthier ideals of sacrifice and devotion, and produce a new race of greater exponents and apostles."

The French race was originally a physically strong one. They are naturally of all nations the most industrious and frugal. They are naturally quick of perception and fond of research. Their scientists lead those of the world. They naturally aim at perfection in all they undertake, expending infinite pains for best results. They are naturally the most artistic people of the earth, their art instincts pervading all their industries. They possess naturally the faculty of initiation, the power of undertaking great enterprises. They do not lack naturally in disinterestedness and idealistic enthusiasm. From ancient physical and mental greatness they have inherited vast power of recuperation, which it has been hard to overcome. "France has fallen never to rise," said Joseph II., expressing the general opinion of statesmen of the eighteenth century, just before the Revolution. Shortly after, under Napoleon, France subjugated all the nations of Europe. Prostrate twenty-five years later, France again recuperated, forcing respect from the nations which had subdued her.

But she has now an enemy less easy to conquer, and from whose prowess it is less easy to recuperate. It is a devouring rot, a corroding rust, which is eating into the life of all civilized nations, but which in the last forty or fifty years has progressed in a geometrical ratio in the life of poor France. The increase of the use of alcohol, tobacco, absinthe, and other poisons, not only by French men but French women, has dealt a blow to France from which a greater effort will be necessary to recover than from the pestilence

of war. Will she be equal to the conflict? God grant it.

One of the most interesting books lately written on the degeneracy of France, and the way of escape, is the one before mentioned by Edward Demolins, "Anglo-Saxon Superiority: To what is it due?"

He does not strike at the root of the great evil of all mankind, — the favorite poison scourge that steals away national health, national intelligence, national energy, and national honor. However, apart from this oversight, his treatment of the subject is very interesting, and he is very sincere in his efforts to find a remedy.

"We know but too well," says he, "that the number of births in France is diminishing year by year, and that deaths are more numerous than births. . . . An evil spirit is alleged to be abroad, conjured up by the abandonment of all good principles."

M. Demolins attempts to find a possible remedy in the study of the habits and customs of other races more successful than his own: —

"Anglo-Saxon superiority: Although we do not all acknowledge it, we all have to bear it, and we all dread it; the apprehension, the suspicion provoked by *L'Anglais* proclaim the fact loudly enough.

"We cannot go one step in the world without coming across *L'Anglais*. We cannot glance at any of our late possessions without seeing there the Union Jack.

"The Anglo-Saxon has supplanted us in northern

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America (which we occupied from Canada to Louisiana), in India, at Mauritius, in Egypt. He rules America, by Canada and the United States; Africa, by Egypt and the Cape; Asia, by India and Burmah; Australasia, by Austria and New Zealand; Europe and the whole world, by his trade, industries, and policy.

"That race seems destined to succeed the Roman Empire in the government of the world.

"The Anglo-Saxon world is now at the head of the most active, the most progressive, the most overflowing civilization. Men of this race have no sooner established themselves on any spot in the world than they transform it by introducing with marvellous rapidity the latest progressive innovations of our European communities. And often these younger societies succeed in outstripping us. They already call us, with a certain disdain, the Old World. And, indeed, we must acknowledge that we do look somewhat old by the side of these, our juniors. . . . See what has become of southern America under Spanish and Portuguese rule, and behold the transformation of northern America in the hands of the Anglo-Saxon. It is like night and day. It is not sufficient to point out this superiority, to 'denounce' it in Parliament or in the press, or to shake our fists at *L'Anglais*, like angry old women.

"We shall examine the situation as men who will be equal to it, as scientists who will analyze it with exactness and most deliberately, so as to become acquainted with its real properties.

"The question, indeed, is to find out the secret of that extraordinary aptitude to civilization, and the means of doing it. Such an investigation for our sons and ourselves is a question of life or death. Recrimination is easier than adopting the ways of the strong."

M. Demolins travelled throughout England to study the school systems and the general training of the young:—

“Their aim,” said he, “is to achieve a harmonious development of all the human faculties. The boy is to become a complete man, so as to be capable of fulfilling all the ends of life. . . . One of the professors of a famous boys’ school told me, ‘Our aim is to develop *physical* education . . . energy of enterprise, and the exact appreciation of any accomplished work. Many breakdowns in life are caused by bodily weakness. In our schoolrooms, thanks to our system of food, of dress, and of living, strong and sound men are made. . . . We have to deal little with illness. Our mode of life teaches young men that good health ought to be the general rule, and that disease is the consequence of error, ignorance, vice, overwork, and misconceptions of what work ought to be.’ According to DeBonald ‘Man is an intellect served by organs,’ and we see how the morning is employed in developing the former and the afternoon in developing the latter.”

In conclusion M. Demolins remarks:—

“Our French education compromises our vitality and our social power; this is double cause of inferiority.

“On the other hand, English education and the whole social atmosphere develops in the highest degree the capability of the race to rise and triumph over the contemporary difficulties of existence. . . . Ay, such are the ways of these redoubtable competitors. Their growing youth is not afraid of the strife. They are the race which through their training can always preserve their . . . energy; . . . their comprehension of the normal conditions of physical life is remarkable.

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“Young men brought up in the Anglo-Saxon way — that is, made strong in their bodies, accustomed to material facts . . . looking upon life as a battle — bring a superabundance of youthful strength to cope with the difficulties of existence; they enjoy these difficulties, expect them, triumph over them; fitted as they are for the strife, they improve in the midst of it, as in their element.

“And now judge, compare, and come to a decision. I have tried to show what are the hidden springs which move that race to threaten and invade the older and more decrepit societies. . . .

“The great peril, the great rivalry are not, as we think, on the other side of the Rhine; militarism and socialism will spare us the trouble of getting rid of that enemy — and that before long.

“The great peril, the great rivalry are on the other side of the Channel and on the other side of the Atlantic. . . . The man is not much considered, because he does not come, like the German, along with high battalions and perfected weapons; he is despised because he arrives with his plough and by *himself*. This comes from our being ignorant of what that plough is worth, and what that man is worth.

“When once we know that, we shall know where the danger is, and at the same time where the remedy lies.”

The Anglo-Saxon race must not feel too much flattered by the words of this astute French patriot.

Persia, Italy, and Spain were once great. They had their turns at dominating the world, and now in the great triumphal march of the Kings — alcohol, opium, nicotine — they have arrived in full force in England and America, and what will be the result? Will England and America succumb to the insidious destroyers?

Another book, "Grandeur et Decadence des Français," by Gaston Routier, is most interesting in connection with this subject of degeneracy. "*On doit au Peuple la vérité*," says the title-page, while the preface ends as follows:—

"But in sixty years, if some one chances to read this book, he will be surprised to discover the picture impartial and unhappily too like actual France; he will appreciate the just value of this cry of grief and anguish of a French writer, this cry of alarm of a patriot."

M. Routier dwells on the glories of ancient France, its great thinkers, writers, and commanders, and can now —

"Only blush and weep for the France of to-day . . . a country of courtesans . . . and debaucheries. What decadence and what shame! I say to you, Frenchmen, my brothers, have you not often blushed on hearing strangers praise our country as one would praise a house of bad repute, our cooks, and the unfit gaiety of our cafés' concerts? Is it for that our ancestors shed their blood and gold for the glory of France? What would they say to-day, — they who left us strong and respected? . . . In a patriotic spirit I say that we must see our faults in order to cure them. We must know the cause of trouble in order to avoid it. I do not deny that France presents actually an ensemble of virtues and vices, a mingling of grandeur and decadence. But there is a justifiable need of a cry of alarm; . . . we are on the point of willingly losing all the patrimony left us by our ancestors. In the name of our country, of our family, of our race, Frenchmen, let us halt on this slippery declivity!

“In the different epochs of our history we have had our times of retrogression, — let us not fall again into the errors of the past. Let us not forget that corruption and shamelessness touched only the aristocracy and *haute bourgeoisie*, in the time of Louis XV., but that to-day the entire mass of our people are being perverted and corrupted, which is a thousand times graver. When a part of the people is contaminated, a revolution may save the masses by a vigorous loss of blood, but when all are tainted there is no longer a remedy. It is irremediable decadence, decomposition, and death.

“We often allude to that too corrupted society at the end of the second empire, as being the cause of our misfortunes and disasters of the terrible year. *Eh, bien!* what was the frivolity, the debauchery, the careless *légèreté* of that epoch, in the presence of the frightful state of morals of to-day?

“France is ill. It has all the appearance of prosperity; it has a magnificent army, an excellent navy, immense colonies, and solid finance, and takes its place worthily in the world, but it has an alarming sore in the body which denaturalizes it, deprives it of its qualities, renders it morbid. It is about to transform and change the soul of our race. This mad and criminal attempt, this monstrous mental aberration! It is against that that we should struggle with all our force, without rest, and without mercy. Patriotism even is becoming undermined; one would make of France a people of amusement-hunters, of miserable beings greedy for distractions and plays, reclaiming the *panem et circenses* of Rome in the time of its decadence, a people without morals, without religion, without enthusiasm, without patriotic faith . . . and forging for themselves chains which some day will strangle them. Frenchmen, with the aid of all, that shall not be!

"A display of demoralization among the rich or the classes which *direct* has always preceded the falls of empire and the ruin of society. In the great epochs of the history of all peoples, the rich and noble classes have afforded an example of virtue. Vice and debauchery have been the monstrous exception.

"Let us here stop and say that it is rather the fault of fashion than of money that makes our entertainments and our luxuries iniquitous. Money brings its power of good. It is but perversion of the proper use of money as the improper use of physical strength that is the curse.¹

" . . . Ancient French virtues are now but an object of derision among *la haute société* of Paris. It is to be feared that what the unscrupulous and criminal seek to provoke by their writings, by their propaganda in the theatres and concerts is, that that gangrene from on high will descend to the people; that the absence of morals and of principle will extend nearer and nearer to the soul of the entire nation, as a contagious disease gains footing in a community. When that time arrives it will be the end of France.

"Yes, the evil that gnaws at the French soul comes from on high. . . . Their example is about to lead all France. It is there that the knife and the hot iron must be applied. . . . It is this guilty indifference that we must fight with all our force. That is the great source of evil which rots society and will cause the French race to perish."

M. Routier, like other writers on the same subject, goes into extensive statistics to show the exact state of affairs.

¹ Let us also stop and emphasize this idea, that incompetent, inane, or vicious respectability is one of the greatest handicaps of civilization, for its influence is incalculable. — Ed.

Let us turn a minute to speak of conditions in America. Let us not indulge in a too pious feeling, when reading of the decadence of ancient Rome or of modern France, for we have a cancerous sore in the national life at home, and the inclination of our *haute société* is to imitate the so-called luxuries of decadent nations, and especially in what is the real cause of their downfall, — the encouragement of the poison mania.

Concerning “degeneracy” in France, there was recently published in *The New Voice* (Chicago) a remarkable appeal from a French prelate, Monseigneur Latty, Bishop of Chalons. The Bishop has taken very advanced ground for a Frenchman, in declaring even the mildest fermented drinks to be poison. The pastoral letter makes a pamphlet of thirty pages. To the editor of the *Voice*, who had asked for his pamphlet, Monseigneur Latty wrote: —

“May God aid us in ridding Christian peoples, and through them all others, of this infernal curse” (the alcohol habit).

A few extracts from the pamphlet are as follows: —

“It is a subject (alcohol) which in the past few years has occupied, disturbed, and frightened all Europe, and France in particular. It is urgent to make heard a cry of alarm at the peril that menaces us, so grave and so saddening are the facts before my eyes. . . . One is justified in believing that alcohol is at the present time the chief and the most deadly of the plagues that infest humanity.

“What is it, indeed, that distinguishes the nature of

man? Reason. In what consists his welfare? It is that he may be and live in accordance with his reason. But poison takes from man the use of his reason. It takes it from him at first at intervals more or less frequent, and then little by little it strikes at reason itself in its essential organs. It exposes him to all evil, in altering the chief faculty which urges him towards the good.

“This poison vice upsets the marvellous order of the human machine. There is no longer to be found there either the proper proportion or balance between the various parts or powers, nor the measure between the passions and their objects, — nothing that expresses harmony and union of the forces that make up humanity. There is no longer beauty, or the least vestige of moral energy. It is a rupture of the human bond without death; a sort of dissolution of the constituent elements of man. . . .

“Will we understand it at last, Christians of France? Do you not know that all alcohol is poison, — that alcohol of the purest wine is a toxic agent of certain and unfailing effect?”

After repeating scientific demonstration of the action of alcohol on the body, the Bishop again says: —

“One seems to hear in alcohol the dry lugubrious sound of a cleaver, which falls without ceasing upon humanity. . . . And it insinuates itself throughout the whole human organism and into each of the systems that compose it. . . .

“Must one tell you . . . that of a hundred insane there are twenty-one alcoholics? That of a hundred convicted criminals in our courts there are forty or fifty alcoholics? That of a hundred murderers there are sixty alcoholics? And finally, that the alcoholics figure for the greater part in the great army of public beggars?”

"I do not speak of disease unavowed or undefined — stoppage for work or unfitness for it ; and from all this coming forth as a necessary and terribly accusing product ; I do not speak of that crowd of children, impressed by the example of parents and who become themselves the prey of the infernal and implacable scourge.

"Let us not water flowers with alcohol — these child flowers so tender, so delicate, that God has made, smiling as joy, and sweet as hope, which should be nourished with naught but milk, dew, and love ; these flowers of promise of which the fatherland and Heaven await together the fruits of honor and of virtue ; yes, too often they are watered with the poisoned liquid which fades and kills them — they, so frail, and it, so powerful and deadly. Who thus plunges their first roots into death ? Who mixes in their first tissues the germs of all diseases and all vices ? Who vitiates day by day the blood and virtues of our race ?

"What greater calamity desolates the earth than the hydra of poison ? Tell me, if you know. And you do not tremble at it ? You are not in the least alarmed ? Would you console yourselves in thinking, perhaps, that men have been drinking for a long time, and that for all that the human race does not seem likely to perish yet ? As if no people had ever weakened, fallen, disappeared. Half a century ago the consumption of alcohol in France was from eight to ten litres per man. We are to-day in the last rank of sobriety with a consumption of fifty-six litres of alcohol per man. Can we escape this rapid increase ? Is it with impunity that we have four hundred and fifty thousand saloons ; one for every forty men ? And can alcohol, by leading Frenchmen to immorality, disease, and death give to France healthy, robust, numerous generations ? Let us have no illusions as to the certain term of its destruction, and let us believe science when, through Professor

Debove, it tells us that 'it wears out the race at both ends by increasing the mortality and diminishing the natality, or in producing only degenerates.'"

The Bishop speaks at length of the consumption of the various poisonous drinks in his own diocese among men, women, and children :—

"My heart fails and my eyes fill with tears at the spectacle of the numerous ills that the water of death produces in this or that portion of the flock confided to my guard. Certainly one cannot feel indifference that temperaments are feeble, longevity rare, madness and sudden deaths frequent ; that alone would suffice to make us curse the poison generating so many evils. But to know that it penetrates still further into the souls, diminishing the intelligence and free will, lowering the most noble and essential sentiments, altering the moral sense itself, and destroying the balance of character and all the fundamental powers of man ; to know that in all these places, public and private, morals are shaken, given over to all chance ; to know that the honor of cities suffers as much as the peace of families, and that all this decadence ends often in horrible suicide ; I ask you if there be anything more heartrending, more capable of inspiring sadness and alarm in whomsoever loves his brothers and his country ?

"The Evangel and the Cross roundly condemn this profanation of all the gifts of the good God ; the country should have only anathemas for the unfortunate ones who thus compromise its glory, its security, its existence. Christians and patriots, will you not unite all your efforts, according to your means, to counteract this curse which, dragging us down from faith, reason, and humanity, will finish by taking from us our right to exist among civilized people ?"

Turning then to the remedies, the bishop recognizes the necessity of legislation, although he is sensible of the weakness of statutes if not supported by the convictions of the people, law falling powerless before the inertia of the majority. He also recognizes the utility of all propaganda, lectures, tracts, charts, societies, and good influence of employers over employees.

“Thus, among all the influences and measures most fit to fight intemperance we find not one which is not incomplete and insufficient in some particular. Is that a reason for pushing all aside? No, surely. It is, on the contrary, a reason for uniting them, and making legislation, private, initiative, and all that they can impose or persuade, like a bundle of offensive and defensive forces all directed towards a single end — the extinction of the evil which is poisoning and killing France. But we must say again, because nothing is more certain or more necessary: None of these forces, nor even their union, will produce the total effect we have in view, if every one does not insure first of all efficacy in himself and does not give, in his person and in his life, the example of irreproachable temperance.”

The letter closes with an appeal admonishing the rich that they cannot expect the poor to give up their brandy when the latter know of the champagne and fine liquors which are consumed in the homes, gardens, and cafés of the rich.

Summing up, he says:—

“Temperance is virility, moral beauty, perfect accord of healthy ideas and good works. Where may one find these things indispensable to the strength and prosperity of a people, if those who dominate it have them not? A democracy has more need of them than another kind of

social state. Priests of the Lord, and all you who practise the holy laws of the Gospel, let us be sober and temperate, let us be so, if need be, quite to the point of heroism. The poor people, the laboring men, the humble, our brothers, perhaps, may follow our example ; precede it, never. Will we not give them a great and religious example of reason ? ”

The degeneracy of France is a subject patriotically handled by many writers. A true patriot keenly recognizes national illness. Without a proper diagnosis there is little chance of cure. Depierris advances another cause for national decadence, and in “*Le Tabac*” says : —

“In our time more than ever, these despairing words for the future are repeated everywhere : ‘We are degenerates ; we are in decadence.’

“The fact is incontestable that within the last half-century, European societies and that of France in particular, present symptoms of physical and moral decadence, which call the attention of all those who are interested in the well-being of man. This degeneracy is seen in the failing beauty of the human type,—the abasement of the human form, in the contemptible and suffering appearance of European populations, in the diminution of longevity, in the numbers of deaths exceeding the births, leading rapidly to depopulation.

“And moral degeneracy is recognized in sterility of intelligence, which produces no more great men or great things in spite of the wealth of learning of our age.

“Intelligence and reason are being lost more than ever before in the thousand forms of mental alienation. . . . The moral sense is also degraded as seen in the ever-increasing number of pitiable beings who are disgusted with

life, and others who are forgetful of all duties,—slaves of passions and willing in the committal of crime.

“Recruiting officers state that the physical stature is deteriorating, physical force is diminishing, and in selections for the army the old standard of size and strength can no longer be maintained. Moralists and lawyers tell us that French manners are becoming debased, that evil tendencies are becoming dominant, and that there is an increase of crime. Physiologists state that the standard of physical beauty is lowered, and that intelligence served by imperfect organs is deteriorating in a thousand ways from mental alienation to full idiocy, and that special establishments are becoming more and more insufficient to contain these innumerable victims.

“These facts are substantiated by the highest authorities, and how shall we explain them? How shall we explain this physical and moral decadence in this age of civilization? Man in his social state retrogrades, while all organized life, animal and vegetable, which he dominates, improves. By his care he regenerates a poor race of animals and profits by their better development of flesh, of form, and of instincts. By his care, and by means of hygiene and culture, vegetables attain such a luxury of development as to be scarcely recognized in their original and primitive state.

“Man has then the power of improving all he cultivates; while civilization of self, which is nothing else than culture of self, is manifested only in impoverishment of primitive faculties. Observation, science, and common sense have long given to opium and alcohol their deplorable place in the arrest and retrograde march of the old civilization of the people of the East.

“*Eh, bien!* These old vices, opium and alcohol, are far from playing a rôle so ill-omened as that of tobacco, this recent vice in the decadence of humanity.

“Why should we be astonished when science demonstrates to us that tobacco, which so charms all seekers after the whimsical and artificial sensations of our modern civilization, is the most virulent of all known poisons?”

Again says Depierris:—

“Physical degeneracy, moral abasement, sterility, excessive mortality, we must recognize as actual laws of our social estate, all of which were unknown in preceding epochs. To what can we attribute these evils but to causes which march parallel and immediately along with them?”

“How has this so evident, so rapid decadence taken possession of us, in this time when advantages for the perfection of all human kind were never so favorable? What have we introduced into our customs, our habits, which has produced so rapid decay?”

“For these strange and exceptional effects one must seek for a cause equally exceptional that did not exist before our great degeneracy, and which increases and marches parallel with it. One may recognize it in nicotinism; that is to say, in all the progressive physical degradations it involves. Yes; we may attribute to tobacco all the social evils that afflict our epoch; tobacco which our ancestors, who were not degenerate, did not know; tobacco, which after having been forbidden for its infamies by legislation of the seventeenth century, has insidiously crept into our life; tobacco which, condemned as it was, as poisonous, unhealthy, ill becoming, and dirty, is now imposed upon us as the height of elegance and fashion. It is everywhere, and accepted as a natural pastime and the most innocent of pleasures.

“One cannot help but admit that any substance whatever, proved and recognized to be a poison, can never enter the internal economy in any degree whatever, without dis-

turbance ; or to speak physiologically, the powers of reserve force are changing, and perishable elements always and sooner or later succumb to the poison which is always the same and never fatigues.

“ And if life is more and more exhausted in the parent, it is still more exhausted in the child. Force begets force and exhaustion begets exhaustion. The children of nicotine will have the defective and sickly characteristics of the parent, the same as if tainted with consumption, scrofula, etc. If it were not that a wise providence which strikes with sterility a certain degree of baseness of function, the disgraces of humanity would debase the human type without remedy.”

The German-French war served to bring general attention to the drinking habits of the French army which were worse than those of the German army, and in 1872 the French government appointed a “ Committee of Inquiry ” to consider this subject of inebriety.

The report of the Secretary of the Commission reads as follows : —

“ There is one point on which all the members of the French Assembly thought and felt alike. They knew that to *restore France to her right position, their moral and physical powers must be given back to her people. Being ambitious to restore the fortress of the country, they ought also to make up their minds to its regeneration.*”

A Paris paper, the *Constitutionnel*, thus discusses the subject : —

“ It is unanimously admitted that the habit of drunkenness has increased in France year by year since the beginning of the century. In all directions its increase is

remarked, and complaints are made of the disastrous effects which it produces on public health as well as on public morality. The *habitués* of the taverns and the wine-sellers lose all inclination for work. . . . As for the drunkard himself, it is fortunate if he becomes merely idle and neglectful of the most sacred obligations. His moral corruption often goes further. The tavern is a school of vice. It is from there that nearly all criminals emerge, and it is there that the great army of thieves and malefactors finds recruits. This is not all. The increase of drunkenness produces other evils not less fatal than the demoralization of numerous families. It is well known that the habit of drinking ruins the health, that it renders all diseases more dangerous, and is the direct origin of many of them. Observations made in the hospitals on this subject give startling results, and the germ of all these evils is hereditary. The drunkard's children are feeble and sickly, and the deterioration of the populations of the towns and districts in which drunkenness is most common is clearly perceptible. The French race is deteriorating daily. These figures show how rapid the increase has been. Must we allow it to go on indefinitely?"

The same cry of alarm comes from many sources, all of which speaks most favorably for France. The greatest danger of race extinction lies in the ignorance and indifference of the people as to its causes. Alive to the source of danger, many a tide has been averted. Let every thinking and patriotic citizen of France put his shoulder to the wheel and time shall again see the superb France of old.

Doctor Chapin, in the *Popular Science Monthly* (June, 1892), on "The Survival of the Unfit," speaks thus of degeneracy: —

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"It is interesting to study the destructive factors at work in society that not only produce the unfit, but also tend to their survival. . . .

"The following figures from the United States Census reports show the number of insane, idiotic, blind, and deaf mutes in the United States :—

1880.	1870.	1860.	1850.
Defectives 251,698	98,484	68,451	50,994
Total population . 50,155,783	38,558,371	33,443,321	23,191,876

"According to these figures the population a little more than doubled in twenty-one years, while the number of defective persons returned was nearly five times as great as it had been thirty years before. During 1870–1880, the increase of population was thirty per cent, and the increase of defectives 155 per cent.

"The following shows the ratio of insane population to the entire population :—

1860	1 to 1,310
1870	1 to 1,100
1880	1 to 570

"The cost of maintaining paupers in New York City in public and private institutions in 1880 was \$3,794,972. What is society to do with its horde of defectives? Unfortunately it does almost nothing to check their production. The sources of the muddy stream are left untouched, while larger and larger reservoirs are being constantly built to collect and conserve the contaminated flow. One cannot help noticing how this humanitarian age is abundantly equipped with asylums, almshouses, reformatories, and hospitals of all kinds. . . . There would seem to be a

more fruitful field for philanthropy than the building of additional hospitals, and above all, more of an effort to get at the roots of the cause. . . . Municipal governments annually devote large sums of money for the care of the sick, the criminal, and the insane, but devote no energy to investigating and striving to prevent the factors that are constantly at work in producing these classes.

"The knotty problem would find its best solution by checking the sources of disease and degeneration. The way to cure is to prevent. . . . Recent statistics show that criminals are increasing more than the population at large.

"Let our greatest energies be devoted to combating the conditions that are at work in society, producing the unfit."

Let us see what our American physiologist Dr. Kellogg says about degeneration (*Good Health*, June, 1900).

"That the human race is marching rapidly toward extinction is attested by an immense number of facts which no one pretends to dispute. The only surprising thing in connection with the subject is that men and women are not more alarmed. . . .

"A study of the records of history shows, . . . that many nations and tribes who have at one time flourished to a most remarkable degree have through the operation of various causes fallen into a state of senility and decay. . . . The death of a nation, even the extinction of a tribe, is an ominous event, but the march of human history is strewn all along the way with catastrophies of this sort. . . . The same degenerative and destructive agencies which have in ages past wiped out nations and races, and which we see in operation about us at the present day extinguishing races

formerly possessed of enormous vigor, vitality, and endurance, are operating with the same certainty and potency, for the destruction not only of small fragments of the human race, but of the entire race of civilized man. . . .

“The statistics of insanity show an increase of 300 per cent in the United States within the last fifty years. There has been the same increase during the same time in the proportion of idiots, imbeciles, and epileptics. A continued increase at the present rate would in the course of 265 years render insanity, imbecility, and idiocy universal among the people of the United States.

“Other degenerates are increasing at an equally rapid rate. In the year 1887 there were ten thousand murders in the United States alone. . . . The increase of immorality in our larger cities, and in smaller towns as well, is something frightful. Many evidences of moral as well as physical decay might be brought forward. A study of the statistics of England and other countries shows the same state of things to be taking place elsewhere. The increase in the average length of life within the last half century results from the keeping alive, by means of increased knowledge of disease and improved methods of quarantine, of a vast number of feeble individuals who, by their intermarriage with the healthy, engraft upon the race their shattered constitutions, their various morbid tendencies, from which arise innumerable predispositions to disease. . . . The average man has in fact wrapped up in his constitution such a tangle of morbid predispositions that it is a matter of no small wonderment that there can be found a single specimen of the civilized human race possessed of any considerable degree of hardihood or vigor. . . .

“The man who undertakes to develop a fancy breed of horses, dogs, or even chickens, takes most infinite care not only of their diet, but of their housing, cleanliness, sanita-

tion, and all that pertains to the physical welfare. The Arabs of the desert, who treat their horses with infinite care and affection, have produced the finest race of horses on earth, animals which are not only hardy and enduring to a most extraordinary degree, but equally superior in tractability, amiability, and intelligence. In the old Spartan days, Lyncurgus, by the same means, produced an extraordinary fine race of men. But, while civilization has achieved marvellous things in science, literature, art, invention, discovery, and social and material improvement in various directions, it has certainly failed to improve man as an animal.

“The French people, once the gigantic Gauls who carried terror into Rome, are now the smallest people of civilized Europe. . . .

“The fact is that human attention has been so much directed towards improvement in social directions, — education, amassing wealth, and a thousand other directions, — that the man himself, the animal man, has been overlooked. At the same time the use of tobacco, alcohol, tea, coffee, and various other unhygienic practices in diet, such as the use of flesh foods and condiments, — these and other agencies have combined to sap the vitality of the race, which, rightly appreciated, ought to arrest the attentive, earnest thought of all intelligent people. They should not leave to those who come after us the task of raising up a wall of defence against this tidal wave of destruction which is rolling in upon us.”

BEAUTY

Beauty is an open letter of recommendation.

SCHOPENHAUER.

Beauty was lent to nature as the type
Of heaven's unspeakable and holy joy.

MRS. HALE.

A thing of beauty is a joy forever.

KEATS.

HAS mankind its share of beauty? Does it properly appreciate the power and dignity of it being but an harmonious combination of physical virtues, the outcome of hygienic habits and worthy heredity? Clearly not.

It would seem that the Creator had intended not only happiness for every living thing, but beauty in everything — man included; in other words, that this world was intended for health, happiness, and beauty, and that man's perversion of natural laws for generations had accomplished much in frustrating the original design. It is cheerful, however, to find how beauty may be enhanced by physical culture.

The subject recalls a little story of a young heroine who, as a picture, was once plain, — quite plain. Her hero suddenly transferred his hitherto devoted attentions to another, — a newly arrived belle. The heroine was clever, if not beautiful; and instead of wholly abandoning herself to her keen sorrow she took a calm and dispassionate view of affairs. She

held them all up to mental view; and what was of great importance, she did not neglect to consult that most truthful and reliable of all oracles, — the mirror. It told her with emphasis that from a high physical standard she held no worthy place. Like a misshapen garment, her body did not fit or become her; and as she drank more deeply from this fountain of truth, she came to realize that she but satirized a true ideal of physical womanhood.

She recalled the latest advice for the inestimable boon of beauty, which suggested neither wizard wands, nor draughts from the fountain of youth, so long sought by certain visionaries of old; nor yet propitiations of the gods, or artificial arts of cosmetics. It was rather based upon the solid foundation of science. That man is physiologically much the creature of his own making, was the keynote of the new theory. It need scarcely be told that, having been fired with a new and dominant purpose, our heroine studied eagerly the science of beauty, and not only studied, but followed its lessons, with results of a most felicitous character.

She cast herself free from the petty tyrannies of life — a pampered palate, the senseless whims of fashion, etc., and a certain time devoted to the hygiene of beauty — but an attunement to nature's laws, found her complexion, once clouded, now flushing with the tint of the rose; her hair, once neglected, now radiating a happy glow of sunshine; her eyes, once dull, now sparkling with the light and merriment of perfect health. Outlines melted into new ideals, movements into new graces, mind into new

activities. It would be unfair not to mention that along with physical and mental metamorphoses, her tastes changed also for a new and higher type of hero (the second), who won the prize, notwithstanding a subsequent and fierce rivalry on the part of hero the first.

Just here an ethical question presents itself. Was hero the first to blame? Seeming fickleness on his part may have indicated rather an advanced education and a fancy for higher standards, which the heroine failed to satisfy. Nature, as represented by her at the time of her abandonment, was, in reality, not nature, but rather a travesty of it. And seeming fickleness on the part of the heroine resulted also from a new light developed by education. Among other foibles she found hero the first to be a decadent, an anæmic, a knight, so to speak, of the attenuated and spiculated blood-cell,—the slave of a poison weed.

Could one blame her? Should one enjoy forever the jangling music of a cracked and imperfect instrument, when one comes to learn that true melody proceeds only from those maintained in order? And if one should keep in order a simple instrument of a few strings, from which may emanate ever varying and entrancing harmonies, how much greater the obligation to keep in order the workmanship of the great Creator, — “the harp of a thousand strings”?

In other words, our heroine found her liking for the vagaries of an abused human instrument undeniably changed. It requires, in truth, but little education to place at true value, human discords, sickly

characteristics, distorted views of things, which inevitably follow the breaking of strings and the clouding of lenses.

Beauty is not a thing to scorn, as some would have us believe. Rather be it said that as an indication of honest and unperverted nature it deserves veritable worship. Beauty is but the expression of health, and in health only is beauty to be found. Beauty is what is physically harmonious. Pull to pieces an inharmonious combination (ugliness), and rebuild the same elements into a harmonious structure, and beauty again appears. Beauty is the normal state, and nature in good humor ever strives to attain and maintain it. "Nature never did betray the heart that loved her," sang her great interpreter, Wordsworth.

The great Creator delights in all things beautiful, and all uncontaminated nature is inspired with the same impulse to rejoice in beautiful things. What is called by biologists "natural selection," is but a Heaven-ordained instinct; man, the lower animals, birds, and all animate creation prefer and select the most beautiful of their kind, which serves to perpetuate but the best.

Where the laws of nature are unbroken all life is extremely beautiful, — its storms and calms, age and youth, darkness and sunshine. Nature's beauty in its minutiae may never be realized without the aid of the microscope to study the plumage of a butterfly's wing, the myriad facets of a beetle's eye, the glistening architecture of a flake of snow, the crystal fractures in a grain of sand, the fairy forest in a bit of

moss. The things of the air, the life in the sea, the creatures of the forest, are beautiful; what they create is beautiful; the bird builds its nest, the bee its cells, the spider its web, with an idea of symmetry as well as utility.

And what shall one say of the endless charms of nature, so lavishly provided for the entertainment of all living creatures! Enchanting pictures from hour to hour and never twice alike; hillsides, valleys, and roadsides, newly decorated daily and monthly with successions of plants and flowers; the tender tints of spring; the luxuriant splendor of summer; the glowing hues of autumn; the sparkle of waterfall; the rippling and merry greeting of woodland brook; the enchantment of the forest; the inimitable halo of the rainbow; the sheen and shadow of silent lake; the wild abandon of the ocean storm; the Elysian grace and quiet charm of moonlight; the morning mists that are lifting or aflame in the glory of sunrise; the wild tangle of tropical jungle; the crystalline purity of northern scene,—indeed, from the tiny plant cell to the ranges of snow-capped Sierras, joining earth and sky, all is beautiful.

Heaven itself may be more beautiful than here below, but the Master Artist is rich indeed in resource, if the heavenly sky can transcend in beauty the wonders of tint, the perfection of harmony, the tenderness, the splendor, the grandeur, the magnificence of our own celestial firmament always new and always inspiring. The heavenly flowers must be fine indeed that can surpass in hue, in harmony of blending, in form, in fragrance and variety God's most gracious expres-

sion, these exquisite creations all about us. And what for fruits, for trees, for waters, for rocks, for gardens of the land and gardens of the sea? Heavenly flavors may surpass those of our fruits, and nuts, and honey; heavenly sounds may transcend the voice of birds, the murmur of forest, or the anthems of the sea; but if eyes are made clearer to see them, ears more acute to hear them, and palate more sensitive to taste them, it is to be hoped they will receive better care than here below, in order to appreciate them.

Here on earth, health alone can demonstrate and interpret beauty. Health sees in charming pictures, hears in divine sounds, tastes in delicious flavors, and feels in abounding happiness; uncontaminated nature is a protracted festival of life and beauty. Mortal man may pray for better, thus showing how little he deserves the wealth of favor so lavishly cast about him. To man, nature stretches out its arms, and a heaven on earth is for him, has he but the will to place himself in condition for it.

To cultivate the beautiful or to retain what is already beautiful is but a question of hygiene. It would seem as if the study for the attainment and the appreciation of the beautiful should be a special feature in our educational and religious training. This Heaven-given instinct, — the love of the beautiful, — should be encouraged and cultivated; for what leads to health and strength and beauty and what retains it, leads also to high morals as well as happiness and success. To appreciate beauty is to respect the laws of hygiene. Reverence for the work of God as illus-

trated in our bodies makes us less ready to defile and abuse them. In this age of competition, the glory of man is health, with all that it implies, and an education which does not disclose this secret of power is unworthy the name.

Mrs. Browning expresses the idea:—

“If man could feel the artist’s ecstasy
Henceforward he would paint the globe with wings,
And reverence fish and fowl, the bud, the tree,
And even his very body as a man.”

Beautiful as is every form in the animal creation, most beautiful of all is man, — or so he should be; in grace, in agility, in charm of eye, of hair, of skin, of color, of form, man is, or was, or will be, the crowning triumph of creation. His voice in melody and flexibility excels the finest instrument of music, and all mankind sings — or rather, such was the intention. With so much already bestowed, to man has been given the power of still improving his species. In his hands we see the modest flower — the wild chrysanthemum, the rose, the pink, the daisy of the hill-side, still more beautiful; and when attuned to the laws of nature and in the controlling hands of man, all organic creation may be still enhanced in power to please. It well exemplifies the majesty and power of hygiene. The ease with which animals and plants may be improved is only matched by the ease with which they may be deteriorated by unhygienic methods. Whatever the reason may be (!) it has remained for man alone to develop a startling retrogression in the scale of health and beauty. Emerson says, “Faces are rarely true to an ideal type. . . .

The man is physically as well as metaphysically a thing of shreds and patches, borrowed unequally from good and bad ancestors and a misfit from the start."

One may pass an hour of quiet interest in watching any passing throng for a study in æsthetics. With the highest standard of beauty in mind as, *par example*, a Greek statue, one will be unable to deny that, as a rule, human kind represents, in personal appearance, abnormal conditions. The majority of people are plain — sinfully plain — so plain that a really beautiful woman, one absolutely sound in health, is so rare an object as to become a theme of general remark, if not of world-wide and everlasting fame.

When will the world cease to thrill over the beauty of Récamier? Not less startling were the Gunning sisters, two Irish maidens, one of whom married the Duke of Hamilton and the other the Earl of Coventry.

"The concourse," said Walpole, "was so great when the Duchess of Hamilton was presented at Court on Friday, that even the noble crowd in the drawing room clambered on chairs and tables to look at her. There are mobs at their doors to see them get into their chairs, and people go early to get places at the theatres, when it is known that they will be there. . . . Such crowds flock to see the Duchess of Hamilton, that seven hundred people sat up all night in and about an inn in Yorkshire to see her get into her post-chaise next morning."

Away back in the sixteenth century lived another woman who was beautiful. The chronicles of the time tell us that Pauline de Viguer was worthy, phys-

ically and morally. It was the physical worthiness, however, that so fired the enthusiasm of her fellow-citizens of Toulouse that they "obtained the aid of the civil authorities to compel her to appear publicly on the balcony twice a week, and as often as she showed herself the crowd was dangerous to life."

And so the beautiful woman becomes the inspiration of the poet and the artist, and electrifies the world. As many as we have seen of her in all our lives, may be counted on the fingers of one hand. This is really appalling when we consider that at least a majority of women should stand the test of the highest standard.

And what shall we say of the majority of men; of our beloved and respected men of America, — the best men, the best husbands and fathers of all the world? They should be physically the best; and so they shall be, — in time.

If practically all the flowers of a bush and all inhabitants of the air and sea are of their kind equally beautiful, men and women should approximate more equally the ideal of human beauty. It is quite clear also that if a century or more ago there was one Récamier and two Gunnings, we should now not only all be Récamiers and Gunnings, but in the light of advanced scientific knowledge we should be superior to them. Time has been wofully lost in the advancement of the health and beauty of the human race.

"If we treated our animals as we treat ourselves, we would soon have none that were tamable, useful, or edible," says Dr. Richardson; and why did he not add,

"and none that were beautiful," since personal appearance is but an index showing the habits of self and ancestors? Men take more poison than women. Women take less alcohol than men, and until 'of late have been spared the habit of tobacco, which is now creeping upon them. Women have other unhygienic habits — corsets, tea-drinking and drug-taking (as medicines), from which men have most fortunately better escaped. Women have comparatively less of the vitality which more active occupation and wholesome interests give to men. Yet the new generation of women is physically vastly improved; more of hygienic dressing, out-of-door air and exercise, higher education, an improved dietary, less of poison stimulant, has already developed almost a new type of women. They are larger and handsomer than formerly. Men, on the other hand, have increased their habits of tobacco, alcohol, and other favorite poisons, and are growing smaller in stature and degenerate in appearance. Concerning several well-known marriages, a periodical has this to say:—

"The brides (of the season) have been a group of young goddesses as far as physique goes. The bridegrooms, on the other hand, have literally fallen short in the matter of inches of any Olympian resemblance."

A physician in a late address declared, "The girls are taller, stronger, better than they were twenty-five years ago." He added with a quizzical smile that his only fear was that "we may produce a race of girls six feet tall, with brothers four feet six."

As for that, let us be spared too large a type of either men or women.

Another periodical says on this subject: —

“It has become a familiar spectacle at fashionable weddings of late to see the fair bride towering several inches above the bridegroom, and sometimes forced to gaze meekly at the crown of his lordly head. . . .

“Since the average size of new-born infants has not increased, but girl babies the world over, regardless of class or condition, are of about an equal size and weight, it is extremely interesting to know what potent factor has created the astounding physical difference between the Juno of this end of the century — whose average height is three inches greater than her mother’s — and all the women of her family for generations back.

“According to the best authorities, environment — which may be considered synonymous with advancement — has created the magnificent physique of the American goddess, who carries her six feet of grace with the superb unconsciousness attained only by the harmony of perfect health and splendid vigor.

“Apostles who preach the inexorable nature of physical inheritance must stand confounded by the authoritative statements — with living girls to back them — made by the professors of physical culture, and the equally corroborative testimony of the fashionable ladies’ tailors and modistes, who all agree that the American woman is not only growing taller, but stronger, more beautiful, and that she stands to-day nearly six feet high, perfectly symmetrical from head to feet, the very symbol of harmony and physical loveliness.

“That women are growing taller with startling rapidity is shown by the testimony of the representatives of the women’s colleges.

"Probably no college in the country devotes so much time to athletic sports as the famous Pennsylvania institution at Bryn Mawr. The physique of a girl is as thoroughly developed there as her mentality, and to take a degree she must also take the whole course in physical culture. . . .

"There is no doubt," says Dr. Smith, "that since women are beginning to learn the delight and the benefit to be gained from physical culture they will each year devote more and more time to indoor and outdoor exercise. It is not a fad, but almost a religion with sensible women, who realize that healthy bodies are more to be desired than all the learning of the schools. What if it does add a few inches to their height? Let the men also exercise and grow tall, too. A graceful woman is never too tall. If she carries herself well, inches only add to her dignity. . . .

"Why should not girls who leap with ease from ring to ring in the gymnasium, who swim like mermaids in the cool pool in the gymnasium building, who spin along the level walks on their wheels, who race over the tennis court with the grace of woodland nymphs, and who throw themselves with wild abandon into the romping game of basket ball, why should not these healthy, happy, rosy-cheeked, athletic girls have Junoesque proportions and the grace of Diana? . . ."

In the matter of school athletics, the men have always had, and still have, far more advantages than the women. The difference is that such training in a woman's college counts. Its results are manifest; while in the man's college its effect is largely neutralized (perhaps in two-thirds of the cases) by the use of the favorite poisons of which tobacco and alcohol

predominate. Measurements have been made at Amherst and Yale to test the effects of tobacco on growth.

"The graduating class of 1891 at Yale contained 187 men. The non-users of tobacco, during the college course, had gained over the users of tobacco, in weight, 32 per cent; in height, $29\frac{1}{2}$ per cent; in girth of chest, 19 per cent; in *lung capacity*, 66 per cent."

At Amherst the same year 53 men graduated. The gain of non-users over users of tobacco was in weight 24 per cent, in height 37 per cent, in girth of chest 42 per cent. In lung capacity the tobacco users had lost 2 cubic inches of air space, while the non-users had gained $6\frac{1}{3}$ cubic inches.

In the matter of scholarship of this same class at Yale, —

Of the 12 highest rank men 1 used tobacco.

" " 37 next in " " 3 " "

" " 72 " " " " 14 " "

" " 126 " " " " 32 " "

Speaking of these facts, Dr. Seaver says: —

"The relation of growth and the use of tobacco is a matter of vital interest. The fact that these men have nearly reached the maximum in height when they enter the college, while they are not filled out, and constantly do and should increase more relatively in such matters as chest girth, would lead us to expect large growth in lung capacity, and the disparity in the actual results obtained are rather startling. The effect of tobacco in obstructing growth in lung capacity is a problem worthy of more thorough study."

Several generations of smoking and drinking have left their record in the physique of the Spanish, French, and Italian men. Who has not noticed the undersized policemen of Paris, and of soldiers in the French army? It has been said that size is no longer mentioned in taking enlistments in France on account of the impossibility of securing enough men of the old standard height. Much anxiety is felt in France concerning the decreasing stature of the people, and to one who is a student of the physiological effects of tobacco, alcohol, and other poisons, the reasons given would be amusing if the subject were not so grave.

It is said that beauty is but skin deep, — a most unfortunate error. It is as deep as the innermost cell of the body. Physiologists tell us that our minutest fibres and cells are separately beautiful. In health they are infinitely delicate and transparent. In disease they become opaque; the translucent and peach-blow skin of perfect health, or the clouded and dried skin of the physically unfit, is a condition which permeates the entire organism of the body. The same condition speaks in the dull eye, the lustreless and falling hair, the impaired voice, and in stiffened limb and awkward movement. A coated tongue but indicates the condition of the entire intestinal canal. The congested skin of the alcoholic, set aflame by inward fires, the nervous expression and clouded tint of tobacco and tea or coffee inebriates, etc., proclaim their story. The physiognomy is but a chart of bodily soundings, the index of a living book; and rich red blood and transparency

of fibre are but the result of purely hygienic conditions.

The study of beauty as well as of happiness and success takes us always beyond the surface of things. As Goethe says:—

“Elegance of form in bird and beast or in the human figure marks some excellence of structure. . . . All beauty must be organic; it is soundness of the bones that ultimates itself in a peach-blow complexion; health of constitution that makes the sparkle and the power of the eye. . . . The cat and the deer cannot sit or move inelegantly. . . . The tint of the flower proceeds from the root.”

And so any living creature not beautiful at any age is clearly a perversion of nature. In other words, ugliness is but a physiological sin, a discord in the harmony of existence. Had we and our ancestors but obeyed natural laws, we should all be beautiful, like every perfect leaf and flower. Were it irremediable, silence would be golden; but when kind nature struggles for beauty everywhere, it should be met with gladness.

The way to meet it is to simply study and obey physiological rules. We must first of all clearly understand that, as far as this world is concerned, our vehicle for a good, bad, or indifferent life is but a mechanism which, like a locomotive, an automobile, a bicycle, or a sewing-machine, demands infinite care to keep in condition. We must also thoroughly understand that what incapacitates one wheel or function, incapacitates all,—the relationships of any machine being interdependent.

The object of this book is to search, without prejudice, for the primary causes of the general unsoundness of health, which so lessens our powers, our happiness, and our beauty. The more one investigates the physiological effects of poisons and begins to realize the extent of damage done to the human organism by the almost universal poison habit, the more one is forced to believe that from this source springs the principal cause of human decadence. The fact is susceptible of actual proof that at least nine-tenths of human misfortune may be directly or indirectly safely laid to the use of the favorite poisons.

We must turn to the scientists. Statements on the subject of physiology and hygiene relating to the poisons are valueless which have not run the gauntlet of their crucial and unsentimental investigations. We have already attempted to show through them the two general effects of poisons when taken in the human system, — first, just how they rob the blood of its full quota of oxygen; and, second, just how they dry and harden the filtering membranes of the body, rendering them less permeable to products for tissue building, and also for the elimination of waste material.

Of course any condition that tends to devitalize the blood or clog the system with waste products, — that antagonizes the liver, the kidneys, the digestive organs, or any physical function whatever, — robs the system not only of its working capacity and acute senses, but its beauty. Any and all poisons most unfortunately accomplish more or less this result. The reason for

insufficient growth, clouded skin, dull eyes, tendency to obesity, fatigue of expression, is easy to comprehend when the physiological action of any poison is studied.

Dr. Depierris, after having described at some length in "Le Tabac" the precise action of tobacco on the liver, says:—

"It is to this particular state of the liver that one may attribute a gray and earthy tint of skin, the tendency of all exposed to the tobacco poisons, and a state so well described to the French Academy by Dr. Melier. These same alterations of the skin may be remarked in all chronic poisoning. The victims of miasmatic poison or those living in any unhealthy quarter in a city . . . are pale, sickly, and yellow."

We are abundantly told how alcohol deteriorates beauty, disfiguring form and complexion, making the features coarse, the skin congested, and also producing obesity.

The opium complexion is proverbial. All writers on opium describe the physical degradation following its use. Writers on the tea and coffee poisons also mention their effects on the complexion, as well as a nervous expression of eye and face.

Arrest of bodily development has generally been ascribed more particularly to tobacco, although any other poison tends to produce similar results.¹

¹ "As the human body," says Dr. Richardson, "is maintained alive and in full vigor by its capacity within certain well-defined limits to absorb and apply oxygen; as the process of oxidation is most active and most required in those periods of life when the struc-

One sees in print much advice concerning means for becoming beautiful, and yet the two most important points in regard to physical culture are rarely mentioned, namely, the drying of membranous filters by efforts of nature to expel poisons, and the robbing of the blood of its full quota of oxygen as results of poison-taking.

We must again understand that surplus fat is to be avoided as an embarrassment to all the internal economy. Fat surplus is material which the system has been unable to eliminate. Beauty of form and color is not owing to fat, but, as before said, to the moist sponginess and translucency of membranous tissues.

Again, if a skin is not clear, reflecting a glowing condition of health in all the internal organs, powder and paint cannot hide it. Beauty and anæmia are no longer related. Successful actresses have now to practise the strictest rules of physical culture, looking as well off the stage as on it.

In short, to acquire beauty and retain it, requires a strict adherence to the laws of hygiene, for instance, — no poisons; the use of pure water internally and externally; proper sleep (never perfect when the nerves are harassed by any poison); no useless worry (also engendered by harassing the nerves with poison); plenty of exercise and sunshine; good

tures of the body are attaining their full development; and as tobacco smoke possesses the power of arresting such oxidation, — the habit of smoking is most deleterious to the young, causing in them impairment of growth, premature manhood, and physical degradation."

As life itself is but a continual process of tissue-growing and tissue-waste, the perpetuation of hygienic conditions permitting a full quota of oxygen, etc., would seem equally desirable at any age. — ED.

digestion, engendered by proper food and not too much of it; no blockading of circulation, no overheating and cramping of vital organs by use of corsets.

A fault to be found with poets is, that they persist in selecting the age of early youth as the only season of beauty. They rarely get beyond spring. We all adore beauty at any age, yet when the millennium of the hygienic habit comes about, there will be little choice in the seasons of life. The *fleur de l'âge* will continue as long as the vital spark of perfect health remains. Autumn is as beautiful as spring, summer is as full of enchantments, and winter is superb. When all ages should be equally beautiful and equally happy, how disreputable it is to grow old before the extreme limit of time allotted to man when the term *old* simply means decay of power and loss of beauty.

The man in full vigor of health and beauty suggests no detestable counting of years. The physical being of "shreds and patches" is really a hundred years old at twenty, and the sound man of eighty or ninety or a hundred is but so many years young, plus valuable experience.

That women are getting credit for a better-looking old age is indicated by the following editorial in a leading newspaper called, "The Innings of the Middle-Aged." It was written on account of the reported engagement of a middle-aged woman:—

"Although the reported engagement of the popular . . . to a young . . . man has been contradicted, the first acceptance of the report shows that no one would have been surprised if it had been confirmed. A lady who has a son twenty-five years old must be assumed to have passed the age

of forty ; it is no reflection on her to imagine that she may be forty-five, and in that case she has just reached — even if for the second time — the marriageable age. This would not have been true a generation ago. Then the woman who had reached the grandmotherly age was relegated to the outer darkness of household duties, and was associated in the popular mind with corkscrew curls, caps, spectacles, wrinkles, and ill-fitting gowns. Now she is at the most dangerous age, and the American widow picks up a peer in England or a title on the Continent as easily as a skilful angler lands a trout. Instead of asking odds from her younger competitors she carries the prizes away from under their very noses before they have learned to fear her.

“If the middle-aged woman is attractive and dangerous instead of being a back number, it is because in the progress of society she has learned to take care of herself and to assert herself. She has lived outdoors and yachted and driven and played golf and lawn tennis, and known how to eat and to sleep and to keep in good physical condition. She has her natural reward in abounding health and the high spirits which go with health. She has the attractions of clear eyes and clear skin, bright lips, white teeth, good figure, and graceful carriage, and as for her mental equipment, what she does not know is not worth knowing.”

TOBACCO

A THOUSAND pities that there is harm in tobacco ! Tobacco is genial and gentle ; it is portable ; it is inexpensive ; it is companionable ; it is enjoyed by such vast numbers of people over the whole earth, — millions and millions, the rich and

the poor, in the hamlet and in the palace! Of all the poisons, had it but a fair excuse, one would soonest capitulate to tobacco.

It is not agreeable to unmask a fascinating acquaintance, once a solace and delight, and find a fraud. Adorable tobacco! In truth, an insinuating and insidious syren, undermining the life forces of its victims whom it lulls to sweet repose. It is a pity indeed.

Alcohol is scandalous, crazy, and brutal. Opium, along with hashish, absinthe, chloral, and that series of atrocious favorite poisons, delivers its victims into the abysses of perdition itself. Tobacco, containing the strongest poisons of them all, is more diplomatic and respectable. And yet just here, is it quite respectable to chew, snuff, or dip? *Dieu defend!* Is it respectable to smoke and expectorate? The least said about that the better. With due apology for touching this most revolting subject, vulgar manners may still be preferable to swallowing rank poison. The tyro with the pipe is almost obliged vulgarly to expectorate because his healthy salivary glands respond vigorously in a desperate effort to dilute and expel the poison from the portal of the royal domain. In course of time, however, the smoker need no longer disgust all about him by expectoration, and he duly prides himself upon his acquired abilities. He believes he has strengthened and trained his salivary glands to endure contact with the poison. What he has really accomplished is to have so paralyzed the mucous membranes and glands, — those complex and wonderful lubricating valves, — and so completely

reduced them to an abnormal state of inactivity, that they can no longer respond to the stimulus of the most acrid and corroding of poison substances. In the case of old smokers these most delicate membranes have become so absolutely dried and impotent, that alcohol, pepper, tobacco, or any poison irritant, may pass without a grimace. In the same manner the mucous membranes of the throat, the bronchial tubes, the œsophagus, and the stomach, cease to rebel. There is no longer any choking; no coughing, no nausea. The flattered smoker believes he has conquered the weed, when the weed has conquered him! "Do you take tobacco?" said an inquiring friend. "No, the tobacco takes me," replied one who knew.

In case of expectoration, of course a considerable loss of vital principle is entailed, the salivary secretions having their legitimate mission in the process of digestion; also in case of swallowing, an extra amount of tobacco poison is taken into the system.

The syren Tobacco is characteristically deceitful. No matter in what form or manner it is taken, it begins its work of destruction silently and stealthily, often completely undermining the system before its victim has begun to suspect the cause of his declining health. When, after studying the subject, one comes to understand it better, and when the incomparable blessings and pleasures of sound health are appreciated, and when the eyes are opened to the marvellous complexity and delicacy of that divine instrument, the human body, then the sight of a sane man carelessly and deliberately sucking poison into his system

gives the beholder actual pain. It cuts like a knife. The habit may be on the part of the man of ease with his infinite power of usefulness and enjoyment, be he only sound of body. It may be on the part of a laboring man, whose capital and glory is his physical strength. It may be on the part of youth, — standing at the threshold of the great future, mortgaging and bartering away his most valuable assets — physical, mental, and moral vigor. In the planting time of life, especially, how unfortunate it is, when every seed has its germ of good or evil, which in the harvest will produce its inevitable fruit! Emerson thus expresses it: "For the effect already blooms in the cause, the end preëxists in the means, the fruit in the seed."

Of course we all know that a certain amount of temporary pleasure can be obtained by the absorption of any substance which is antagonistic to the principles of life, and that that pleasure lasts just so long as one's faculties remain in a healthy enough condition to resist them — be it alcohol, opium, absinthe, arsenic, strychnine, or the head of a lucifer match; be it in fact anything that is a poison and consequently an enemy. The warfare of the vital organs, the sudden quickening of functions, the call upon reserve forces, is always more or less conducive to pleasurable sensations.

Dr. Thwing, in "Facts about Tobacco," remarks: —

"If the amount of poison is small, a gentle excitement begins, perhaps exhilarating, the circulation being accelerated without being really unbalanced. So it is sometimes at the

beginning of yellow fever, cholera, and other malignant diseases, when the vital forces begin to rally. There is for a while a sense of unwonted energy and a pleasurable excitement, pervading the whole system, attended often with unusual buoyancy of spirits and intense mental activity. But perhaps in an hour the patient is powerless, fatally prostrated, — the intensity of the vital struggle having exhausted life. This disturbance is disease. It wastes one's capital of strength or sensibility in the ratio of its violence and continuance. . . . One of the most unfortunate delusions is, that the drug elects or selects or has affinity for this or that part of the vital structure, invigorating the system or forcing the organs to perform their normal functions, when it but occasions vital resistance and a waste of vital power. Instead of affinity, repugnance or antagonism is the word to use."

Again, the "soothing effects" of all narcotics are for a time extremely fascinating. Partially freed from consciousness, one floats calmly and deliciously upon rosy clouds. As is the case in natural and perfect health, one is emancipated from all physical discomforts. One is transferred to another sphere of being. It is supposed that natural death itself, or, rather, the process of dying, with a gradual numbing of nerves, a semi-paralysis of muscles, and a semi-consciousness, — is pleasant. The poor face after death generally assumes a pleasing expression. Semi-oblivion, or partial paralysis, may be more or less temporarily delightful; but when we learn the truth, and realize that experimenting with "soothing effects" by means of poisons is playing with death itself, it becomes a bit gruesome; moreover, it does not mean partial death to self only, but involves others. The

child and the child's child of a poisoned parentage are born already mortgaged to death, partially alive, partially useful, partially successful, partially happy, — but this hereditary feature of narcotism must have a chapter to itself.

The advent of tobacco in the civilized world was not over two hundred and fifty years ago, and yet it has conquered every nationality of the earth, and every condition of human life. It is to-day the temporary solace and the curse of 600,000,000 of people. It is the product of millions of acres of land. Its yield is a curse to land as well as to humanity.¹

Though not a smoker, the writer is familiar with

¹ A traveller says : "The old tobacco lands of Maryland and Virginia are an eyesore, — odious barrens, looking as though blasted by some genius of evil."

Gen. John H. Cook, of Virginia, writes ; "Tobacco exhausts the land beyond all other crops. As a proof of this, every homestead from the Atlantic border to the head of tide-water is a mournful monument. It has been the besom of destruction which has swept over this once fertile region."

Thomas Jefferson said : "Tobacco is a culture productive of infinite wretchedness."

"The dried tobacco leaf yields from nineteen to twenty-eight per cent of ash, or, on an average, every four pounds of perfectly dry tobacco leaves contain one pound of mineral or incombustible matter. It is this which forms the ashes of our burning cigars . . . all the substances it contains have been derived from the soil on which the tobacco plant has grown . . . they belong to the class of bodies which are most necessary to vegetation and least abundant even in fertile soil . . . as every ton of dry leaves carries off four or five hundred weight of this mineral matter — as much as is contained in fourteen tons of the grain of wheat — it will readily appear that the growing of tobacco must be a very exhaustive kind of cultivation."

— *Chemistry of Common Life* (Johnston).

It would seem as if nature wants very little of the tobacco plant.
—ED.

all phases of the tobacco habit. There was the blind period of admiration ; there was the time of welcome in the social circle, about the open fire ; there was the after-dinner time for easy chat, amid the reposeful, narcotizing incense of curling clouds. Tobacco was the acceptable present for the lonely bachelor ; for drooping old age ; for the responsive laborer ; for the luxurious young man. Those were *laissez faire* times of profound ignorance. Then came nearer home a sad record of deterioration of powers ; unavailing entreaties to abandon a relentless vice, — illness, reserve fund of vital force finally exhausted, — death. Then followed the time of investigation, of arduous study, a ferreting out and devouring of everything attainable written upon the subject of tobacco.

Tobacco has not so large a bibliography as alcohol, yet it is quite extensive enough for all practical purposes. The stories of the poison are told over and over again by different scientists in English, French, and German — accounts of poor animals sacrificed in torture to ascertain the physical action of tobacco. Experimental work has been made on every vital organ with practically the same results. The record is open, and is very pathetic as well as conclusive.

M. Rosé thus preludes his most valuable work mentioned later : —

“ Since the discovery of nicotine by Vauquelin in 1808, endless work, endless sacrifice of suffering animals, have been dedicated to the shrine of tobacco. In the meantime, self-poison by tobacco has steadily increased. More than that, its use has been sanctioned and encouraged by

the different civilized governments of the world ; strange indeed, in the age of chemical research, of the knowledge of physiology, toxology, and hygiene, — sciences capable of enlightening all intelligent men regarding the curse of the venomous plant, that it is still so firmly rooted in all the best of the civilized countries of the world. It is no longer a question. The blighting action of tobacco is sufficiently demonstrated to become a subject worthy the consideration of public legislation in the name of public health."

Yes, quite *sufficiently* demonstrated, — and may animals in the future be spared further ordeals ! The careless world may still be amazingly ignorant about tobacco, — considering the extent of the tobacco habit, and its actual influence on the health standard of the entire human race ; but this ignorance is owing to no want of careful scientific research, or lack of light already cast upon the subject by the ablest of medical investigators. Several works on the subject should be translated into English for general use, especially the book of M. Depierris, "Le Tabac," and that of Dr. Gustave Le Bon on "La Fumée du Tabac." The latter contains the latest researches in analysis for the prussic acid and carbonic oxide of tobacco smoke. Another French work should also be translated — "Étude Expérimentale sur l'Empoisonnement Chronique, par la Fumée du Tabac" (an experimental study on chronic poisoning by tobacco smoke), by M. Rosé, 1881 (Nancy). The French scientists have published some of the best works on the physiological effects of tobacco.

The writer may only touch the subject in this

brief account. It was a great temptation to quote much more, — however, it would have been offering the same testimony in the different words of many scientists.

TOBACCO AS A DECEIVER

It is strange that tobacco, the strongest of all poisons used as a luxury, kills more slowly when used habitually than alcohol or opium. In this gruesome business of inducing quick dissolution, opium stands at the head, — its devotees surviving, as a rule, but three or four years. Alcohol follows second, with a story of gigantic devastation, longer drawn out; and then comes tobacco, — insidious tobacco, — disposing of its victims with less display of consequences, and by disease attributed to everything but tobacco. Of all the forces of demonology, that of tobacco is the cleverest. His Satanic Majesty can best of all celebrate its advent. All poisons to a greater or less extent are deceivers, but tobacco is the chief deceiver.

Gustafson, in his second book, "The Drink Problem," gives this sinister honor to alcohol: —

"Many talk of alcohol," says he, "as a thing of very simple powers, and its use a mere question whether it feeds people, whether it is burned up in the system, or not. . . . It affects the whole man, his whole self, *all he can do or say*. . . . These terribly significant words hardly more than foreshadow the most awful characteristic of the alcohol evil, — namely, that alcohol always, everywhere, and under all circumstances, is the *arch deceiver of man*.

"It is this very power to deceive, to cajole and trick us, which has given alcohol its tremendous hold over us. It

is probable that some ideal of goodness and worth, and some faint desire to realize it, exists even in the weakest minds; and alcohol has been the great betrayer here. From the Mahometan bigot in Tunis, who still holds the common belief of ancient times, that drunkenness is an inspiration, to the Christian invertebrate, who staggers about, gibbering prayers and hymns; from the philosopher, who thinks that by taking a glass he may better solve the problems of thought, down to the penny-a-liners, who believe that a glass will aid them to do better work, — they are all deceived. *No drink-inspired performance will stand the test of sober thought.*

“Alcohol has this power to deceive with all qualities of mind, and in all conditions of life. It deceives us as regards all vital realities, and when we come out of its delusion, the awakening is so terrible that to escape it we rush back, by means of alcohol, to the world of delusions again. Can any mockery be worse than its ordinary effects upon man? It makes the sensualist imagine himself a saint; the miser for the moment fancy himself a philanthropist; the dullard believe in his own genius, and the beggar fancy that he is a Cræsus. It pretends to give warmth by the very process which reduces the bodily temperature; it seems to give strength by the very process which vitiates and exhausts it; it releases us from remorse by stultifying the conscience; from despair, by stupefying us to our miserable plight; from care, by drowning the sense of responsibility. It kills hope and loyalty and yet makes us merry at their loss. From first to last, from birth to death, in all relations of life, it deceives, it deceives, it deceives.”

All absolutely true, excepting in the statement that alcohol, — that bungling, staggering, maudlin, stupe-

lying, idiotic, and brutal demon, — can compare in deceit with the gentle, plausible, and insidiously lovable syren — tobacco. Should a book be written on the humbugs of mankind, tobacco must head the list. Has not tobacco made almost a humbug of civilization itself? Among all the drugs and deadly plants, there is none other so well adapted to do the satanic work of deceiving and destroying mankind. As Dr. Harris in his book on “Tobacco” says : —

“No other article of luxury is so universally used, and there is none whose fascinating and deleterious effects are so marked and misunderstood. . . . The properties and effects of tobacco are of a curiously mixed character and perfectly adapted to the work of fascinating and deceiving those who indulge in its use. Its power of stimulation is strangely interwoven with its important and predominating one of sedation or depression.

“Among the articles of the *Materia Medica*, tobacco is considered the type of those poisons known as *acro narcotics* ; i. e., narcotics which irritate while they stupefy.

“This definition of a descriptive term conveys a good idea of the peculiar effects that tobacco exerts upon the human system. This complex and double action of tobacco is peculiarly and fully adapted to the work of fascinating and misleading those who submit themselves to its influence. It titilates the nerves and exhilarates the feelings, while it obtunds and stupefies the sensibility and partially suspends the processes of life. It most enticingly tempts to further indulgence, while at every repetition it creates additional appetite and a fuller indulgence in the luxury, until habit becomes stronger than nature, and the effects of tobacco come to be more eagerly sought than necessary food. The appetite which it creates is a never-

ending *gnawing* that will not be denied; and under the most specious guise of absolute physical necessity it hides its insatiate and cruel demands.

“The powerfully sedative properties of tobacco distinguish it from those more exhilarating narcotics like alcohol, — liquors which so openly betray their hurtful nature that one may not be deceived by them. But the evils of tobacco using are not less important nor less certain because not so obvious and immediate as the effects of spirit drinking; on the contrary, they are the more dangerous and deceptive because they are masked and misapprehended. Indeed, this peculiarly sedative or depressing effect of tobacco is one of its very worst effects, and it is far more disastrous in its results than any other species of simple exhilaration, with the exception that it does not make its victims violent.”

It may be said emphatically that no other drug is so peculiarly fascinating and deceptive as the combination of the tobacco poisons of which there are several.

Tobacco appeals especially to Americans. We are a highly wrought, nervous people, possibly so induced by extremes of climate, questionable dietary, etc. By treating the nerves to semi-paralysis many are deceived into thinking that they have conferred upon them a blessing; they feel that the sedative influence of the drug acts as a damper to that bristling excitability which the nervous system has acquired from other abuses; and while they are conferring this supposed benefit by semi-paralyzing it, the drug, by its double power of action, affords through irritation a fresh and fascinating excitement, making the smoker forgetful of all weariness.

"The plodding laborer," again says Dr. Harris, "the careworn denison, the anxious student, the listless object of ennui, the excited wine bibber, and the exhausted debauchee, together praise the virtue of tobacco; and they believe that it has power to alleviate all the toils and ills of life.

"Tobacco," says Burton, in his "Anatomy of Melancholy," "divine, rare, superexcellent tobacco, which goes far beyond all the panaceas, potable gold, and philosopher's stones, is a sovereign remedy in all diseases. A good vomit, I confess, a virtuous herb, if it be opportunely taken and medically used; but as it is commonly used . . . by most men . . . 't is a plague, a mischief, a punge of goods, lands, health, — hellish, devilish, and damned tobacco, the ruin and overthrow of body and soul."

With the advancement of science and a new meaning to sound health, this expression — "opportunely taken" — has a dubious significance, for the present physical culturist does not care to poison himself at all. To the hygienist of the new century, a little poison in the system is like a grain of dust in a watch, which may obstruct the working power of its entire machinery, and the idea of an accumulation of vital weaknesses in the human machinery becomes abhorrent. When a proper appreciation of life and the key to life — health — becomes dominant, the idea of "soothing effects" and "mild exhilarations," occasioned by any poison whatever, becomes as repugnant and odious as the idea of any kind of disease.

Still another phase of the hoodwinking characteristics of tobacco is demonstrated in a popular belief

that it renders the smoker free from infectious disease and particularly from malaria; in other words, forsooth, that which best prepares the human body for the breeding of disease (impaired vitality being the reason of all disease) destroys the germs of disease. If anything so serious could be considered as a pleasantry, this would be tobacco's grimmest joke. Because it kills insects on plants it is supposed, therefore, to kill the germs which attack mankind. In reality, instead of destroying human blights, tobacco invites them. Tobacco is devitalization rampant, beckoning on all sides for the demons of disease to come to the feast.

The champion impostor has still other deceitful phases of character, owing to the absence of pain or discomfort which semi-paralysis engenders. The poor invalid feels that he is benefited by his cigar, whereas his nerve sentinels of alarm are merely silenced. The poor man finds his hunger allayed by his pipe, and so he declares tobacco to be an agent so affecting the body that it requires less food, or he even goes so far as to declare tobacco a food itself. He forgets that the sensation of hunger is nature's call for needed food, and to benumb that sensation and neglect to take wholesome nourishment is to rob his body of its just due.

Another feature of the exquisite deceit of tobacco is in a hypnotizing power it possesses of reconciling its victim to early death. "I do not expect to attain a great old age," says the smoker, "in fact, I prefer to die sooner and enjoy more." This is a feeling more or less common to the devotees of all poisons.

This symptom of disease is easily explained. A beneficent nature intended only happiness as the birthright of man. It is always manifest in sound health—a playful, merry, and singing childhood; joys, richer and fuller as life matures. At the close, when the leaving of such rich pleasures would otherwise distress, the faculties of keen enjoyment are clouded, and naturally the old man sinks to his last slumber, peacefully and happily as though lulled to sleep by an angel's breath. Old age is but degeneration of vital forces. Tobacco, or any poison, can accomplish this result at any period of life, benumbing and devitalizing all the faculties. It is sad indeed to see the death spectre of old age with this fatal wand of indifference and contempt of life hovering over youth or blessed middle age. Alas! so much of genuine bliss bartered for that spurious counterfeit induced by poison!

In the chapter on germs, mention is made of the fact that the germs of putrefaction seize hold of dead matter and destroy it, or, rather, convert it into new elements, thus ridding the world of incumbrances; some space is also given to show how the numerous germs of destruction attack unworthy material still partially alive, and all for the same purpose, namely, to get rid of it. In still another place is more fully discussed the reasons why nature desires perfection and constantly strives to that end, and how these germs of disease leave alone all healthy and wholesome organic material, until the allotted period of its life is passed, when a process of extinction, which is a wholesome one, sets in.

Again, when many an inebriate dies, neighbors wisely blink their eyes while whispering, "The poor fellow in reality drank himself to death," or, "It is not commonly known, but *entre nous* he had the morphine habit." Not so when the devastating agent has been the poison, tobacco. In that case the bewitching Circe may smile back of her veil of fragrant smoke, for the wiseacres declare, "It was consumption, cancer, typhoid fever, pneumonia, etc." Will the world never learn that the moulds of disease germinate only in degraded soil usually prepared by some poison,—possibly the noxious air of miasmatic or malarial regions, or of sewer gas, oftenest by the poison taken directly in some pet indulgence; and oftenest by that most cajoling and deceptive of toxic agents, tobacco?

As a satanic drug the syren Tobacco again shows consummate skill by paving the way for that other arch destroyer—alcohol; yet it is popularly supposed that by taking tobacco one is in all probability saved from taking alcohol. Many a foolish mother encourages the use of tobacco in this erroneous belief. Let her understand that to the great river of alcoholism, as well as disease in general, the greatest tributary stream is tobaccoism.

The partnership of tobacco and alcohol is explained physiologically as follows: Before the glands of the throat become partially paralyzed, the excessive flow of saliva for the purpose of expelling the poison soon leaves the throat more or less dry, thus provoking thirst. After the partial paralysis period of the glands, the mouth becomes not only dry but more or

less incapable of taste, and so something stronger than a normal fluid is demanded in order to whip into activity the organs of taste. The victim of tobacco is thus naturally led to peppers and strong drink. Dr. Richardson, in the *Popular Science Monthly*, best describes the next series of effects:—

“The toxicants . . . killing when given full play . . . have variety of action in their early stages. Alcohols excite the mind and quicken the pulses before they depress . . . Tobacco . . . depresses and soothes from the first, so that there are stages which some persons always feel when alcohol is antidotal to tobacco. . . . Under tobacco the heart seems rapidly to run down in power, and alcohol is called for to whip it up again. . . . The fact is, that the heart is not the organ primarily concerned at all, but the minute vessels at the termination of the arterial circuit. These minute vessels are under a nervous influence by which the passage of blood through them is regulated, and which influence is readily modified by every refined cause, acting through the organic or emotional nervous centres. The effect of tobacco on these minute vessels through the nervous system is to cause contraction of them as a primary fact, so that the face of the person affected becomes pale and the surface of the body cold, while the heart labors to force on the supply of blood, until its own vascular system comes under its influence; then the stomach involuntarily contracts, and after a time the voluntary muscles, deprived of blood, convulse tremulously or pass into active convulsions as in tetanus. Alcohol, on the other hand, through its influence on nervous functions, relaxes the vessels of the minute circulation, sets free the heart, reduces the muscular power, and in every particular counteracts the tobacco. When a person receives a stun or is shocked by

some intelligence or sight or sound that thereby stuns him, so that like Hamlet he is bechilled

‘Almost to jelly by the act of fear,
Stands dumb and speaks not,’

he is for the moment in the same state as the man who first tries to smoke tobacco, and who, with pallid face, cold surface, and reeling brain is to his sense and feeling stricken with all but mortal suffering and prostration. In each of these cases alcohol for a moment acts as an antidote, — not necessarily the best one. . . .

“In process of time the nervous system becoming accustomed to these influences, one or both, in a certain degree tolerates them for a period ; . . . if the habit were a *necessity* it would be a blessing. *But the advantage is not permanent. In the end the nutrition of the organic parts which are under the influence of the same nervous regulation, is sure to suffer and in many organizations to suffer rapidly and fatally.*”

From a brief treatise on “Narcotics,” quoted in Meta Lander’s “Tobacco Problem,” this phase of the subject is again discussed : —

“When introduced into the system in small quantities . . . tobacco acts as a narcotic, and produces for the time a calm feeling of mind and body, — a state of mild stupor and repose. This condition changes to one of nervous restlessness and a general feeling of muscular weakness when its habitual use is temporarily interrupted. The body and mind feel in need of stimulation, and there is a great danger that a resort to alcohol may be had. The use of alcohol is frequently induced by that of tobacco.”

An interesting incident in the State Prison at Auburn, N. Y., touches very directly on this subject.

Five hundred convicts out of six hundred sent for crimes committed through strong drink testified that it was tobacco which led them to intemperance.

“So inseparable is the habit of drinking and smoking,” says Adam Clarke, “that in some places the same word expresses both acts. Thus ‘peend’ in the Bengalee language signifies to drink and to smoke.”

In connection with this subject of the natural partnership of tobacco and alcohol, it would be a pity to leave out an amusing description of it by a Boston newspaper, *The Christian* : —

“Alcohol is a stimulant, exciting and irritating ; tobacco is a narcotic, benumbing, stupefying, and depressing. Hence, either of them if used prepares the way for the other. When a man is wearied and exhausted a glass of liquor excites and exhilarates him ; when he is excited and worried, a few whiffs from a pipe make him as calm as a summer evening. When he has stupefied himself day after day with a narcotic, he then excites himself with the irritating stimulant. The poisons work together like the halves of a pair of scissors — alcohol exciting, tobacco soothing, and both killing ! When the man is dull and heavy from the use of tobacco, he drinks until he is excited and stimulated, then he smokes his pipe until he is calm and quiet, and then drinks again to wake himself up. So the two poisons work together, like the upper and nether mill stones, and between them both the man gets ground up. Every time he uses tobacco, he cultivates the need of a stimulant ; and every time he drinks, he cultivates a desire for a narcotic. Such habits, like hounds, hunt in pairs. When one vulture has fastened his claws

- in a victim others are always at hand to assist in destroying him. So whenever one of these vices may beset a thoughtless mortal, the other one is usually not far away to assist in dragging him down into the pit."

The crowning deceit of tobacco lies in its apparent cure of diseases which it has originally caused and continually feeds.

Each particular organ is incapacitated for work, owing to the continuous strain and excitement imposed upon it. It sinks under the burden of an endless accumulation of grievances. "I take my tobacco to aid digestion," pleads the poor broken down dyspeptic. "I should die without my tobacco," says the unhappy victim of catarrh, etc.

THE TOBACCO POISONS

IN studying the constituents of tobacco, of course its poison ingredients alone interest us. They alone fascinate and enslave us, and it is for them only that tobacco is taken into the system; otherwise the leaves of tobacco would be no more important than the leaves of a corn stalk.

The best known of the tobacco poisons is nicotine, although tobacco is a weed of compound poisons which produce complex physiological effects. The combination is without antidote.

Prussic acid is another component of tobacco smoke. Ammonia is one of the mildest poisons, yet its deleterious effects in drying the membranes, exciting

the salivary glands, and vitiating the blood would of itself make tobacco a curse.

The toxic ingredients of tobacco cold, are virulent enough, but it remains for tobacco hot to excel in venom. In the burning of tobacco and in tobacco smoke other poisons are generated by the chemical action produced by heat.

Of these poisons alone, carbonic oxide (carbon monoxide CO) is sufficiently evolved to deteriorate the entire human race, as not only the smokers themselves must inhale it, but all those about them. It is the pestiferous volatile substance that is found in coal-gas, and which kills when the suicide turns on the gas in a closed room, or when he breathes the fumes of smouldering charcoal.

The chemists Eulenberg and Vohl with infinite accuracy separated the fumes of tobacco into various poisons of different characteristics,¹ namely,

¹ "These products of the combustion of tobacco have been split up into still more refined divisions. Eulenberg and Vohl passed the smoke of tobacco through a strong solution of potassa, and afterwards through a dilute solution of sulphuric acid. The solution of potassa separated carbonic, acetic, formic, butyric, valeric, and other acids, including even hydrocyanic or prussic acid together with creosote and some hydrocarbons. The acid solution fixed ammonia and a series of oily bases belonging to those homologues of aniline which Dr. Anderson first discovered in coal tar. These bases run parallel with aniline and under the action of iodide of ethyl yield ammonium compounds. They are composed of the elements carbon, hydrogen, and nitrogen, and they differ in physical and probably in physiological qualities according to their atomic weight. The lightest of them is pyridine, composed chemically of $\text{C}_5 \text{H}_5 \text{N}$; the heaviest is viridine $\text{C}_{12} \text{H}_{19} \text{N}$: . . . Pyridine was found to be most abundant in smoke from tobacco, and picoline, lutadine and collidine in smoke from the cigar." — *Induced Diseases of Modern Life* (Dr. Richardson).

pyridine $C_5 H_5 N$, picoline $C_6 H_7 N$, lutadine $C_7 H_9 N$, paroline $C_9 H_{13} N$, coridine $C_{10} H_{15} N$, rubidine $C_{11} H_{13} N$, viridine $C_{12} H_{19} N$.

For considerable time after the first discovery of nicotine and when nicotine was considered the chief offender in tobacco, smokers were puzzled to know why Havana and Eastern tobacco, containing only two per cent of nicotine, should still be as decided in effects as the French and American tobaccos, containing from six to eight per cent of the same poison. Chemists later unravelled the mystery by finding these other equally virulent poisons in the leaf after the nicotine had been removed. Many treatises upon organic chemistry, especially German and English, explain the very simple process (everything is simple when once understood) of obtaining them. Endless experiments have also been reported to prove the virulency of each on poor suffering animals. The very valuable little work of Le Bon ("La Fumée du Tabac") gives in detail the interesting process for obtaining pure prussic acid¹ from tobacco, also for accurately determining the exact amount of the poison ingredients that are absorbed by the smoker when inhaling, and again when not inhaling the fumes, when smoking with long or short stemmed

¹ Hydrocyanic acid — more commonly known as prussic acid, is accepted as the most uncompromising of all the poisonous substances. Prussic acid in combination with potassium (KCN) is used by naturalists to kill insects. A few crystals of this potent drug placed in a jar with any living creature will cause almost immediate death. An infinitesimal amount of the acid will destroy the life of a dog or horse the instant it is absorbed into the circulation, the rapidity of its action being especially gruesome.

pipes, when not actually smoking one's self, but merely breathing the tobacco smoke produced by others. In fact, it exposes all conditions of the smoker himself and those who, breathing the smoke, share its latent perils. A few quotations are made from this excellent book later on.

Before proceeding to discuss the effects of tobacco on the human system, let us consider first its chief poisons separately.

NICOTINE. — Nicotine was first analyzed and described by Vauquelin in 1808 and later by Posselt and Reimann in 1829. It has been analyzed by many chemists since that time. Were there no other toxic agent than nicotine in tobacco or in tobacco smoke, it, in itself, is a poison of sufficient energy to accord tobacco the highest place as a harvester of death.

Nicotine is thus described in Appleton's Cyclopaedia: —

“Nicotine possesses an exceedingly acrid, burning taste, even when largely diluted. . . . It is one of the most virulent poisons known, a drop of the concentrated solution being sufficient to kill a dog, and its vapor destroying birds. Its vapor is exceedingly powerful, that arising from a single drop being sufficient to render the whole atmosphere insupportable.”

It belongs to the same family and is closely related to belladonna or deadly nightshade, to stramonium, hyoscyamus or henbane, etc., a family of plants of about forty varieties. They are rampant poisons, nicotine being the most virulent of all,—too virulent, in fact, to be used as a medicine, either internally or externally.

In the "Chemistry of Common Life" Johnston thus describes it:—

"The volatile alkali (nicotine) is thus obtained : When tobacco leaves are infused in water, made slightly sour by sulphuric acid, and then distilled with quicklime, there comes over mixed with the water a small quantity of a volatile, oily, colorless alkaline liquid, which is heavier than water, and to which the name of nicotine has been given. It has the color of tobacco, an acrid, burning, tobacco taste, and possesses narcotic or very poisonous qualities. In this latter respect it is scarcely inferior to prussic acid, a single drop being sufficient to kill a dog. Its vapor is so irritating that it is difficult to breathe in a room in which a single drop has been evaporated. The proportion of this substance contained in the dry leaf of tobacco varies from two to eight per cent. . . . In smoking a hundred grains of tobacco, therefore — say a quarter of an ounce — there may be drawn into the mouth two grains or more of one of the most subtle of all known poisons."

M. Orfila, president of the Paris Medical Academy, says, "Tobacco is the most subtle poison known to the chemist, except the deadly prussic acid."

Writes Dr. Solly, for many years the medical examiner of various English insurance offices :—

"The profession have no idea of the ignorance of the public regarding the nature of tobacco. Even intelligent, well educated men stare in astonishment when you tell them that it is one of the most powerful poisons. Now is this right? Has the medical profession done its duty? Ought we not as a body to have told the public that of all our poisons it is the most insidious, uncertain, and in full doses the most deadly?"

Keompper tells us that a thread dipped in the oil of tobacco and drawn through a wound made by a needle in an animal, killed it in the space of seven minutes.

“Place a tobacco victim into a hot bath ; let him remain there till a free perspiration takes place ; then drop a fly into the water and instant death follows. . . .”

Dr. Elisha Harris in his little work on “Tobacco” says : —

“So very dangerous and potent are its narcotic properties that tobacco is only seldom used for any purpose in medicine ; and when it is resorted to, the greatest caution is necessary.

“The peculiar poisonous principle — nicotine — is one of the most deadly poisons known, a single drop or a single grain being sufficient to destroy the life of a large animal. A single leaf of tobacco or a single cigar contains enough of this poison to destroy the life of the strongest man if it were introduced into the stomach or applied directly to the nerves and blood-vessels of the body. . . . A few drops of the fresh juice of tobacco when applied to a wound or introduced into the stomach induces a fearful prostration of all the powers of life, if not death itself. The same effects will follow when a fresh or moistened leaf of tobacco is applied over the region of the stomach, or upon the abraded surface of the skin.

“So hazardous are these experiments that no intelligent physician would think of performing them. Surgeons have sometimes resorted to a weak infusion of tobacco injected into the bowels in cases in which it was necessary to induce immediate prostration of muscular energy, as in cases of

strangulated hernia, and in bad dislocations of the joint; but even in these cases, the risk is so great that no prudent surgeon will use it except as a last resort."

Again on this subject I will quote from Claude Bernard: —

"Nicotine — a substance obtained from tobacco — is one of the most violent poisons known. . . . Nicotine resembles prussic acid in appearance, in its effects, and by its activity. All animals succumb to its effects. We have experimented with mammals, birds, reptiles, and always with the same result, and always determining analogous symptoms.

"By whatever way nicotine is administered, — by the intestinal canal, under the skin, in a wound, — the animal is overcome. He dies in excessively violent convulsions. . . .

"Nicotine acts on the nerves, the muscles, and above all on the vascular system. When one places on the plate of a microscope the web (foot) of a living frog, one can see the circulation of blood in the capillary network of that membrane. If during this observation the frog is poisoned with nicotine, one sees the immediate effect of the depression of the arterial system, whose vessels wither and become completely emptied. The heart continues to beat, however. It seems as if the capillary system alone had submitted to the poison. Curare, strychnine, and cyanide of potassium, which we have carefully studied, do not compare with the virulency of nicotine to arrest the circulation of blood. The heart continues to beat while the veins cease to circulate, notwithstanding they are full. If the dose of poison is sufficiently small to escape death, the circulation is gradually re-established. This action upon the arterial and capillary system explains the trembling that one sees in the muscles, the same muscular trembling which is produced

when by a ligature the blood is prevented from entering the muscle.

“A large dose of nicotine, or enough to produce what we call an excess of action, and we have convulsions of the muscles so that they may permanently remain in a tetanic state (rigid spasm).

“When the dose of nicotine is feeble, singular phenomena take place in the lungs and heart. Respiration becomes quicker and deeper, and pulsations of the heart increase in energy.”

One of the most interesting essays published on nicotine is by M. Orfila. His attention was first directed to nicotine by the horrible episode at the château of Bitrement, Belgium, when Count and Countess Bocarme poisoned a rich brother-in-law after dinner (the usual time) by means of nicotine. The trial filled all Europe with intense excitement, drawing much attention to nicotine both as a pleasure-dealing drug and as a means for murder or suicide. The *beau frère*, Gustavus Fouguies, was a guest, who after dinner had evidently declined the honor of being poisoned, for the trial disclosed the fact that the nicotine had been thrust down his throat by force; also that the unfortunate Fouguies was a candidate for another world in five minutes, etc.

M. Staus was the medical jurist who reported the presence of nicotine in the different organs of the late brother-in-law, a fact which led M. Orfila to pursue exhaustive researches upon the character, qualities, and chemical properties of nicotine.

“During several months after the apprehension of Count and Countess Bocarme,” says M. Orfila, “I devoted myself

to numerous experiments in order to ascertain if it were possible to detect nicotine in the various organs after absorption ; this problem appeared to me very important, inasmuch as the alkali kills, as it were, with the rapidity of lightning, and as it belongs to that class of alkaloids against which it is believed toxology is powerless. It will be seen by reading my memoir, that I have been able to surmount all difficulties, and that it is possible by very simple means to detect traces of nicotine in the liver, the kidneys, the lungs, etc. . . .

“The intense excitement prevailing all over Europe over the affair was intensified for three reasons : First, a general ignorance prevailed regarding nicotine ; second, it was an attack on each and every one’s dearest friend — tobacco ; third, it was the arraigning in a public court, for a heinous offence, of people of high degree. . . . ”

In literature on tobacco the story is often told of the French poet, Santuil, the greatest French poet of his time, who while feasting at the table of his friend, the Prince of Condé, drank a glass of wine, into which a gay and joking friend had stealthily introduced a small quantity of Spanish snuff, which caused his death in a few hours.

The American Indians have still another way of serving tobacco ; quicker, but in the end not less sure of results than the ordinary one, namely, at the ends of their arrows.

Shirking soldiers and sailors are sometimes relieved of active duty on account of sudden and alarming illness, caused by placing a moistened tobacco leaf under the pit of the arm.

We are quite accustomed to the administration of

tobacco poison through the medium of the nose and that poor abused organ, the mouth, but it remains for Shakespeare to suggest still another channel for introducing the drug not as yet popular! We are indebted for the suggestion to the Ghost of Hamlet, the "juice of cursed hebenon" being in fact our friend nicotine.

"With juice of cursed hebenon in a vial,
And in the porches of *mine ear* did pour the leperous distil-
ment ; . . .
Thus was I, sleeping, by a brother's hand
Of life, of crown, of queen, at once dispatch'd:

TOBACCO SMOKE

"GIVE US PURE AIR"

THE greatest surprise of all who begin the study of tobacco is to learn that the mere breathing of tobacco smoke is pernicious; that the victims of tobacco are not alone the actual smokers themselves, but all those who inhale the vitiated air which has become impregnated with the poisons of their fascinating weed.

"One breathes," says Le Bon, "about eighteen times a minute, and at each breath about half a litre of air reaches the lungs; nine litres of air, then, a minute traverses these organs, bringing all the elements it contains. Charged with tobacco smoke it condenses in part on the vast surface offered by the mouth, the bronchial tubes, and lungs. It is less, of course, than is absorbed by the smoker

himself, who receives part of the smoke almost without admixture of air, but all the same he absorbs a notable proportion."

Here, again, tobacco has a diabolical advantage over alcohol. When sound and normal, one's entire system is permeated with alcohol with almost the rapidity of lightning, by mere contact with it. It remains for nicotine not only to match alcohol in this respect, but, on account of its volatile qualities, it attacks others not in actual contact with the weed, and who may wisely scorn its use.

It seems that not only is nicotine sufficiently volatile to vitiate the surrounding air, but that the air is further contaminated by the new poisons, which are generated chemically by the burning of tobacco. German and French scientists have turned their attention especially to tobacco smoke. Several important works have been published treating of tobacco smoke alone. The methods of analysis of its poisons are explained, and exhaustive experiments are reported in minutest detail, to illustrate their pernicious effects.

Let us again mention a most valuable book of this kind, prepared by Dr. Gustave Le Bon (President of the Society of Médecine Pratique de Paris, Chevalier of the Legion of Honor, etc.), called "*La Fumée de Tabac*."

The following quotations are from the last pages of this work, entitled "*Conclusions*":—

"1. The principles of tobacco smoke, which become condensed by cooling in the mouth and respiratory tubes of

smokers, contain notably nicotine, carbonate of ammonia, different matters *goudronneuses*, coloring substances, prussic acid combined with bases, and aromatic principles very odoriferous and very poisonous.

“In the smoke these different substances are mixed with a large proportion of water vapor and differently composed gases, notably carbonic oxide (*oxyde de carbone*) and carbonic acid.

“2. The liquid resulting from the condensation of the preceding substances is extremely poisonous. It is only necessary to inject the smallest quantities into the circulatory system of an animal, or to make him breathe it for a short time, to see him succumb after various symptoms of paralysis.

“3. Toxic properties of tobacco smoke which have heretofore been attributed to nicotine alone, are due equally to prussic acid and to different aromatic principles, notably a particular alkaloid — collidine.

“This is a liquid of agreeable and very penetrating odor (giving principally the odor of tobacco) whose presence is detected in products of distillation. . . .

“4. Collidine is an alkaloid as poisonous as nicotine. The twentieth part of a drop will rapidly kill a frog after symptoms of paralysis. One cannot breathe it for several instants without experiencing muscular feebleness and vertigo.

“5. It is to the presence of prussic acid and of different aromatic principles that certain phenomena are due, such as vertigo, headache, nausea, which certain kinds of tobacco produce which are deficient in nicotine . . . and of which others rich in nicotine do not produce similarly.

“6. The proportion of prussic acid and of aromatic principles contained in tobacco smoke, vary. . . . Those containing the strongest proportions are the Havana tobacco and

the tobacco of the East. By processes described in this work, one may easily obtain and apportion prussic acid and Collidine in a state of purity from tobacco smoke.

"7. The black semi-liquid matter which is condensed in the interior of pipes contains all the substances here enumerated, and notably large quantities of nicotine. It is extremely poisonous in small doses, two or three drops being sufficient to kill a small animal.

"8. The combustion of tobacco destroys only a small part of its nicotine, which is again found in tobacco smoke. The proportion susceptible of being absorbed by smokers, and which has been accurately determined in our experiments, vary according to certain conditions. It does not descend much below fifty centigrammes for 100 grammes of tobacco smoke. The quantity of ammonia absorbed is about equal.

"9. The quantity of nicotine and other poison principles absorbed is greatest when the smoker inhales the smoke, — the least when smoking the Turkish pipe (*le narghilé*), or a long pipe in the open air without breathing the smoke.

"10. Two or three drops of nicotine will instantly kill animals, and doses infinitely smaller will produce symptoms of paralysis and death. A frog introduced into a receiver containing a single drop of nicotine on a cotton ball, will succumb in a few hours, and the vapor arising from nicotine ebullition will instantly overcome animals without time to make a movement.

"11. . . .

"12. Among the most certain effects of tobacco smoke on man may be mentioned : troubles of eyesight, palpitations, tendency to vertigo, and loss of memory."

CARBONIC OXIDE. — This carbonic oxide generated by the fire of burning tobacco is, as before remarked,

the same gas or vapor that is produced by the incomplete combustion of coal and charcoal. It has long been a favorite agent of suicide in Paris, where it is usually produced by a charcoal fire smothered to check free combustion. Several distinguished scientists, especially Germans, have published the results of their experiments regarding it, notably Dr. Krause, of Annaberg, and others. From twelve experiments made by Dr. Krause, the carbonic oxide varied from 5.2 to 13.8 in 100 of smoke in different kinds of tobacco, the average being 9.3.

Dr. Kissling, of Bremen, after many experiments reported practically the same results.

Fokker found, by experimenting with dogs, that after being an hour in a small room filled with the tobacco smoke of one smoker, this poison element in the smoke, apart from nicotine, could be found chemically in the dog's blood.

Dr. Gréhant (Baret — Thèse de Paris, 1879) also poisoned dogs with tobacco smoke, and found in their blood the same changes noticeable in coal oxide intoxication, whereas the blood of those which had died of pure nicotine poisoning showed different results.

Dr. Le Bon's experiences but repeated those of Dr. Gréhant, in finding the same amount of carbonic oxide in tobacco.

Claude Bernard (France's greatest physiologist) demonstrated ("Leçons sur les Effets des Substances Toxiques") just how this carbonic oxide acts on the blood. He gave us to understand just how one dies by asphyxiation. Hæmoglobin is the medium in the red blood-corpuscles by which the blood takes up

oxygen in the lungs to be distributed throughout the body. Claude Bernard added carbonic oxide to the hæmoglobin to show the latter's affinity for it, and how it absorbs it immediately, to the exclusion of oxygen. In other words, hæmoglobin is rendered more or less incapable of taking up oxygen according to the amount of carbonic oxide which is conveniently about. When one is asphyxiated by this coal-gas product, it simply means that the hæmoglobin of the blood-globules are saturated with carbonic oxide, and that there is consequently no place for oxygen.

"When an animal remains an hour," says Claude Bernard, "in an atmosphere containing $\frac{1}{1000}$ of carbonic oxide, 100 cubic centimetres of his blood will contain 10 cubic centimetres of carbonic oxide which have taken the place of 10 cubic centimetres of oxygen. The same proportion of blood could only dissolve 20 cubic centimetres of this last gas. It is absolutely as if one had taken away from the victim half of his blood.

"In an atmosphere containing $\frac{1}{500}$ of carbonic oxide, a quarter only of globules lose their power of absorbing oxygen. In an atmosphere containing $\frac{1}{100}$ of the carbonic oxide a dog dies in twenty minutes."

"Happily for subjects . . . who have absorbed insufficient quantities of the carbonic oxide to produce death," says M. Le Bon, "the combination formed by this gas with hæmoglobin is more or less transient. The gas becomes eliminated from the system, but not without leaving its pernicious effects."

M. Rosé, among others, shows how the action of carbonic oxide leads to paralysis. The first excitement induces a quicker respiration, a quicker beating

of the heart, trembling and convulsions; a larger quantity, dilation of the pupils, cold sweats, cold skin, fainting, paralysis. It is sufficiently demonstrated how carbonic oxide induces grave morbid states, sometimes taken for typhus and other similar diseases.

Velpeau, in 1865, published an account of an epidemic in Savoie taken for cerebro-spinal meningitis, or a typhus (*à forme cérébrale*), and it was simply due to a poisoning by carbonic oxide escaped from the kind of stoves generally in use.

“One should shun this dangerous poison everywhere,” says he, “whether from coal-gas, from stoves, from illuminating gas, or from the gas of sewers. If it does not kill, it leaves its pernicious effects — nervous troubles, irregular pulsations of the heart, partial paralysis, inflammation of respiratory organs, and weakened digestion.”

The influence of small quantities of this gas tends to pulmonary affections — degeneracy of the muscles, consumption, failing of intelligence, etc.

In an article entitled “Sang” (blood), by M. Tour, all the symptoms of blood vitiated by carbonic oxide are given at length. The author says:—

“It is well known that carbonic oxide is rapidly absorbed by the lungs, and as quickly penetrates the blood when an equal amount of oxygen is displaced.”

PRUSSIC ACID.—Let us again quote from Dr. Le Bon, regarding prussic acid in tobacco smoke, as follows:

“During my first researches in connection with tobacco, I was struck with the fact that the kinds of tobacco which act most forcibly on the nervous system, — notably, the strong Havana cigars and certain kinds from the East, —

contain less of nicotine than other common brands which smokers take with less difficulty. It was then evident that besides nicotine and other well-known constituents of the tobacco leaf, tobacco smoke must contain other active poison substances. The method employed in new researches which consists of passing the smoke through different liquids in order to eliminate certain principles, enabled us to isolate new substances . . . which, in the complete absence of nicotine, possessed active poison properties. Some are aromatic principles, others prussic acid. We (Dr. Noel and himself, Ed.) not only were able to detect exactly the proportion of prussic acid in tobacco smoke, but to secure it in notable quantities, in absolute purity, which have been presented to several scientific societies."

An elaborate account is given of the process of analysis by which pure prussic acid is obtained from tobacco smoke:—

"The amount of prussic acid," says M. Le Bon, "obtained by these experiences, varied considerably in different kinds of tobacco. The smoke of the ordinary tobacco gave three to four milligrammes to 100 grammes of tobacco burned. That of the East, 7 to 8 milligrammes for the same quantity of tobacco.

"On account of losses which necessarily follow operations as long as those just described, these figures are really below the real ones. Such as they are, they are quite high enough, when one understands that prussic acid is the strongest of all known poisons, and that a single drop on the eye of a dog will kill him instantly.

"It is also true that prussic acid is formed during the burning of tobacco, and does not exist in the plant. It is evidently formed by a combustion with several of the numerous bases which tobacco contains."

AMMONIA. — M. Rosé says: —

“One often sees poisoning by ammonia among the Vi-dangenos. It produces headache, arrests digestion, produces spasms, ending in death in violent cramps. The blood and general condition is that of putrefaction. The organs are gray-green, the lungs brown mixed with a bluish red. Mucous membranes dark in color. There is a partial paralysis of the organs of sense, especially that of the voice. There are troubles of the cerebral circulation with a falling off in intelligence.”

“The effects caused by tobacco on the human body are many,” says Dr. Richardson; “the smoke of tobacco being of compound poisons, the symptoms it produces are also compound.”

In these days when the study of hygiene is becoming of ever-increasing interest, more attention is being paid to the water we drink which, as far as possible, is sought absolutely pure and free from pollution. No less care should be taken by the hygienist to feed the lungs with the purest of air. One might quite as well drink polluted water as to breathe polluted air.

We may not always be able to obtain the pure and exhilarating air of the meadow, the forest, the sea, or the mountain, where —

“O'er mountain heights sojourning
As by some spell divine,
Our cares drop from us
As the needles falling
From off the gusty pine.”

But we may still avoid miasmatic locations, air laden with sewer gas, air unsunned and unventilated,

any of which is less pernicious than air vitiated by the strongest poisons known to men, and which are contained in tobacco smoke.

Physicians (who are not themselves smokers and do not possess the inebriate's fatal facility for excuses) attribute much of the invalidism of wives and families to the breathing of tobacco smoke supplied by the smoker of the family. Tobacco smoke is especially disastrous to infants. Says Dr. Trall:—

“Many an infant has been killed outright in its cradle by the tobacco smoke with which a thoughtless father filled an unventilated room.”

Meta Lander repeats the remark of a physician to a friend at a Saratoga hotel:—

“See that portly man yonder, smoking like a volcano? He stands the racket, but do you see how he is killing his wife? Look at her, pale, nervous, and sinking into the grave. So far as health is concerned, she might as well have wedded a cask of tobacco.”

The French scientist, M. Perigord, after telling of a young woman who remained a couple of hours in a room thickly filled with tobacco smoke, and who fell very ill with various symptoms duly explained, only recovering after several days of severe prostration, remarked:—

“These observations show us how very dangerous it is for smokers and non-smokers to remain in an atmosphere charged with tobacco smoke. And how could it be otherwise, since we so well know that besides other dangerous substances the air is contaminated with two violent poisons,

carbonic oxide and nicotine. It is an error to believe that combustion destroys nicotine; without doubt some nicotine is condensed in the pipe, some is condensed in the mouth, where its principles are partly absorbed by the moistened mucous membranes, but tobacco smoke contains nicotine always. It is not at all necessary to smoke to expose one's self to the most dangerous effects of tobacco poisoning. In smoking rooms anywhere, . . . also remaining repeatedly in air vitiated with tobacco smoke, brings, among other troubles, loss of memory."

Many cases are quoted of deaths due to breathing tobacco smoke in small unventilated rooms.

It must be remembered if but an infinitesimal amount of the tobacco poisons reaches the smoker and those breathing the smoke, it requires but a very minute quantity to degrade vital functions.

The idea of breathing the fumes of tobacco as smoked by others has another disagreeable feature. It is the idea of breathing what comes from the mouth of others.

Another remark before leaving the subject of tobacco smoke, which relates to those who have once used the poison weed and have afterwards abandoned it. It is that such persons seem more sensitive to the influence of tobacco than others. It is as if the whole organism, struggling for a healthy and normal condition, were supersensitive to the reminder of old insults and hard struggles, losing patience at the suggestion of their renewal.

WHAT IS ALCOHOL?

ALCOHOL is a poison produced by the decay of any fruit, vegetable, or grain containing sugar or starch. Products of decay are always poisonous, and were never intended to be used by man as food or drink. To obtain alcohol, fruit or grain is crushed (to facilitate the decay of its particles), moistened, and placed in a warm atmosphere favorable to rapid decomposition; the germs of putrefaction set to work vigorously to decompose the mass by the usual processes of decay; gas is generated; the mass bubbles and becomes warm; scum forms on the surface of the effervescing mass. Finally the ebullition ceases; the scum is deposited at the bottom, the liquid has lost its sweet flavor, and behold, as a part of what remains — alcohol (said by some scientists to be the excreta of the germs of putrefaction).

The germs of putrefaction are simply death agents. Their products are poisons, inimical to all live tissue. There is a mistaken popular idea that as alcohol is extracted from the most wholesome and nutritious of foods, the alcohol component must also be wholesome and nutritious. Those who maintain such a theory do not seem to understand that these foods when in their fresh state, and when in a state of decay, represent two absolutely different conditions, as different as the pure distilled water of the clouds and the green and polluted water of miasmatic swamps, filled with decaying organic matter in process of extermination by the germs of putrefaction.

THE GRAPE

HOW little do the devotees of wine appreciate this delightful food served in semi-transparent cups, tinted with hues of the sapphire, the olivine, and the opal! And what could have been more divinely conceived than the exquisite natural flavors contained in these fairy goblets?

It is said by some sentimentalists that these artistic clusters, caught by emerald chains, contain a solar energy, the result of some divine alchemy by which the force of the sun's rays is caught in the purest of distilled waters. Whence it comes, or whatever it is, there seems, to the susceptible and rebounding life-currents of sound health, something more in the refreshment of the grape than is alone furnished by its purest of water and nutrient qualities. To them, this nectar of the gods, redolent of the sun, is a true stimulant, bringing a glow of color to the cheek, and a sense of new life.

The grape does not rank high in nutritive properties but is rich in qualities that make quickly available the nutritive values of other foods. When fresh and sound it contains a pure water, so delicately and skillfully compounded with certain acids and salts that it increases nutrition by an immediate promotion of secretion and excretion. It comes as a ministering angel to the great antiseptic laboratory of the liver and to all the vital organs. It also contains a sugar

immediately available for energy without the necessity of further digestion and which is taken at once into the blood. This grape sugar is in the form of a soluble gum, which has been already acted upon by diastase, — that digestive substance which, in the human organism, converts starch and the ordinary sugar into a new form before they are available for use as fuel. This diastase first dissolves starch and converts it into a soluble gum called dextrine, which is further converted in the process of digestion into what is called grape sugar, so called because in its analysis it closely resembles the sugar which naturally exists in grapes.

And such flavors! Which is more delicious, the emerald-tinted Niagara, or the spicy Muscat? What shall one say of the rich Tokay of iridescent hue, as it comes in succession and varied flavors from the sun-clad hills of California? What of the purple Concord and the abundant Isabella? What of the solid and exquisite Malagas, which, from sunny Italy and Spain, keep in perfection all the year? What of that hot-house product of America and outdoor vineyard of Wales can compare with perhaps the most superb of all these ambrosial foods, — the dark Hamburg of richest purple? We hear of a flavor called "bouquet" in wine, which suggests the fragrance of the rose, the heliotrope, the mignonette, the violet, and all the sweet incense of flowers. Poor deluded mortal! One has never tasted a *bouquet*, one has never tasted a grape, whose palate has been benumbed by the habitual use of any poison.

Again, the great Creator has not confined this thing

of beauty, the flowers of fruit, the jewels of fruit, to the few or the wealthy. It is a rich product over all the best of earth. It is divinely intended for the abundant and common use of all. How must the perversion of this delicious food strike the sense of the Giver, when endless tons of it, enough for the poor man's table in all the world, is yearly converted into a decaying, putrifying mass, to be drunk as a poison beverage?

THE FAVORITE POISONS AND THE NERVES

A GAIN says Dr. Beard in the *North American Review* (September, 1880): —

“As the tides go up and down under the force of gravity, so the blood flows hither and thither through the organism, at the order of the nerve force. . . . The nerves are the life. . . . In comparison with the study of the nervous system in health and disease, all other sciences seem cold and hollow and dull; the problems of the universe so far as they are soluble by man are locked in the cerebral cell; psychology is the one science to which the 20th century must do homage.

“Standing on the shore, which the tide is swiftly approaching, a little child may justly fear that the ocean is about to engulf the land; to the mind of the timid, the philanthropic, the recent rise of the tide of nervous diseases pouring upon us in rapidly succeeding waves, might inspire a fear lest all civilization would become deranged; . . . but the forces that are now filling the asylums and institutions of Great

Britain and America may yet be antagonized by higher forces that shall subjugate them. . . . New diseases are continually arising with the expansion of civilization, and general paresis (destruction of vitality) is a type of modern disease — a 19th century disease. The last half century indeed has brought to the surface a larger number of new diseases of the nervous system, including insanity, than all the previous centuries of human history; . . . hidden, treacherous, recurring forms of disease are springing up everywhere, to the confounding both of science and law. . . . The world in which we crawl is one that has no sound guide — knows of no pathway that leads to the truth in the great problems; . . . not truth, not reason, not the demonstrable, but the undemonstrable, and the demonstrably false have ruled and are destined to rule all the higher . . . animals."

Let us hope that the phrase "are destined to rule" is a mistake; and yet, notwithstanding the endless list of published works relating to the influences of poisons on the nervous system, involving self and progeny, the triumphal march of tobacco, alcohol, and other poisons still continues. Indeed, one rarely eats and drinks without taking some favorite poison; few social functions are free from them; children are early trained to their use; one even drinks to the health of others in them. The only becoming excuse for it all is, that the world does not properly understand or appreciate the delicacy and intricacy of the nervous system. The most wonderful and interesting of the sciences — physiology — is too little taught.

To a fresh enthusiast, the nervous system would seem to be one of the very greatest works of creation.

In point of mechanism, its many million lines with their separate functions discount all other works of nature.

This wonderful telegraphic system has its headquarters in the brain with branch offices situated in the spinal column and other parts of the body. These various stations with their endless branches are all combined to carry out a diversity of purposes. There is the one set of wires, so to speak, for controlling alone the contraction of muscles (motor nerves); another set for the special activities of the internal organs (sympathetic nervous system); other sets (sensory nerves) for the use of the senses, — taste, smell, hearing, seeing, etc.

“By our skin, by our nose, by our tongue and palate, by our ears, and above all by our eyes, impressions caused by the external world are forever travelling up sensory nerves to the brain; thither come also impressions within ourselves, telling us where our limbs are, and what our muscles are doing. Within the brain these impressions become sensations. They stir the brain to action; and the brain working on them and by them, governs the body as a conscious intelligent will.”

Those nerves having the brain as headquarters and under the direct control of man (the voluntary nervous system) require intervals of repose for renovation and recuperation. Other nerves (the involuntary nervous system) may become weary and ill by imposition and over-taxation, but do not cease for a second their exertions from the time of birth until death. They, and the muscles they control, work

through their own consciousness apart from that of the brain. They control breathing, the pumping of the heart, the necessary actions of the digestive functions, dominating indeed the operations of all the organs. The intricacy of nerve relations, the mutual dependencies of the various sets of nerves, of the heart, the lungs, the blood-vessels, the skin, in fact of every gland, organ, and function of the body; the entire system as a part and as a whole, operating to carry and to fetch, while transmitting messages and orders with the rapidity of lightning, furnishes a most complex problem for study, and commands our profoundest wonder and respect. One can never fully appreciate the marvellous delicacy of the body-machine without some knowledge of the nervous system. Officially the nervous system, "the intimate agency of the life principle, protecting, guiding, and controlling the various life manifestations," is the King spirit of the entire human organization. In this superb kingdom, the body as a whole or as a part flourishes or languishes, enjoys or suffers, lives or dies, according to the health and vigor of the master in control. The conscientious parent, the station master of a railway, the pilot of a ship, the general of an army, alert to all interests and dangers, can best appreciate the duties of the nervous centres.

We have the body consisting of endless cells and fibres united and combined to form the large organs; again, each particular cell is itself a living organ with its own individuality, its own particular structure, its own duties and needs. There must be a means for all this collection of organs not only to work in co-

operation in obedience to the conscious will, but also independently of that will. There is not only a vast amount of ordinary routine work to be done, but also extra work for mutual and individual protection. Thus, without order from the conscious brain the lids of the eyes close when an object threatens to touch the tender eyeball. As Professor Martin, in "The Human Body," says:—

"When we are using the muscles of the legs vigorously (without our thinking about it at all) the muscles of respiration hurry their action, and consequently oxygen is conveyed more rapidly to the blood for the supply of the working leg muscles. . . . When the sole of the foot is tickled, the muscles of the thigh and leg, which are not directly interfered with at all, contract and jerk the foot away from its tormentor. Everywhere we find this co-operation among the organs, and it is only by such co-operation that our bodies are able to continue alive."

The effort of trying so to adjust affairs of the human system that it may best endure habitual hardships inflicted upon it, is a service faithfully and energetically performed by the nerves. All warnings of evil are promptly reported to the brain by them. All the pleasures of life, and they are infinite in health, are gladly heralded by the nerves, and these joyful messages add to our general health and strength.

"Care, to our coffin adds a nail no doubt,
And every grin so merry draws one out."

Perplexing the nerves by unusual conditions which tend to disturb the well-being of the body, as by walk-

ing on shipboard or along dangerous elevations, brings about (before the nerves have gained confidence) an unhappy state which illustrates a body acting without the full consent of the involuntary nervous system.

When all goes well, and there is no ill news to report, we are wholly unconscious of the existence of nerves, their work being absolutely silent, prompt, and, in health, inconceivably efficient.

There is, indeed, a sort of personality in connection with the involuntary nervous system — an instinct, a second self endowed with reason. It seems possessed of a moral sense of high obligation, almost heroic, in its attempt to maintain the integrity of the body, protecting it from danger, mending its injuries, and guiding its actions. Conscience itself has its relation to a sound condition of general health.

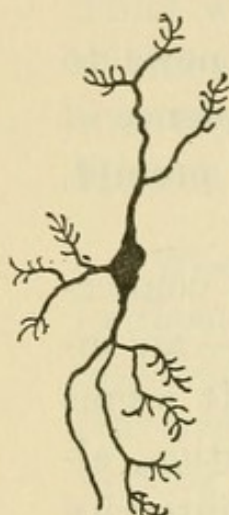
This fostering care on the part of the nerves aside from conscious self may be illustrated in the case of the drunken man who is not too far advanced in intoxication. His voluntary intellectual self has been benumbed, and his involuntary intellectual self alone remains. Put something in his hand and he will clutch it firmly, though without interest, motive, or memory; place him on horseback and his legs will still cling to the saddle.¹

¹ In "The Living Temple," Dr. Kellogg's book just published, the great hygienist says: "The brain and nerves are commonly described separately as independent organs, but in reality they are one. The thinking and feeling organ, as the whole together might be called, centres in the cranial cavity, but occupies the whole body. The smallest brain conceivable . . . is a nerve-cell, or neuron.

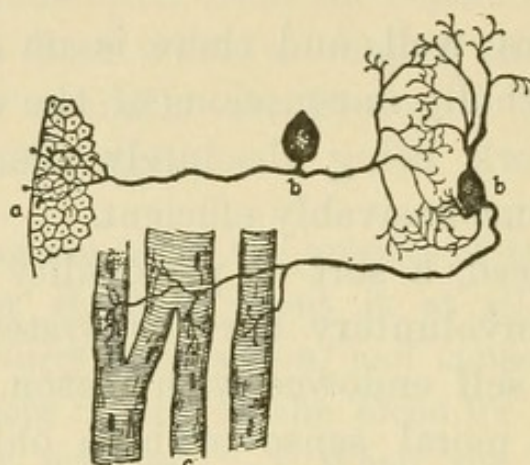
"A neuron consists of a body with branching parts. One of these

And now let us say emphatically that as a preserver and law giver of the bodily forces, a sentinel, a guide,

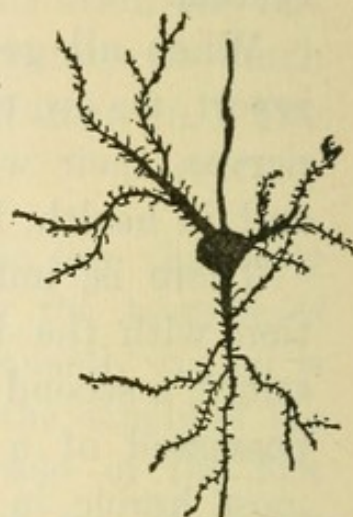
branches is commonly very greatly elongated, often to the extent of several inches, ending in a delicate tuft. The accompanying cut



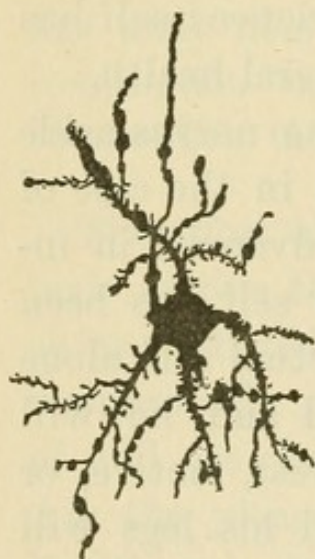
A NEURON,
OR NERVE-CELL



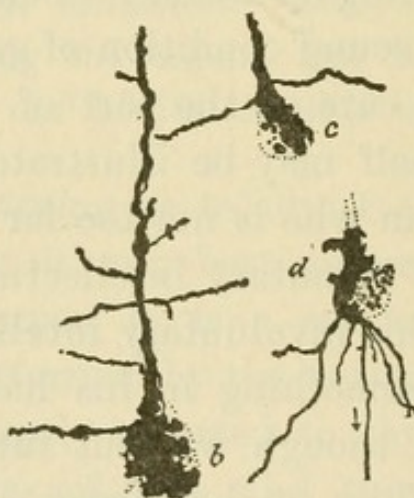
(a) SKIN
(b) NERVE-CELLS
(c) MUSCLE



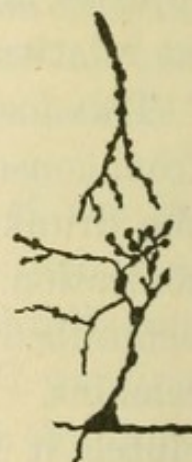
NORMAL NERVE-CELL SHOW-
ING POINTS OF CONTACT



NERVE-CELL IN ACUTE
ALCOHOLISM



APPEARANCE OF NERVE-CELL
IN CHRONIC ALCOHOLISM



CONTRACTED
NERVE-CELLS
CONTACT BROKEN

gives a representation of a typical neuron. Nerve-cells have many different forms. . . . Every cell of this sort is a centre of nervous activity, a seat of intelligence, a source of energy, a living battery in which energy is generated, or rather in which the energy derived from the food is set free, and made to appear in vital work.

“A mass of matter within the cranium that we call the brain is simply an assemblage of these little brains, comprising in all the

a protector, a would-be willing and marvellously efficient worker, what the nervous system most abhors

enormous number of more than 100,000,000,000. Similar cells are found in all parts of the body, — in the heart, the lungs, the stomach, the liver, in the walls of the blood-vessels, in the skin. Their prolonged branches constitute the nerve trunks, and serve to connect the cells in different parts of the brain, and of different parts of the body, and especially to connect the central brain with the lesser brains and various other organs of the body. The number of these cells and fibres in the body is so great that if all other structures were removed, — the skin, bones, blood-vessels, muscles, etc., — nerve fibres and cells only being left, the form of the body would still be absolutely complete and solid in appearance, so that our thinking and feeling organs, that is, the brain and nerves, really occupy the whole body, just as do the circulating organs, the heart, and blood-vessels.

“It will be interesting to notice a little more carefully the structure of a neuron. It consists of a body with a nucleus, or centre, and branches, which may be very few or exceedingly numerous. A careful examination of the branches shows that they are covered with minute buds. It is supposed that these buds are for the purpose of contact, either directly or indirectly with other cells. This contact occurs by means of the tufts which form the ends of the long, branching filaments. The cell branches, as well as the matter composing the centre of the cell, consist of transparent, jelly-like matter as clear as water, yet possessed of the most marvellous and varied properties of any known substance. By means of these living threads, which are many times smaller than the finest spider web, the nerve-cells, or little brains of the different parts of the body, are in constant communication with one another, just as various points and cities of a country are in communication by means of telegraph and telephone wires.

“The nerve-cell is the battery; the nerve-fibre, the wire. Who is the operator?

“There are various sorts of nerve-cells or brains. Two different classes may be recognized; cells which feel, or receive impressions, and cells which send out impulses to organs which are capable of doing work of various kinds. The cells of feeling, or so-called sensory cells, comprise many different groups, each of which is the seat of some particular kind of sensation, of which we may enumerate the following so-called special senses: sight, hearing, smell, taste, touch, pressure, weight, temperature, and various general sensations, as

and detests, is a poison of any kind. The meaning of *poison* is something inimical to the body, injuring

pain, hunger, nausea, thirst, fatigue, the sense of suffocation, and others.

“The nerve-cells, or rather groups of cells which have control of vital work, are too numerous to name, for every acting organ in the body down to the smallest muscle fibre, or the most minute gland cell, is stimulated to action by impulses received from nerve-cells or groups of cells. Bodily movements of every sort, although performed by muscles, originate in the nerve-cells which control the muscles. Nerve-cells arranged in groups, called centres, in the brain and spinal column, likewise control the work of the liver, the stomach, the kidneys, the lungs, the heart, even every individual blood-vessel and sweat gland. Special centres are provided to control such acts as coughing, sneezing, vomiting, . . . the dilatation and closure of the pupil, the balancing of the body, the heat-making processes, speech . . . writing. . . .

“At the base of the large brain are found some very interesting groups of cells which serve as middlemen, receiving impressions or orders from the large or upper brain, and transmitting them through the spinal cord to the organs for which they are intended. Acts which are performed very frequently, as in walking, piano playing, swimming, and the special acts peculiar to the various trades, are for the most part carried on by means of these intermediate centres, which, after a certain amount of training, seem to be able to conduct habitual acts without any conscious effort on the part of the higher centres. For example, a person in walking does not have to give thought to each individual step. . . . This is quite true, however, only when a person walks at his habitual gait. To walk much slower or much faster than the usual pace requires a constant conscious effort. Writing is at first an extremely laborious act, which requires very close and conscious effort to direct the muscles employed. The accomplished penman, however, is able to write rapidly, and without giving conscious thought to the exact formation of the individual letters. He only thinks the word he wishes to write, and the hand produces it under the control of these subordinate ganglia. This is true also of typewriting, of speech, of piano playing, and of every habitual act.

“It thus appears that the formation of a physical habit involves the education of a portion of the brain ; and when the habit has once been formed, the act may be performed almost independently of the

and destroying it. Any and every poison bestirs the nerves to excite as quickly as possible the whole organization of the body to the minutest cell, in order to expel the enemy. The nerves exert their utmost to the point of frenzy and madness, until they are conquered in paralysis by more than they can endure. We see the imposition, the outrageous imposition, practised upon the faithful sentinel and guide of the human organism every time it is afflicted and persecuted with a poison. The human system with poison in it is practically a house on fire. There is, of course, a pleasurable sensation derived from the quicker coursing of the blood, the more rapid flow of liquids from the glands, — a feeling of exhilaration in the excitement of the nervous system forcing out reserve strength and occasioning a general commotion. There is more reason, however, in setting fire to one's house made by man for the delectable purpose of enjoying the rushing about of inmates attempting to save, than to set fire to the body with poison, in order to enjoy a nervous exaltation brought about for exactly the same kind of duty. It is sad to think how this house made by God, this temple of a divine spirit, is set on fire regularly by the majority of man-

will or the higher brain. This fact should impress us most profoundly with the importance of forming right habits, since it is apparent that the getting rid of a wrong habit involves not only the formation of a right habit, but the far more tedious and difficult work of undoing the evil work which has been done in the wrong education of the brain. This same principle applies to the higher centres which are concerned only in mental acts. . . . It is indeed a most momentous thought that every act of our lives not only emanates from the brain, but modifies and changes the brain, thus influencing our characters."

kind. The house of stone and wood may be entirely rebuilt; but only one house of flesh and blood is allowed to mortal man.

One must not forget that the nerves themselves are but human, requiring infinite care and consideration; that they have relationships; that they are fed and sustained by the blood; that the blood is fed and sustained by proper food and good digestion; that all the complicated system of accessories has its needs; that the nerves can endure but a certain amount of exertion; and that an often-repeated state of over-exertion and fatigue means not only particular disaster to the nerves, but general disaster to all the bodily functions. We have also seen (p. 74) how by continual contact with poison the sheath-covering of every nerve becomes more or less dried, pressing upon this most delicate and sensitive thread and producing nervous disorders — weakness of mind, loss of memory, neuralgia, insanity, etc. We also saw that on account of the hardening of nerve sheaths, nourishment passes through to the nerves less readily, and waste material less readily escapes. We were also told in the oxygen phase of poisons (p. 80) how the robbing of the system of oxygen starves every portion of the body, nerves included.

Notwithstanding the sufferings which later follow any abuse of the nerves, we have also seen how, for a time, two kinds of temporary pleasure or gratification are obtained by subjecting them to poison, namely, by exciting them in defence of the body to force an extra circulation of fluids; and second, by treating them to poison beyond their endurance that they be-

come partially or entirely overpowered and paralyzed and temporarily unable to convey bad news to the brain.

The habitual harassing of bodily functions for the object of the pleasure first mentioned, rendering the nerves tired, weakened, ill, easily leads to the second abuse,—the remedy sought in paralyzing them and silencing their outcries. The cause of trouble is overlooked. To silence the warning is only too easy,—a mere question of quantity or virulence of the poison dose. And while this most unhygienic and most insane process of poisoning is going on, the anæmic will blandly inform you that he needs more stimulant, quite regardless of the fact that the poison itself has originated and induced the weary feeling and general decrepitude.

“I smoke to quiet my nerves,” says the very frank but very unscientific smoker. For more than any other reason, tobacco is taken for this sedative effect. It is a dreadful commentary on the health of our men, so naturally do they take to tobacco or any kind of poison. It seems as if they could stand but little strain of mental exertion or physical effort without some warning of nerves which they hasten to silence by a drug of some kind. A social meeting, a chat at the club, an afternoon call, a dinner company seems to them flat and tame without the aid of medicine,—a poison to enable them to talk during dinner, a poison to enable them to digest food after dinner, and a poison to enable them to think or to act at any time. Such decrepitude is very sad.

May we learn that everything which tends to ex-

haust or even deteriorate the vital functions of the body, disposes it to nervous tell-tales of disaster. May we learn to appreciate rather than vilify these nerve warnings as the most friendly it is possible to receive from any source whatever. They indicate fatigued cells or other conditions needing prompt attention, that the cause of trouble may be removed. Without the warning of the involuntary nervous system which is always on the watch, one might possibly be burned to death during sleep. Disease itself is but a more or less advanced state of cell fatigue and functional struggle against an enemy, for the nerves warn and the system struggles as long as reserve forces last. The physical culturist comes to recognize all warnings of disease as friendly notices. He seeks to find *causes* which he removes, and comes to the aid with every hygienic condition he can muster.

Despite the meanings of advanced nerve and cell fatigue, despite the horrors of the hospital and lunatic asylum, and of the semi-victims all about us, must we continually pick and hammer, aggravate and torment, embarrass and clog, benumb and paralyze our system with peppers and spices, internal mustard plasters, Chili sauces, teas and coffees, tobacco, alcohol, opiates, etc., etc., as if the nerves were not the most sensitive, the most delicate, the most complex, and altogether the most difficult to cure of all bodily organs?

The anæmic fatigues and weakens his entire nervous system by his poison. When his hard-worked and jaded nerves more than ever need quiet and repose

for recuperation, then is the time of all others that he plies them with extra burdens.

"I am nervous¹ and tired. I need something to quiet my nerves," he repeats. Instead of needed rest or fresh air, or other natural remedy, he simply gives them another dose of "house on fire." The gourmand gives the nerves and muscles of the stomach more legitimate work than they can accomplish, then proceeds to impose upon them the extra duty of "the house on fire." Similar business methods are rarely practised outside the body, but inside of it the losing game of physical imposition has been the rule.

Disease of the nerves naturally and inevitably follows the habitual use of any poison however small. A corresponding reaction always necessarily follows poison-taking, which reduces nervous strength as far below its normal level as it was forced above it by the stimulant, and the permanent effect is always on the losing side. This vibration, like the swinging of a pendulum between the forced action and corresponding depression, leads inevitably to a mental unbalance, first perceived in a weakened memory, blunted perceptions, distorted views of life, weakened power of application to study or business, this being the first stage on the road to full insanity. In the works on degeneracy, victims only thus far advanced are called "defectives." They may be recognized in

¹ What is usually called "nervousness" is scarcely correct. In reporting truthful conditions of bodily functions the nerves must be in fair condition of health, and when they report pain, the ailment is rather where the pain is, than of the nerves themselves. When the latter are out of order they are less capable of reporting sensations good or bad, as in the case of loss of taste, eyesight, hearing, etc.

the father who prefers his pipe to his children, his poison to success in life or to the advantages and pleasures of a long life. Possibly the most serious feature of the use of tobacco and other drugs is that, along with other defalcations and losses, the power of will (a function of the nerves) necessarily vanishes with the rest, and the determination to cast off the yoke of the poison mania becomes a rope of sand.

Dr. Martin tells us that before the days of habitual poison-taking, paralysis was almost unknown; that it is now a disease only too common.¹

Many writers on the subject of the alarming increase of nervous diseases consider the general use of tobacco as the principal cause.²

I should not close this chapter without mentioning the often-repeated story of the effort of Napoleon III. to ferret out the cause of the very alarming increase of insanity in France. His attention was called to the fact that there were proportionally to the population more than five times as many paralytics and lunatics in the hospitals of France as there had

¹ Says he, "In the spinal cord portions of the delicate vesicular matter forming the batteries of the nervous system become destroyed, and we have mere connective tissue taking the place of the highly sensitive tissue, and when that predominates you have the loss of muscular power, irregular movements; and this attaches not merely to the nerves supplying the voluntary muscles, but to many of the nerves supplying the involuntary muscles."

² Dr. Williams writes: "It is said that the numerous cases of insanity in Germany are attributed in part to tobacco, and that Spain has probably degenerated more rapidly and to a greater degree than any other nation on account of tobacco. It is said that Spain is now a vast tobacco shop, and its only consolation is that other nations are fast approaching its level. The great danger to be feared is the enfeeblement of the national mind. . . ."

been thirty years previous, and that the government revenues from the tobacco monopoly had increased during that time in about an equal ratio. In attempting to decide intelligently if the parallel increase were but a mere coincidence or a case of cause and effect, the emperor appointed a commission of scientific men to investigate the question. In their course of studies the commission devoted much time and attention to the young men in the government schools, dividing the students into two classes, the smokers and the non-smokers. The latter were found to be so much superior physically, mentally, and morally, that the emperor committed an honest governmental act, regardless of the tobacco trade, by promptly prohibiting the use of tobacco by students in all schools under government supervision throughout the country.

It need scarcely be mentioned that not only in France, but in other countries, statistics of disease, crime, and national deterioration mark a corresponding ratio, increasing and diminishing with the sale of the favorite poisons, tobacco claiming a lion's share in the sepulchral harvest.

ON THE MIND

The mind is more or less perfect, according to the vehicle in which it manifests itself, and the vehicle of the mind is nothing more nor less than an apparatus of a purely mechanical sort, of most wonderful and intricate construction and perishable character. It is marvellous that the mind is so little considered as the product of a mere machine, even by its professional trainers in our colleges and schools. As before said,

Fichte was a great philosopher, and yet let congestion touch the delicate organization of his brain, or let imperfect digestion or impoverished blood or the loss of proper sleep rob it of its sustenance or balance, and what becomes of the mind of Fichte?

"A man," says Schopenhauer, "should accustom himself to view his intellectual capacities in no other light than that of physiological functions, and to manage them accordingly."

In reality, the vehicle of the mind includes the entire nervous system, the entire system of blood-vessels and *all that relates to them*. The brain and spinal marrow consists of nerve-cells, a complicated system of telegraphic lines, and an equally complicated system of minute blood-vessels. These nerve-cells of the mind, found principally in the brain and spinal cord, are grouped together and called ganglia. They are the generators of nerve force, and correspond to batteries used in telegraphy. Branching from them to all parts of the body are telegraphic lines. It may be interesting to know that nine of these separate systems (ganglia and branching telegraph lines) are located in the brain, and thirty-one of them in the spinal canal.

Now thought originates from, and is chiefly composed of, impressions received from without, which have been stored on the brain as on a sensitized plate in photography. Of course the accuracy, vividness, and durability of these impressions are controlled by the perfection or imperfection of the photographic sensitized plate of the brain. As before said, one of the

two chief classes of nerves serve to carry impressions from without to the brain and spinal cord; the other transmits nerve force from within outward, and there are many varieties of impressions to be received which have their separate systems of nerves to perform that delicate work. For instance, the special ganglia with its own special branches occupies itself with impressions of sight and nothing else; another system transmits solely impressions of hearing, another of taste, another of smell, etc. There is a special group for the workings of the heart, another for the lungs, and for each vital function. One of the most important steps in modern research is the localization in the brain of the several cerebral functions. Each of the forty principal sets of nerve systems with their separate and distinct duties is supplied with the most delicate of membranes designed for its protection and nourishment.

The paramount importance of understanding, revering, and protecting our nerves and nerve-cells and all that pertains to the mechanism of the mind, becomes clear when once we realize that upon their health and vigor depend not only our thought, reason, and memory, but all our sensations and vital actions of every sort. One's receptivity and power of education thus grows as one's susceptibility to impressions increases in accuracy, depth, variety, and durability. "The man of culture," says Matthew Arnold, "is one on whom none of the finer flavors of life are lost."

Dr. Albert Wilson in "The Brain Machine: Its Power and Weakness," writes: —

"Those who photograph, know well that a good impression requires correct exposure. . . . The brain is like a big album of photographs. It should be stored with accurate impressions, especially of the good."

As our thoughts, judgment, and actions are made up of these impressions, Dr. Wilson again reminds us that in the training of the mind it is especially wise and all-important to secure only impressions of the good and the true. He has too little to say about the effects of the poison habit on the mechanism of the brain. He tells us that the chief enemies of the brain are worry, which fatigues and disorganizes the machinery, and shock, which paralyzes it; that the tired and irregular nerve action following worry or excitement produces a confusion of ideas; that the optic brain centres throw up a series of depressing mental photographs, exaggerating existing trouble; that frequent repetition of worry depresses the cells in the forebrain resulting in complete failure to judge aright or analyze correctly.

Dr. Wilson should have told us how ninety-nine times out of a hundred, worry, excitement, and shock, to the mental system, result directly or indirectly from some poison mania. In telling us "If the blood is not right the brain cannot be, for it is nourished by good blood," how could he have spared the favorite poisons?

THE PHYSIOLOGICAL RELATIONSHIP OF THE BRAIN TO MORALS

This subject was ably treated in a lecture given at Berne by Dr. Gaule, of the University of Zurich.

The influence of the poison habit on the brain, fatiguing, stupefying, paralyzing, and starving it, renders it incapable of responsibility. Says he:—

“The influence is exactly as if part of the brain were cut away. The man no longer stops to consider the whole situation, to make use of impressions of former experience stored away in the brain, or to weigh present obligations. . . . And as more and more is taken the stupefying influence reaches lower and lower. . . .”

Dr. J. C. Jackson (Dansville, N. Y.) goes still further:—

“Find a man of impure blood with half decayed particles of tissue helping to make up his physical being and you will find his mental and moral nature on the same level.”

Spinoza regarded the universe, including man, as a system of pure mechanics, the mechanics itself being spiritual and all divine.

“Human nature,” he writes, “obeys fixed laws no less than do the figures of geometry. I will therefore write about human beings as though I were concerned with lines and planes and solids.”

And so good conduct naturally follows a proper adjustment and balance of all vital functions, and a tendency to ill conduct follows the upsetting of physical balances.

If the physical relation of the poison habit to moral character were better understood, we would more readily appreciate how the entire human race is being morally degraded by this insidious and stupendous evil. Our lives are made up of influences, good, bad,

or indifferent, which are largely within our control; yet man, through his poison mania, is industriously engaged in fostering abnormal conditions, little realizing that the power of clear perception and sane purpose is what distinguishes true manhood and womanhood; that sane purpose or well-balanced decision is the rudder of honest life. A blood-poisoned man, like a poison-infested town or country, is without a rudder. Again, normal, hygienic conditions preserve the natural instinct which it is safe to follow, natural instincts being God-given for beneficent purpose. It is this very quality of instinct that the poisons pervert. The tendency towards evil is perverted instinct. The taste itself for poisons is not a natural but a perverted one. Sin is moral disease, which needs more to be treated than punished.

There is no standstill in nature. Individually and nationally we are either progressing or retrograding, gaining or losing. Strength begets strength and weakness begets weakness; and most unfortunately ignorance counts no less than want of skill in any game or battle. In most work for the reclamation of mankind, too little intelligence is displayed concerning the causes of evil. We should bear in mind that sinful tendencies are but a species of insanity, and that the growth of evil cannot be checked without an axe at the roots.

In connection with the subject of morality, is it pardonable to digress a little to speak of the power and responsibility of personal influence? Robert Ingersoll was fond of saying that if he had made the world, health would be catching instead of disease.

He did not stop to think that all good influence is catching as well as pernicious influence; that health itself is a splendid contagion; that environment is largely accountable for our brain impressions which control our actions. The best prayer ever uttered to the great Father is, "May I deserve to be strong, prosperous, and happy!" It is not a selfish prayer, for to deserve this trinity of blessings calls for all the virtues, of which good influence is the greatest. "Give us Thy blessing!" Well, that depends upon too much. "May we deserve Thy blessing" is more rational. "May our country deserve prosperity" is also a long enough prayer at the opening of legislative proceedings. Alas! how little reason is there for answering most prayers. He who helps to forge a link in the strong and merciless chain of the poison habit which fetters the whole earth and drags it downward, clearly does not deserve divine blessing. The poison habit means dethronement of mind. Poison means something inimical to sanity, to all requisites for health, prosperity, and happiness.

We are all more or less physically brave, like the lower animals, but what slaves morally! "We never shall be slaves," cries in a magnificent chorus the followers of Notan; and with swelling heart, shining eyes, and clarion voice, the American patriot shouts, "'The home of the free and the land of the brave!" and then proceeds to suck his pipe.

Could the world but shake off the slavish fetters of the favorite poisons, then could we better talk of sanity, of liberty, of equity, of equality, of prosperity, of morality, of happiness; then could we sing a

chorus in which all the earth and Heaven could join in glad rejoicing!

Again, from a strictly moral point of view, who is the criminal? Is it simply the murderer, the thief, the perjurer, the debaucher, the life failure? Is it the rum or opium or tobacco seller, who gets his living by the dying of other people? Is it the statesman who permits the privilege of poisoning his fellow-men for money? Or is it the citizen who creates the sentiment behind the statesman?

"There is nothing," says Gustafson, "upon which the righteous indignation of the community more heavily and justly depends than upon a man's teaching vice, and especially to the young. The most deadly charge against Socrates that malice could invent was that he corrupted the youth. No moderate drinker is free from this sin. The power of example is more obscure and subtle than a physical cause, but no less potent."

In a lecture to the young men of Princeton College (surrounded by a network of dram and tobacco shops) President Patten spoke as follows:—

"To be a success in the struggle of life one needs the unhampered use of all one's power; good health, an unclouded mind, trained intellect, strict integrity, high moral purpose, indomitable energy. . . . Success will mean that you have it in your power, in no small degree, to influentially affect the lives of other men, of inspiring their confidence, controlling their judgment, shaping their conduct. But you must first learn the lesson of self-control; you must rule your own spirit if you are to be masterful among men."

THE FAVORITE POISONS AND SLEEP

Of all the powers the best,
O' peace of mind, the repairer of decay,
Whose balms renew the limbs
To labors of the day. COWPER.

"Art thou poor? yet hast thou golden slumbers."

ASIDE from children and the lower creatures of earth, how few sleep? "Tired nature's sweet restorer" is a complete abnegation of all consciousness, dreamless and senseless of time. To close the curtain of the eyes, to awaken with an abounding sense of new life and unaware of sleeping hours, so deep has been the "twinkle of oblivion," yet with senses sealed so lightly that a vibratory key of warning, a sound, a whisper, a light, a touch, unclasps them, — such is normal sleep.

Could we but sleep, what a wealth of vitality, what happiness, what beauty were ours! Alas! perfect sleep is given only to those already rich in health. The luxury of sleep is granted only when physical life is harmonious in all its relations. The magic wand of sleep is but the hygienic habit.

To protect the human body, — that most complicated and delicate of all machines, — it is the duty of the alert body-guard — the nerves — to report the presence of all danger; and perfect sleep requires that the telegraphic message on the sensitive bulletin of the brain shall read "All is well."

In imperfect sleep, parts of the organism are reported by this nervous chain of telegraphic communication to be in disorder, a condition *always deserving attention*, and they set up a restlessness, inducing either full consciousness or semi-consciousness, the latter of which expresses itself in dreams. Undoubtedly the greatest enemies of sleep are the favorite poisons, which always harass vital functions in a greater or less degree when in the human system.

"Now blessings light upon him that first invented sleep," quoth Sancho Panza. He should have added, cursed be he who first invented the enemy of sleep, for it may be truly said that he of the poison habit never sleeps. "Glamis hath murther'd sleep, and therefore Cawdor shall sleep no more."

When the vital citadels of the body are invaded by the germs of disease, or when the incendiary fires of poison are burning and choking the currents of life, and the nerves are running wild, alas, what sleep! Tobacco sleep is pitiful — twitchings, startings, mutterings, chaos. Alcoholic sleep leads one to imaginary avalanches and precipices, to dark pits and abysses, until one fears to again close the eyes. The sinking may never stop. Opium sleep leads beyond the bottomless pits and yawning chasms of alcohol, to demons, imps, and the fires of Hades. The victim is left a wreck, exhausted with the horrors of the night. He welcomes annihilation in counterfeit sleep, — the freezing or the congestion of the brain, accomplished by still more poison.

The invariable rule of the inebriate, whether the drug be tobacco, alcohol, opium, tea, coffee, or any

other poison, strong or mild, is to experience that more or less tired feeling in the morning. Sleep has been unrefreshing. The partial vital collapse continues until a new and ever-increasing dose of the drug is taken.

The normal man of sound sleep is at his best in the morning. In the morning he feels his youth. Like the early lark, his spirits are reinvigorated. Sleep, the birth of new life, triumphant sleep, the conqueror of obstacles, has cast anew its armor of strength about him.

“Sleep that knits up the ravelled sleeve of care
Chief nourisher in life’s feast,”

has presented to him the world in new glory; to his ambition, new incentives; to his hope, new inspirations; to his thoughts, new revelations.

Blessed morning! youth of the day! time of clearest thought, of sanest purpose, of easiest accomplishment, of keenest happiness, — not to be shortened by late sleep nor wasted by unworthy occupation.

Blessed is he who may luxuriate in sleep unhampered by its enemies. He who abhors the taking of poisons and cherishes and practises the simple rules of hygiene need not want for sleep, — delicious sleep.

Few recognize the significance of the word “recreation,” which means literally what it says — to *re*-create, to build anew the forces of the system. To recreate involves a nutritive and most important building process, which takes place chiefly during the period of natural sleep. Indeed, sleep is more essential to life than food, in that one can live longer

without food than without sleep. As repair is principally conducted during sleeping hours, imperfection of sleep of course hinders that renovating process. The vital functions are in a measure starved, and one ages prematurely. In reality the night's sleep is the creator of the day's life.

In normal and dreamless sleep the nerves and muscles have their season of rest as well as repair. The heart beats from six to ten times a minute less frequently, so that during eight sleeping hours it does much less of work than during a corresponding number of waking hours. This need of relaxation may be realized when we know that during waking hours each beat of the heart represents several pounds of work, and that the heart, being only a muscular organ, needs its period of comparative rest. The lungs are also worked by muscles which must have their comparative rest during normal sleep. Respiration is reduced, inspirations being lessened in the proportion of six to seven as compared with the number when awake. The viscera which triturate and digest food are also moved by muscles which need their rest. There is a diminished flow of digestive juices and of all bodily fluids; hence the error of eating soon before sleeping or before full digestion has taken place.

The voluntary muscles in normal sleep are relieved of all work and fatigue, and in that time undergo repair of structure.

The voluntary nervous system which, during waking hours, is called upon to animate, direct, and control all the voluntary muscles of the body, has also its

period of complete rest during normal sleep, when repair and reconstruction of force takes place. Thus, during sleep, the voluntary nervous and muscular system sleeps, the involuntary nervous and muscular system rests. The latter cannot have complete rest, as the heart may never entirely stop beating nor the lungs entirely stop breathing during life.

During normal sleep the brain is partly denuded of the blood which supplies that organ in activity. If a portion of the skull bone were removed, one could perceive in sleep a contraction, and during waking hours an expansion, of brain tissue. This is accomplished by means of the small blood-vessels of the brain, which have a contractile power like India rubber, and the tissues of the brain act like a sponge controlled by elastic ligaments. In normal health these controlling ligaments are both firm and elastic, the contrary being the case in illness. The tension of continued wakefulness tends to weaken this contractile power, like continued tension in a rubber band, so that the habit of insomnia feeds upon itself. In sleep, then, the brain rests, partially bloodless and relaxed. Of course much less time is required for normal than abnormal sleep. Six hours of sound sleep equips one gloriously for the duties and pleasures of the day, while eight or nine hours of imperfect repose leave one still fatigued.

Artificial insensibility, often called sleep, may be caused in two ways: either by means which render the brain bloodless, or by the opposite condition, — engorgement of blood or congestion, both of which conditions can be induced by poisons. For

instance, through inhalation of chloride of amyl the brain is rendered as bloodless as when frozen, causing complete insensibility, and by the inhalation of an ether called methylic, the vessels of the brain become engorged with blood, likewise producing complete insensibility. The same experiment may be made on any part of the body — the body everywhere possessing blood-vessels and nerve-fibres. For instance, by spraying the skin anywhere with ether, and depriving it of blood, it is made insensible to all impression. Or one may place a cupping-tube on the skin anywhere, thus mechanically inducing an intense local congestion, which again brings on full insensibility. This is called *sleep* by the inebriate, but it is a condition gruesomely akin to death. This counterfeit sleep is very different from normal sleep. In healthful sleep, although profound, there is still a correspondence and a communication with the entire bodily system, and the forces of repair are in active duty, involving every atom of the body.

In youth the growing process of the body takes place principally during sleep. In adult life the forces of nutrition and repair accomplish their ends during natural sleep. Senility and death is that condition in which the repair of the body fails to keep pace with its wear.

When the body-machine is in perfect and easy running order, — the blood pure and rich, the membranes absorbent, the vital energy not forced to expend itself in adjusting inharmonious influences or repairing damages, — the natural repair of the system is quick and thorough, and comparatively

little sleep is required. Those who have abandoned all poison stimulants and experimented with the new diet, free of condiments and flesh food, and never in excess of the needs of the system, have unanimously expressed not only surprise at the few hours of sleep required, but at the awakening of superabundant energy, happiness, and appreciation of life. Let us woo the drowsy goddess in the light of knowledge!

THE FAVORITE POISONS AND THE LIVER AND KIDNEYS

“**W**HILE we live let us live,” exclaims the so-called *bon vivant*; but if one takes poison with a view to happiness, that desirable condition is most atrociously frustrated by the indulgence of any habit inimical to the liver. “Is life worth living”? asks the hypochondriac in the old conundrum. “It depends upon the liver.”

Other organs allow more or less latitude in the way of personal comfort, even when ill-treated. It is said that the heart responds in warm and friendly effusiveness in its intervals of comparative good health, and that even to the last the poor victim of outraged lungs is more or less cheerful and hopeful. It remains for the liver not only to turn naturally light moments into despondency and gloom when mildly offended, but to change absolutely the character of its careless owner, when continued battles with poisons have induced within itself an habitually

morbid state. The knight of the offended liver, once cheerful and ambitious, is chronically melancholy and unappreciative of life. "Indeed," says a distinguished divine, "in the interest of religion the gospel of the liver should be preached."

The largest and most uncompromising organ of the body has another dreadful revenge for ill-treatment in loss of beauty. Charm of tint, both of complexion and the eye, as well as grace of form are due to a benign liver. Clearness of mind, longevity itself are also chiefly due to a perfect equilibrium of bodily repair and waste. For the building and motive power of the system the body consumes fuel, which is continually replenished by the food we eat. The entire body is being constantly renewed for better or for worse. There is, indeed, a steady process going on of disintegration and regeneration of cells, and the authorities tell us that the entire blood is renewed every six weeks. This is pleasant to know, showing how hygienic methods may conduce to general physical improvement.

The chief instrument for taking charge of the waste substances that result from work done in the body is the liver. By it the dangerous refuse is separated and the blood purified. Says Dr. Kellogg : —

"The liver is a large gland weighing about three and a half pounds. All the blood in the body passes through it once in every three or four minutes, and as it passes it is purified. The liver takes out the alkaline poisons — the residue — the result of the process of combustion which corresponds to the ashes in the stove. It oxidizes or de-

composes and destroys some portions, rendering other portions more soluble, so that they can be carried through the kidneys."

And so the liver is a chemical laboratory with a prodigious amount of work to do. It has also to be very prompt in business, to manipulate what comes to it regularly and quickly. If this great gland is improperly nourished by impoverished blood-corpuscles, or withered and devitalized by poisons, or if it is fatigued and exhausted by overwork, as in continual efforts to eliminate the favorite poisons which have no legitimate business there, but with which it has to cope, one may readily appreciate the blockades, the congestions, the inflammations which develop the myriad diseases of the liver. Like a self-dumping grate, when the liver is burdened with too heavy an accumulation of debris, what else can it do but automatically discharge them into the system? This accounts for dull eyes, ashen skin, stiff joints, and the frequent tendency to the filth diseases (colds, etc.).

Though always with more or less damage to itself the liver can cope with a certain amount of poison, aside from the natural excretory material of the body. Otherwise, instead of being partially killed, one would be killed outright by the taking of almost any poison; nature provides this certain amount of reserve force for all our organs; but the one who would live long and well had better give the liver only its legitimate work, which in health consists in preserving an even balance between repair and waste. Wholesome food and drink alone can permit this happy equilibrium. The liver has other duties to perform besides this

very important manipulation of waste products. It produces coloring matter for tinting the hair, skin, and eyes. It also manufactures bile which it keeps in store always ready for use in digestion.

Another most important function of this great gland is to store away in its cells a kind of sugar called glycogen, which is an excess of digested starchy or sugar food absorbed from the intestines. The liver gradually deals it out to the blood for general use of all the organs of the body. As this saccharine matter means fuel both for energy and warmth of the body we may also duly appreciate this important office of the liver.

Although the lower animals and birds almost universally have sound livers, that rich possession is very rare in the human family ; indeed, it has been said that not one man in a thousand has an absolutely sound liver, and little wonder. As the liver may hold a certain amount of poison in its cellular tissues for a time, it is to this organ that the physician first turns to find traces of arsenic, strychnine, or other poison given for murderous purpose ; and when the liver is treated habitually to alcohol, tobacco, tea, coffee, opium, or other favorite drug, it is practically never free from the malign influence of poison. It is too often saturated with it. The general effect is, first, inflammation, distention of vessels, enlargement and thickening of tissue ; then follows contraction of membrane and slow shrinking of the cellular parts of the whole organ.

Of course eating too much is another cause for liver complaint — another fault usually due to un-

natural appetite stimulated by poison. The diseases of the liver seem to be legion — enlargement, fatty degeneration, tuberculosis, ulcer, cancer, etc. It would seem especially appropriate in a footnote¹ to describe briefly one disease called gin drinker's liver (cirrhosis), wondering at the same time why some other poison than gin had not been given the honor of the name, when the effects of all poisons on the liver are practically alike.

The kidney whose mission, like that of the liver, is to dispose of certain waste materials, suffers likewise in deterioration of structure by the habitual taking of poisons.

EFFECTS OF TOBACCO AND ALCOHOL ON THE MOUTH, EAR, NOSE, THROAT, AND LUNGS

THE skin covering of the mouth and all interior passages is very thin, allowing the true skin underneath, crowded with glands and capillaries, to easily exude their moisture through it.

¹ We are told that "the gin drinker's liver begins as an inflammatory affection, in which lymph is effused in the tissue. The smaller branches of the portal vein become obliterated by the pressure, and as the lymph subsequently contracts, larger branches of the veins and ducts become strangulated, and the surface of the organ becomes uneven — known as hobnailed. The obstruction of the portal circulation occasions the effusion of serum into the peritoneal cavity; and this effusion often goes on so rapidly as soon to force up the diaphragm and impede respiration. In a fully developed case of cirrhosis, the liver is so altered in structure that palliative treatment is all that can be attempted. . . . The disease is at best a very hopeless one."

The glands are hollow organs that secrete fluids, and are enveloped in the gossamer network of the capillaries. Normally, these membranes are always soft and moist, and capable of various official duties. In health they not only absorb with absolute facility, but also exude various kinds of liquids necessary for various purposes. For example, fed by the blood through this infinitely delicate lace-work of capillaries, the glands of the stomach exude an acidulated fluid — the gastric juice; from the glands of the intestines the secretions are alkaline, used also for purposes of digestion. With the passages of the throat and bronchial tubes in normal condition, the voice for speaking and singing is melodious. The purity and fine timbre of voice of course disappear with any degradation of these membranes.

Catarrhal affections are inflammations and diseases of these membranes, which may not be confined to the nose or the ear or the throat, but to all the tubes of the internal economy.

These lining membranes have various enemies, — drinks or foods too hot, too cold, or poisoned, and all spices and other abominations that bite, irritate, and destroy their fine quality. They have no enemy worse than tobacco.

That part of the body which comes into first and immediate contact with the drug tobacco, is, of course, the mucous membranes of the mouth, throat, ear, nose, bronchial tubes, and lungs. Nature's first effort when in a normal and healthy state is, as often stated, to rid itself of any poison by mechanical means, *i. e.*, by a flow of fluids. The mucous membranes, being

constructed on a very delicate and complicated plan, can endure but a certain amount of offence. Abuse first inflames, then gradually dries, hardens, and benumbs them — a source of pride to the old smoker who considers his ability to smoke without expectoration an evidence of strength! The gradual deadening of these highly sensitive membranes results not only in loss of ability to secrete certain liquids necessary to digestion, but also in a partial loss of the sense of taste, and along with it the pleasures of delicate and delicious natural flavors, — infinite in number. That nice distinction, that *finesse du gout*, vanishes completely. It is why the smoker or the drinker is invariably obliged to incorporate in his food poisons of some kind, — pepper, mustard, alcohol, etc., — something which bites and arouses decrepit and impotent mucous membranes. The physician sometimes applies a mustard plaster to the outer skin to fire it into blisters. The inebriate applies the mustard plaster to the still more sensitive skin of the intestinal organs. No devotee of any poison whatever, really has the power of enjoying food. It is a physical impossibility. It is said that the time arrives when the poor inebriate gets really but three flavors from the natural thousands, — sweet, sour, and bitter. It is also said that “the palate which the flavor of a poison does not repel has lost the guardianship of life.”

Dr. Richardson thus speaks of the “smoker’s sore throat” :—

“There is, in fact, a form of soreness of the throat, — the disorder has been most ably described by Dr. Gibb, — in

smokers, which may be considered as peculiar to them. The disease consists of an irritable state of the mucous membranes at the back of the throat, redness, dryness, a tendency to cough, and a large soft sore condition of the tonsils; . . . it is far more general than is commonly known. I once examined the throats of fifty smokers; . . . thirty-seven had enlargement of tonsil; . . . it exists usually as an enlargement with thickening of the mucous membranes and profuse secretive action of the small glands, leading to soreness, exfoliation, actual mechanical difficulty in swallowing, and . . . to imperfection in speaking and singing. I have known it to affect public singers, producing a hoarseness and a want of firmness that was most annoying and painful."

Inflammation, paralysis, and other diseased conditions of these lining membranes, almost invariably extend more or less in all directions — to the nose, the ear, the bronchea, the lungs, the stomach, the entire intestinal canal, the appendix, the bladder, etc.

The greater canals for the circulation of the blood have their branches which re-multiply into thousands of little tube sprays, serving to conduct their life-giving fluid to the mouth, the throat, the lungs, etc. They are naturally pliable and elastic. By repeated irritation they become less elastic and less spacious. The parts become blockaded and swollen; the gums often become spongy and bleed easily; the teeth suffer from an acid reaction of the fluids of the mucous membranes which facilitate earthy secretions upon them, and a chemical action at weakened points.

The earthly possession of every tobacco inebriate

also necessarily includes a set of respiratory organs more or less diseased, and which are more or less ready to invite the germs of pneumonia or consumption, those pestiferous scavengers which are always lying in wait for congenial surroundings. Nature simply abhors unworthy material and gets rid of it. Statistics showing the wonderful increase of consumption and cancer since the advent of tobacco are very alarming. Of course there are other poisons besides tobacco. It remains for tobacco, however, to attack more directly and persistently the respiratory organs.

The study of tobacco, its effects, its history, its statistics, followed by a very short study of consumption, its causes, its history, and its statistics, conclusively establishes the fatal parallel. The most potent factor in developing conditions for consumption — that great white plague, that hereditary and contagious scourge, to which the United States alone pays a yearly tribute of 102,000 human lives — is the use of tobacco along with the inheritance which degraded lung tissue transmits.

Dr. Richardson says: —

“Consumption is a disease which is essentially a disease of bad air . . . air containing an excess of carbonic acid. It is a disease owing to deficient oxidation. In inhaling tobacco smoke, smokers breathe carbonic acid itself and various other gases of which the action on the blood is similar in character. Again, there is never an affection of the lungs or arrest in the process of breathing without some derangement in the digestion. Indirectly the stomach requires oxygen, and without oxygenated food it fails to

produce freely its digestive fluid ; thus fresh air gives appetite ; smoking destroys the appetite and enfeebles the digestion, and consumption does the same thing."

Death by asphyxiation on account of robbing the blood of oxygen by means of coal-gas, etc., is more generally understood than when the same result by *the same means* is gradually accomplished by the tobacco poisons.

We are told by abundant authority how the lungs are devitalized in several ways by the use of alcohol ; how the vessels of the lungs are relaxed by this favorite poison, and when partially paralyzed by it are readily congested, awaiting but time to determine serious results. We are also shown how alcoholic, as well as tobacco inebriates, have a form of consumption all their own ; how the more delicate blood-vessels give way in case of severe congestive conditions and the blood is exuded into the membranous tissues of the lungs, leading to destruction of the lung tissue.

Of course we know how tobacco in various ways tills the soil for consumption of the lungs — by degrading the lung tissue, and by supplying poisoned air. One form of consumption which tobacco induces is the slow hepatization of the lungs caused by tobacco smoke. It is a blockading of small veins by blood which has become coagulated by the action of the tobacco poisons.

"The blood thus thickened forms in the capillaries a coagulum, which at first simply checks rapidity of circulation and later clogs it entirely at certain points.

"In physiological anatomy the fact is incontestibly established that blood which can no longer circulate in its veins becomes coagulated, loses its life, and acts in the economy as a foreign substance.

"The lungs become hepatized, when they change their form from a spongy light condition, permeable to liquids and the air, to a solidified and resisting one. Hepatization of the lungs was formerly very infrequent. It was then owing to acute inflammation which involved at once the entire tissues, death generally resulting rapidly.

"With smokers the hepatization proceeds slower, but no less surely to a fatal termination. The entire lungs are not so soon involved; it is one, then two, then three, then ten, then a hundred, then a thousand of the little blood-vessels (capillaries) which are obliterated successively, and with them their corresponding air capillaries, until the sponginess of the lungs have disappeared. A languid life remains by a circulation through the tubes rather than in the capillaries.

"The smoker may know that his lungs are becoming hepatized when he experiences an uneasy oppression at the base of the chest without actual pain. It is the first symptom of the malady. It is soon accompanied by a little persistent dry cough, which soon causes alarm if the subject is young, as it is the cough characteristic of pulmonary obstructions, and belongs to the first stage of consumption (tuberculosis). It is for this reason that the premature loss of so many young men is attributed to tubercular consumption, when in reality they only succumb to *hepatization nicotique*.

"This disease established, the smoker smokes more than ever. He feels a dryness and irritation, and without consideration of the cause takes to his tobacco, both for the purpose of producing a secretion of saliva, and on account

of its narcotic influence to calm temporarily that titillation of the lungs inducing the cough, the same as if he had taken belladonna or hyoscyamus. . . .

“The smoker is thoroughly convinced of the curative virtue of his poison, which is so very seductive in its ways of killing him. In the alternate successions of cough and relief, of discouragement and hope, years may pass while the affection progresses, or it may take the form of ‘galloping consumption.’ The trouble, which at first was felt only at the base of the chest, ascends nearer and nearer to shoulders, increasing in pain as the hepatization progresses. . . .”

We are told in the article on “Tobacco,” in the *Encyclopédie des Gens du Monde*, that nicotine produces such serious troubles on the lungs that in England statistics show that of every ten persons dying of tubercular consumption eight use tobacco.

In the chapter on “Heredity,” the tendencies of the children of smokers to consumption, pneumonia, etc., owing to inheritance of lung cells degraded by the tobacco poisons, are further discussed.

THE FAVORITE POISONS AND THE EYES

TWO such fragile objects between us and the light: composed chiefly of water, gossamer-like nerves, transparent cells and blood-vessels, delicate as mist; a jelly for lenses; a design for binding all together almost incomprehensible by man. *Dieu soit benit* for our eyes!

Aboard a French steamer we met a young physician on his way to Paris to study diseases of the eye. "Are advantages so much greater in Paris than in America for studying the eye? Is there so much to learn about the eye?" I inquired. With some surprise at my ignorance on the subject, he spoke of the comparatively meagre advantages as yet in America for a thorough training in regard to it; of the indefatigable and lifelong researches concerning the eye by French and German scientists; of its bibliography; of the eighty or ninety distinct and recorded diseases of the eye; of the danger of having the eye treated except by one who makes it the especial study of a lifetime.

What a pity that the same interest and an equal amount of research cannot be applied to the cause and prevention of so much trouble!

Another incident emphasized this subject of the eye to the author. Having sent to a publishing house for several books on a certain subject, an agent appeared. After completing a list of books, the young man remarked that I must be interested in the subject of tobacco.

"Yes, I am trying to learn all I can about it."

Said he, "Tobacco has played something of a rôle in my life, as I am afraid I shall soon become totally blind. My especial friend and chum in college has become so, and I seem to be following his example."

I glanced quickly at the handsome face of the young man, scarcely twenty-five years old. "Are your eyes no better, having stopped taking tobacco?" I inquired.

"But I have not stopped taking it."

"Is it possible that you could let tobacco stand between you and daylight?" I again inquired.

"One knows little of tobacco who has not learned how hard a master it is," he replied.

After telling me of his symptoms which related to the optic nerves, I again remarked that I hoped his parents could influence him to let tobacco severely alone. "Oh! my father, who is not living, was a smoker, and my mother knows very little about tobacco."

I wondered how much was due to heredity and how much to the deplorable incentives, examples, and fashions of colleges in the use of tobacco!

The picture of a narcotized son with a mother who knew so little about tobacco, so lingered, that several days later I sent the young man a book on tobacco with my best compliments and hopes, directed to the office of the publishers. A reply from the office stated that Mr. — was no longer in their employ, and they did not know his address. More shadows of the night in the morning!

We are fast becoming a spectacled nation, as is proverbially said of Germany. The excuse of the German text may be a convenient one, but a nation of smokers (to say nothing of drinkers) need not look far to find ample cause for deterioration of eyesight.

The eye is an especially sensitive structure, of exceedingly delicate nerves, upon which a poison of any kind exerts a deplorable influence; but in the tragedies of the eye, probably no poison has played so important a rôle as tobacco — the near kinsman of

belladonna, hyoscyamus, stramonium, and all the tribe of the deadly nightshade.

One is quite overwhelmed with testimony when seeking evidence and light on this subject — so much has been published to show how the eye is especially affected by tobacco.

We are told by the authorities : —

1st. That the eyeball is rendered continually more opaque through defective elimination of waste caused by the drying of its filtering membranes as before explained. This clogging of membranes is, of course, felt throughout the body, but is more directly to be noticed in the eye, a fact due to the extreme delicacy and complexity of the organ.

2d. That the eyeball is insufficiently nourished by blood deoxygenated by any poison.

3rd. That the pupils of habitual smokers are at all times somewhat dilated, not normally contracting when exposed to bright light; and the exposure of the retinae to this undue irritation is owing to partial paralysis of the circular muscular fibres of the eyeballs, which have lost in a certain sense contractile and expansive force. Poisons act on these muscles in the same way as they act on the muscles of the stomach, heart, and in fact upon all muscles of the body. The authorities also tell us that frequent contact with the acrid fumes of tobacco smoke, which are invariably and always irritating to the exposed conjunctivæ of the eye and the delicate parts underneath, produces changes in their circulation and nutrition. There is sometimes a retention of objects on the retina, sometimes floating specks

owing to this want of nutrition and proper elimination of waste. When metabolism in the organ is perfect, as in health, the picture formed on the retina is absorbed or rather transmitted instantly to the brain.

4th. That at least ten per cent of smokers are more or less color blind, in that they cannot distinguish blue from green or separate shades of the different colors, also cannot draw accurately.

5th. The most serious effect of tobacco on the eyesight is upon the optic nerve, and when this is seriously involved, sight may be completely obliterated without the eye itself displaying visible defect to the casual observer. Indeed, if the eyesight of a smoker fails and no appreciable change of structure can be found in the eye, let him understand the subtlety of the tobacco poisons and the very natural manner in which the continued excitation of the optic nerve leads to fatigue, paralysis, and withering of the fibre (amaurosis). There is a great amount of literature published on this phase of blindness resulting from tobacco — the atrophy of the optic nerve — of which Sichel, Mackenzie, Wadsworth, Wells, Von Graef, Hutchinson, Stillé, and Chisholm, among many others, are high authorities.

“We find here,” says Dr. Allen, “the characteristic action of the drug, namely, a persistent contraction of the blood-vessels producing an anæmia of the nerve structure. This contraction is like a persistent cramp, and may pass off in ceasing to use the drug; but, if it is continued, malnutrition and slow degeneration of the nerves are sure to take place.”

From all sources we find that a very large proportion of partial and total blindness comes directly through the tobacco poisons, and probably the remainder comes directly or indirectly (inheritance plays its part) through the influence of alcohol, coffee, or some other poison perhaps less violent than tobacco, the eye being supersensitive to all poisons.

From all sources, without exception, we also find that practically no habitual smoker possesses normal vision. Degeneration in this respect may come so gradually that the defect may not be apprehended until in comparatively early life the necessity for wearing glasses appears.

Tests have often been made on those claiming perfect sight, in order to demonstrate the deteriorating effects of poison on the eye. Those of Dr. Ridge (*Med. Tem. Journal*, London, 1882), to test minutely the nerve-paralyzing effects of alcohol on all the senses, are extremely interesting. The ability of so-called moderate drinkers to detect fine weights by means of feeling, or fine objects by means of vision, were carefully and accurately measured, and it was found that even half a dram of alcohol would materially lessen the delicacy of touch and vision. Tables are given at length to show the result of many such experiments.

Drs. Nicol and Mossop, of Edinburgh, conducting a series of experiments upon each other, examined the base of the eye by means of the ophthalmoscope while the system was under the influence of various drugs. They found that the nerves controlling the delicate blood-vessels of the retina were paralyzed

and the vessels themselves congested by a dose of two drams of rectified spirit — less than a quarter of an ounce of absolute alcohol, or about a tablespoonful of brandy. Here was a case of genuine paralysis, a real physical damage to the nervous tissue. The narcosis caused by the minute dose was, of course, less extended, but just as real as that which occurs when a man becomes “dead drunk.”

“As the nerves and blood-vessels of the eye have a peculiarly intimate connection with the brain, this experiment would seem to show us through this little window to the cerebrum, how it is that even half a glass of light wine goes to the head of many people, that is, causes for a moment a slight dizziness and blurring of sight. . . . Is it impertinent to suggest that even smaller quantities than this quarter of an ounce may cause incipient narcosis, if we only had an instrument sharp enough to detect it?”

The relationship of the eyes, the nose, and the ears is very near and intimate, and what involves one necessarily affects the others more or less. They are all alarmingly near the place of bombardment, where poison usually strikes the body.

The membranes of the mouth, nose, and ear are always more or less irritated and congested by tobacco, and this irritation generally extends to the conjunctivæ of the eye, so that we have, 1st, irritation; 2d, inflammation; 3d, paralysis; 4th, atrophy.

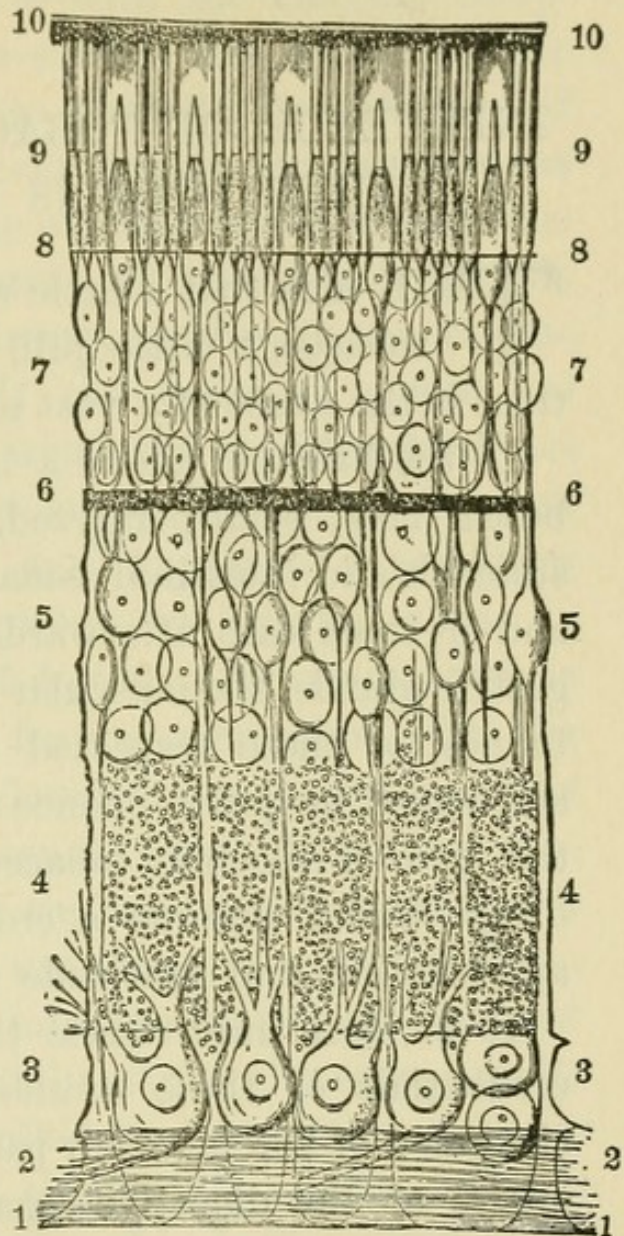
The physiology of the eye is so refined and complicated that, to a casual observer, the effort to understand it more than superficially seems hopeless;

more the pity, when to understand it, is to better appreciate and care for it.

The arrangement of the muscles is extremely marvellous ; for instance, we find that the crystalline lens is controlled by muscles which have the power to change its convexity, making it greater when we look at near objects and less for focusing upon distant objects ; these muscles in turn being controlled by different sets of nerves.

A single sketch taken from Professor Martin's book, "The Human Body," will partly serve to illustrate the intricacies of the eye.

It is a microscopic view of a section of the retina showing its very complex structure. Although but one-eighteenth of an inch in thickness, it presents ten distinct layers, as shown above.



1, internal limiting membrane ; 2, nerve-fibre layer ; 3, nerve-cell layer ; 4, inner molecular layer ; 5, inner granular layer ; 6, outer molecular layer ; 7, outer granular layer ; 8, external limiting membrane ; 9, rod and cone layer ; 10, pigment-cell layer.

INFLUENCE OF TOBACCO, ALCOHOL, AND
OTHER POISONS ON DIGESTION

THE idea that a little wine, a little beer, a little tobacco, a little pill, in some way aids digestion, is the cause of a vast amount of poison taking.

If the habitual use of a little poison could simply bestir lazy, semi-paralyzed, or tired forces of the stomach and intestinal canal to a little extra work, and if some care afterwards could again nurse the gastric glands, the muscular fibres, the mucous membranes, of these respected organs into good humor and cause no great offence or harm generally, then the god of alcohol, tobacco, tea, coffee, and other drugs would deserve a crown in testimony of the appreciation and gratitude of mankind.

It is most unfortunate that, notwithstanding the credentials of these would-be assistants to nature, the game of forcing such partnership on the business affairs of the digestive organs is a losing one. The proper digestion of food does not depend alone on one organ, but is interdependently connected with every organ of the body. The digestive ferments are themselves produced from the same vital sources which develop and maintain all the functions, and the formation of gastric juice is as important a factor in the cure of dyspepsia as the use or abuse of it after it is secreted.

Whatever interferes with the proper nourishment of blood-corpuscles, or the mechanical and chemical

processes of assimilation, or with the efficient co-operation of the heart, the nerves, the liver, and the kidneys, etc., interferes also with the manufacture of digestive juices. Whatever assails the harmonious working of all, retards the efficient action of any one.

Again, the direct contact of the gastric glands with any poison tends directly to thwart the formation of gastric juice. If the doses of poison are small these glands are weakened by abnormal activities; if the doses are larger, the glands become more or less paralyzed and impotent, a condition which easily becomes chronic by habitual abuse.

Besides the question of digestive ferments, there is another most important feature connected with the digestion of food. It relates to the muscles of the stomach and intestinal canal, which by active contractile movements churn the contents of the stomach and bring all the mass into contact with the digestive juices. Intestinal muscles propel the onward movement of all the contents of the alimentary tract. These muscles are controlled by the nervous system, hence any agent which abnormally excites or partially paralyzes or starves either the nervous or muscular system, acts on the processes of digestion. That which develops the muscles of the arm develops the muscles of the stomach and intestinal canal. And whatever weakens any muscle weakens all. Do not expect the athlete to win, whose arm or lungs or stomach have depended upon the pleasant but iniquitous partnership of alcohol, tobacco, or any other poison for strength. Pure hygienic sources alone establish and maintain the vigor of

all bodily functions. Abstainers have necessarily better and more regular appetites than so-called moderate drinkers or smokers, and can eat and digest more food.

A large dose of alcohol completely paralyzes the glands of the stomach. Drunkards expel by vomiting absolutely undigested food hours and sometimes days after taking. A small amount acts on the stomach as it acts everywhere else, by exciting its glands to pour out extra fluid in order to get rid of poison by flooding; and as everywhere a continued demand for energies beyond the normal brings early breakdown. The glands cannot endure too much abnormal excitement or abuse without becoming more or less paralyzed and dry. Old smokers rarely expectorate, and the same conditions of dryness extend more or less all the way on, obliterating not only the sense of taste, which unspiced food cannot satisfy, and inducing thirst which water will not allay, but also at the loss of fluids necessary for perfect digestion. It seems to the author that the learned Dr. Depierris states it almost too strongly when he says:—

“Constipation at times becomes so great that the intestines become covered with a crust of matter forming a solid and hollow tube, the thickness becoming greater and greater to the obliteration of the passage. This is a condition of the worst of the nicotinized hypochondriacs.”

More or less of a catarrhal condition exists with all habitual tobacco inebriates, involving the mucous membranes of the entire system.

Dr. Bennet thus speaks of it:—

"The injurious effects of tobacco smoke on the mucous membranes is one of its worst features. It produces a chronic catarrhal condition greater than that induced by any other source of irritation. It is hard work to make smokers believe this. They tell you that a cigar in the morning relieves their catarrh, and no doubt it does so, for the time being. What is more natural than that a swollen and infiltrated membrane in a state of passive congestion and covered with a thick or sticky secretion should be relieved by stimulation, which quickens the circulation and thus diminishes the swelling and clears off the adherent mucous. . . .

"If the act of smoking be repeated often, gentle stimulation is merged into continuous irritation. . . . Besides, the tobacco smoke renders the retained secretion of all parts with which it comes in contact more acrid. . . . The mucous membranes of the stomach are also affected, . . . the result being the same as upon other mucous membranes."

Dr. W. H. Riley, in an article on "The Effect of Alcohol upon the Functions and Structures of the Stomach," in *Good Health*, October, 1899, thus speaks of the changes made of the structures of the stomach by the use of alcohol: —

"Alcohol in the stomach acts as a poison to the nerves having control of the blood-vessels of the stomach, and by paralyzing the fine nerve fibres, the muscles of the blood-vessels are allowed to dilate, become engorged with blood, and a condition of congestion develops. Along with this condition of passive congestion of the organ there is a lessened activity of the glands, and a tendency on their part to become smaller and smaller; and if its use is prolonged, the gland completely wastes away and dies, so that there is nothing left to secrete the gastric juice of the stomach.

This is a condition frequently recognized by physicians, and is known as atrophy of the glands of the stomach.

“As time goes on, this passive congestion becomes more marked, and involves nearly every part of the mucous membrane of the stomach. With this congestion and atrophy of the glands, conditions are very favorable to a worse condition; namely, ulceration of the stomach, and this frequently follows in the wake of the intense congestion. Physicians in their practice often see cases in which the mucous membrane of the stomach is atrophied from the moderate use of alcohol for a number of years, while the blood-vessels are engorged with blood, and ulceration of the stomach is present.

“In still other cases the habitual use of alcoholic liquors causes malignant diseases of the stomach, such as cancer. At different periods in the history of the use of alcohol one finds pathological conditions of all grades and shades of severity. Since alcohol destroys the functions of the stomach, and causes organic changes in the mucous membrane, it can readily be understood that from this, other serious troubles may follow; death by starvation often ensues because the stomach is not able to digest properly. In view of all these considerations, we can hardly see how alcohol can have any place in the treatment of disease.”

The results of taking alcohol are never innocent, and how little the feelings and the general outward signs may indicate the real condition of the stomach, was conclusively demonstrated in Dr. Beaumont's “Experiments and Observations on the Gastric Juice and the Physiology of Digestion.” His observations were based upon experiments which are of world-wide fame. They were made upon Alexis St. Martin, a Canadian huntsman, who was acci-

dentally shot, the ball entering his side and piercing his stomach. He recovered from his wound, but an opening remained, which was used "as a door by which to introduce substances into the stomach, and as a window through which to look and examine effects." As the hunter fortunately had been a man of temperate habits, the experiments made with alcohol were most valuable. After a few days of free indulgence in spirits by St. Martin, Dr. Beaumont made three observations by means of the opening in the patient's stomach, as follows: —

"The inner membrane of the stomach unusually morbid; the erthematus (inflammatory) appearance more extensive; the spots more livid than usual, from some of which exuded small drops of grumous blood; the apthous (ulcerous) patches larger and more numerous; the mucous covering thicker than common, and the gastric secretions much more vitiated. The gastric fluids extracted were mixed with a large proportion of thick ropy mucus and considerable muco-purulent matter, slightly tinged with blood, resembling the discharge from the bowels in some cases of chronic dysentery. . . . St. Martin complained of no symptoms indicating any general derangement of the system except an uneasy sensation at the pit of the stomach, and some vertigo with dimness and yellowness of vision on stooping down and rising again; had a thin yellowish brown coat on his tongue, and his countenance was rather sallow."

There are, of course, other causes of dyspepsia beyond the favorite poisons, among which is included the use of pepper, spices, mustard, Chili sauces, and all condiments that bite, or otherwise irritate and devitalize the mucous membranes. The mere habit of

treating delicate mucous membranes of the stomach to fluids too cold or too hot, or the habit of over-eating and overtaxing the stomach, by taking too much food or by taking it too frequently, may also cause dyspepsia. The digestive functions not only need consideration in the way of proper food, but they also need their regular periods of rest.

In reality, it borders on a grim joke to hear a man say that he smokes or takes his alcohol or his pill to aid digestion. In all probability the use of his favorite poison originally produced the weakness, and like all poison drugs which but feed the malady, they do no more than temporarily alleviate, while continually weakened conditions call for ever-increased doses to produce the coveted effect.

EFFECTS OF ALCOHOL AND TOBACCO ON THE HEART

AS the human body is obliged to exert its vital functions to rid itself of any enemy, so the great propelling engine, called the heart, must exert itself beyond its normal work every time a poison enters it. The heart must soon become fatigued and demoralized by continual fights with poison.

We are told how the nerves directing certain blood-vessels (at the termination of the arterial circuit) control the flow of blood from the heart; how they are commanded from the nervous centres and are affected by the most subtle influences; how, in fact,

the heart, like all other organs of the body, is under the supervision and control of the master spirit of the body—the nerves. When communication between them is broken, the heart races like a clock without a pendulum.

In a short description, Dr. Richardson says:—

“We have now learned that there exist many chemical bodies (poisons) which act directly by producing a paralysis of the organic nervous supply of the vessels which constitute the minute vascular circuit. These minute vessels when paralyzed offer inefficient resistance to the stroke of the heart, and the heart thus liberated, like the mainspring of a clock from which the resistance has been removed, quickens in action, dilating the minute and feebly acting vessels, and giving evidence really not of increased but of wasted power.

“The phenomena noticed above constitute the first stage of alcoholic action on the body; we may call it the stage of excitement; it corresponds with a similar stage or degree caused by chloroform, etc.”

The athletic work performed by the heart seems incredible. As before said, it beats 70 times a minute, and two and one-half ounces of blood pass through at each beat. This means 175 ounces a minute and $7\frac{7}{8}$ tons a day. All the blood in the body passes through the heart and lungs in between two and three minutes. The blood travels at the rate of 207 yards a minute and 168 miles a day. The daily work of the heart is to lift 122 tons of blood one foot. It becomes indeed hard, physical work, for the heart to fight any poison: “Harder,” says an English scientist, “than rowing, wrestling, carrying heavy weights, coal

heaving, or the treadmill itself." Little wonder that no habitual inebriate has a sound heart!

The exact additional burden given to the heart by the taking of different poisons is finely calculated by the scientists. Especially interesting experiments were made by Count Wallowicz and Dr. Parkes on a healthy young soldier to find the extra work on the heart imposed by alcohol. Twelve ounces of best brandy (48 per cent alcohol) increased the pulse from 77.5 a minute to 94.7. The heart lifted 15.8 tons extra a foot the first day. The next two days, twenty-four tons extra, or an extra ton each hour. After eliminating the alcohol the heart showed signs of weakness and fatigue. It was also found that one ounce of alcohol produced decided effects on the heart, and that a continuation would have degenerated the tissues.

They also experimented with wine on the same patient, using red Bordeaux (claret) of best quality and only a half pint daily. The difference of pulse during this time was an increase of $4\frac{1}{2}$ beats a minute or 6 per cent. In the twenty-four hours the heart's action was increased 6,120 beats. The degradation and devitalization resulting from a continuation of the poison habit leaves the heart suffering from a double grievance — overwork and want of nutrition.

Still another, a third grievance, relates to that mentioned in the article on "The Filter Phase."

"The membraneous structures which envelop and line the heart," says Dr. Richardson, "are changed in quality, are thickened, rendered cartilaginous and even calcareous or bony. Then the valves, which are made up of folds of

membrane, lose their suppleness, and what is called valvular disease is permanently established. The coats of the great blood-vessels leading from the heart, the aorta, share not infrequently in the same changes of structure, so that the vessel loses its elasticity and its power to feed the heart by the recoil from its distention after the heart by its stroke has filled it with blood.

“Again the muscular structure of the heart fails, owing to degenerative changes in its tissue. The elements of the muscular fibre are replaced by fatty cells; or, if not replaced, are themselves transferred into a modified muscular texture in which the power of contraction is greatly reduced. . . . The jaded, overworked, faithful heart will bear no more; it has run its course; and the governor of the blood stream broken, the current either overflows into the tissues, gradually damming up the courses, or, under some slight shock or excess of motion, ceases at the centre. . . .”

The immediate action of tobacco on the heart is different from that of alcohol, tobacco containing stronger poisons, which paralyze more quickly than alcohol. A quotation from Dr. Richardson, to which I here refer, gives the physiological processes of the two toxic agents. This account, by one of England's greatest scientists, of the action of tobacco at the fountain head of vital *functions*, is so intensely interesting to the student who seeks to find the truth from a physiological standpoint, of what is fast becoming (if it has not already become) the greatest poison agent of the world for degenerating the human race, that a further quotation will be pardoned by both the reader and the master spirit, which has departed.

“In my researches on the action of some substances on the minute circulation, I have been able to differentiate

their action by this general rule. The alcohols . . . relax the vessels; nicotine constricts; chloroform . . . constricts; opium relaxes then constricts; ether relaxes; chloral hydrate first constricts and afterward relaxes. From these differences of action, the differences of phenomena in the persons affected are explainable. It is a necessary result, for example, that under the long continued use of alcohol the constantly relaxed and congested vessels should assume a new character and local functions; that the parts depending on them for their supplies of blood should be changed from the natural structure to unnatural but definable, and now well-known conditions of disease. It is an equally necessary result that under the continued influence of opium (or tobacco, Ed.) the constantly constricted vessels should assume a new local function; that nutrition should be arrested in the parts which those vessels supply with blood; and that the shrunken, impoverished body of the confirmed opium-eater should be an outward and visible sign of the internal changes which are being so assiduously and determinately carried into effect by the narcotic."

Of the many experiments to test the exact influence of tobacco on the heart, I quote from Dr. Edward Smith as reported to the British Association for the Advancement of Science, as follows:—

"Experiments were made at 10 A.M. when the rate of pulsation naturally declines, and at least three or four hours after solid or liquid food is taken. They were made in the sitting position after complete rest and quiet of mind, so that all influences were eliminated but those due to tobacco. Pulsation before smoking was $74\frac{1}{2}$ a minute, smoking six minutes, 79, 77, 80, 78, 78, 77 per minute, 78.1 average. Smoking seven minutes, 83, 87, 88, 94, 98, 102, 102 per

minute, average 93.4. Smoking eight minutes 105, 105, 104, 105, 105, 107, 110 per minute, average 106. Smoking eleven minutes, 112, 108, 107, 101, 101, 100, 100, 100, 98, and 91. There was thus a maximum increase of $37\frac{1}{2}$ pulsations per minute.

“Numerous other experiments were made with tobacco of different strengths and upon different persons. In some of the experiments the additional labor of the heart amounted to more than 50 per cent.”

Tracings of the heart's action made by a sphygmograph—a sort of typewriter of the pulse showing the effect of the tobacco poisons on the heart—are given in numerous works on tobacco.

Before giving those of Dr. Hobart Amory Hare, of the University of Pennsylvania, I will insert a few remarks from a report of experiments made by Dr. Schall at the Hahneman Hospital, N. Y., for the purpose of testing this action of tobacco on the heart. To obtain an absolutely sound and healthy person for the test was more difficult than naturally supposed; but after a due amount of research, a perfectly healthy person was found in Miss H., a well-known actress. The sphygmograph was adjusted to her wrist, and a slender needle vibrating in unison with the pulse recorded its tracings on slips of paper. A tracing of the normal pulse was first obtained, and after consulting pulse tracings that have become accepted standards for the heart action at certain ages, Dr. Schall asked:—

“‘Do you mind telling me your age?’

“‘In the interest of science, not a bit, of course; I am thirty-two,’ she laughingly replied.

“ ‘Your record is the pulse of a woman of but twenty-one,’ responded the doctor, and as the smoked paper was dipped in the fixative he admired its regularity and fulness. Here was a perfectly healthy woman.

“ ‘I have never known a sick day in my life,’ further explained Miss H.”

The doctor instructed Miss H. to inhale the smoke.

“Inhaling is a separate vice in itself,” says he, “and cigarette smokers say they do not enjoy these little coffin nails without inhalation.”

While the doctor told stories of tobacco pulses in confirmed smokers, during which time Miss H. puffed the smoke from her mouth, he mentioned that a pulse of over 90 is common among smokers, and often runs to more than 100.

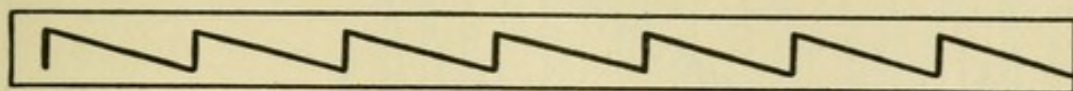
At the end of fifteen minutes Miss H. had managed to smoke the halves of two cigarettes. “There is the effect already,” said one of the doctors, “you can see it is beginning to show irregularity in length.”

At intervals of ten minutes during nearly an hour, tracings were made by the instrument. In each was an increasing irregularity, showing the rapid work of the cigarettes. At the end of forty-five minutes the young woman had managed to consume the larger portion of six cigarettes.

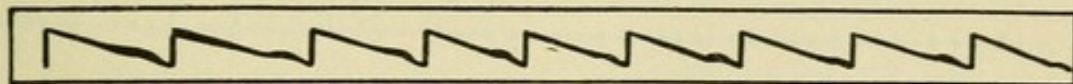
“At this time the messages on the narrow strip of blackened paper showed the heart’s irregular action by short jumps and great rapidity.

“ ‘What must be the effect on persons of weaker physique, especially those with any weakness of the heart,’ exclaimed one of the doctors, ‘if this effect is produced in sound health?’ ”

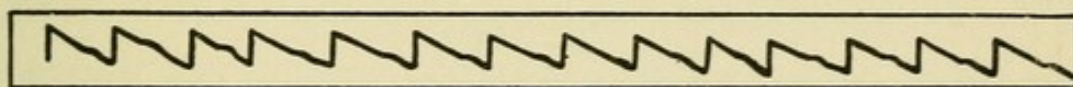
The register of Miss H.'s pulse is as follows:—



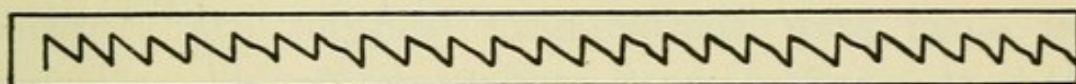
Normal pulse register.



After 15 minutes.

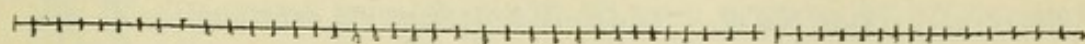
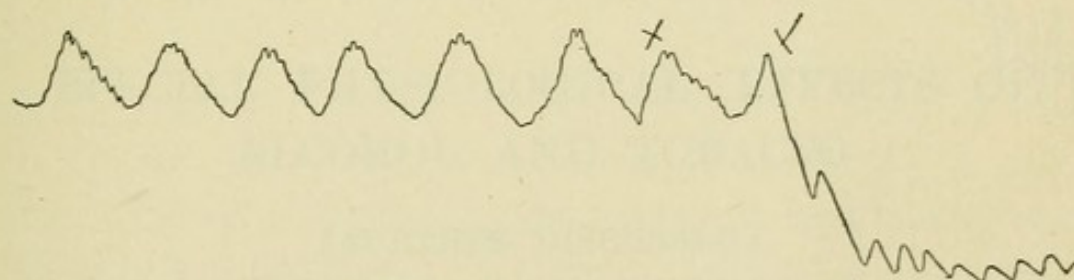


After 35 minutes.

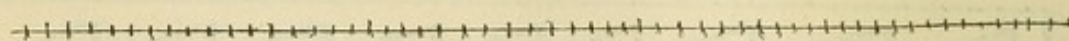
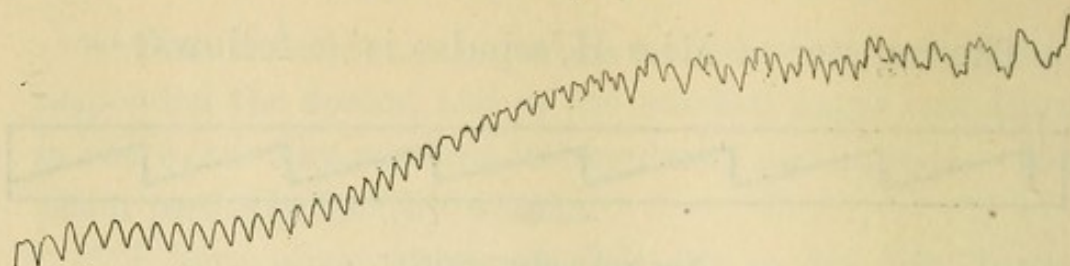


After 45 minutes.

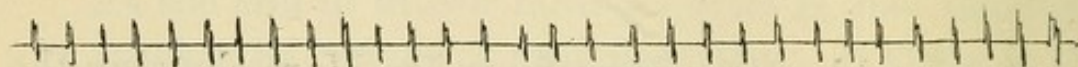
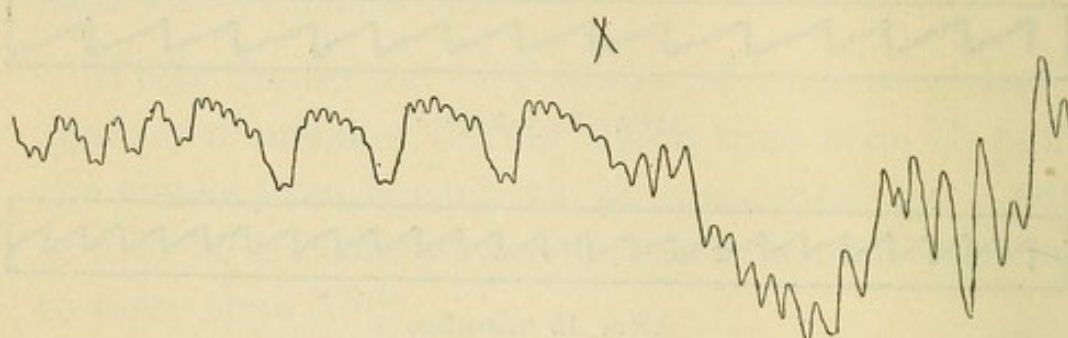
Some tables are given from Dr. Hare showing the effect of nicotine on the hearts of two dogs. The somewhat irregular lines given before the administration of nicotine show a little excitement naturally occasioned by unusual surroundings. Poor Carlo! Poor Rover!



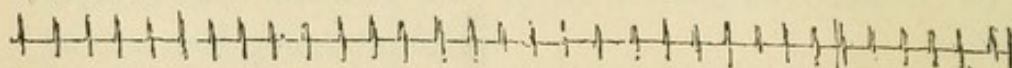
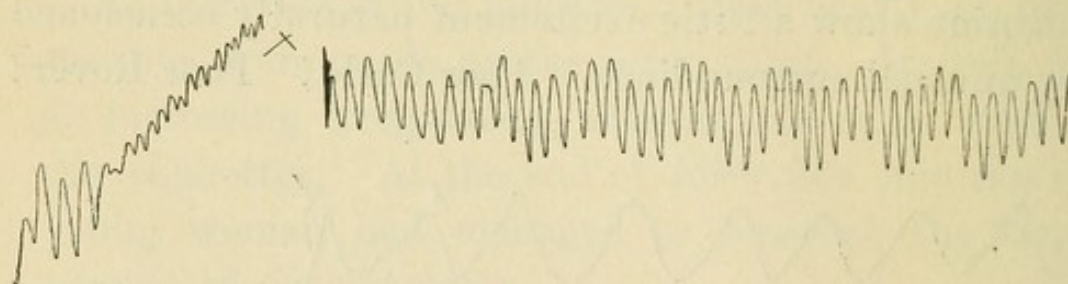
DOG No. 1. — Showing depression (primary) after injection into Jugular vein of $\frac{1}{32}$ drop of Nicotine. + mark shows moment of injection.



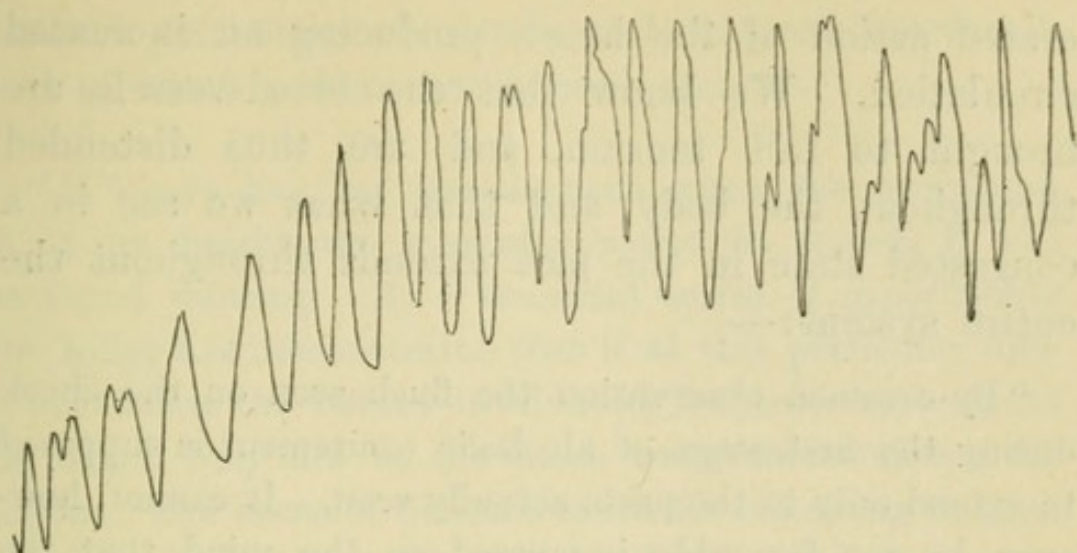
TRACING OF DOG No. 1. — *Continued.* — Showing increase of pulse rate and force in second stage, following primary depression. Also, point at which the increased blood-pressure sent the pen above the drum.



DOG No. 2. — Showing depression from injection into the Jugular vein of $\frac{1}{2}$ drop of Nicotine. Also, showing the rise, first beginning, of second stage. + mark shows point at which injection was made.



TRACING OF DOG No. 2. — *Continued.* — Showing continuation of rise, as seen in first tracing, on preceding page. Also, showing point at which the blood-pressure sent the pen above the drum, and tracing after interval of three minutes after pen went above the drum.



ASPHYXIA curves produced by a sudden and large injection of Nicotine

We did not realize how general is the "tobacco heart" until physical examinations were made in selecting soldiers for our late Spanish War. At that time the press commented very extensively on this feature of the general physical incompetency. In reality, a soldier who is a tobacco or an alcohol inebriate is as much of a farce in an army as the military officer in an opera bouffe. But this phase of the subject is further treated in the chapter on soldiers.

SPECIAL PHYSIOLOGICAL EFFECTS OF ALCOHOL AND TOBACCO

(FURTHER DISCUSSED)

WE have already seen that the main effort of nature to rid itself of any poison is by means of flooding, which is accomplished by a copious secretion of liquid by the glands, and also by an accel-

erated action of the heart, producing an increased circulation. We know that the blood-vessels are brought to full tension, and are thus distended throughout the body, and that what we see in a congested state in the face extends throughout the entire system:—

“By common observation the flush seen on the cheek during the first stage of alcoholic excitement is supposed to extend only to the parts actually seen. It cannot, however, be too favorably impressed on the mind that the condition is universal in the body. If the lungs could be seen, they too would be found with their vessels injected; if the brain and spinal cord could be laid open to view, they would be discovered in the same condition; if the stomach, the liver, the spleen, the kidneys, or any other vascular organ or parts could be laid open to the eye, the vascular enlargement would be equally manifest. In the course of time these changes, at first temporary, become confirmed and permanent.”

One of the shortest, clearest descriptions of the general effects of alcohol is told in the “Cyclopedia of Temperance,” by Dr. Richardson. The unloosing of all the blood-vessels is explained as in the last chapter by the semi-paralysis of nerves which control the arterial vessels at their extremities,—how they first let loose extra blood, not only in the region of the heart, but in every part where the blood circulates, first beginning with the circulation through the brain, through the organs of the stomach, liver, and intestines, and the active groups of muscles controlling the organs of locomotion,—in fact, an over-action everywhere,—the heart quickened, the mind

exalted, secretions of glands and stomach increased, and all vital powers accelerated, etc.:—

“If,” says he, “at the moment when the overaction is at its height the muscular power be tested, it will be found wanting. By a beautiful series of experiments Dr. Ridge has demonstrated that if at this particular time of overaction the refined involuntary muscular movements be tested, they are in the most uncertain condition for action. The sense of delicate touch for balancing weights is made absolutely worthless; sensibility of touch is rendered imperfect; the adjustment of the muscles of vision is made uncertain and feeble, so that the act of aiming at a mark is extremely faulty, and the sense of hearing faint sounds is decidedly impaired. These facts relate to the action of the involuntary muscles, but they apply with equal correctness to the voluntary. I myself studied with the greatest care the effects of alcohol during the first stage of its action on the voluntary muscles, not only of man, but of inferior animals; and I detected invariably that, other things being equal, the actual strength of the voluntary muscles is reduced under alcoholic excitement, except in the briefest moments in which no sustained work is being carried out.

“Precisely the same state of things is observable in respect to mental phenomena. The mind seems more active, and may be so; but it is less precise and less strong in its efforts. Words which come forth at one moment in haste are forgotten the next. This excitement of mind is, as a matter of course, followed by depression and often with irritability. To sum up, the first degree of effect from alcohol is toward helplessness of mind and body, when the full influence is calculated.

“The first stage passing away may leave nothing more

than a depression; but if it has been induced by a quantity of alcohol which leads to an extension of symptoms, the signs of failure are more strikingly portrayed. . . . In this second degree the voluntary muscles begin to show the same aberration that was instanced in the involuntary at the earlier period. The smaller voluntary muscles, like those of the lip, are, as a rule, the first to become enfeebled and uncertain; afterwards the muscles of the limbs follow the imperfection of function, and the brain also becoming enfeebled, the muscular and mental acts begin to be aberrant simultaneously. Meanwhile, in this degree, the temperature of the body begins to fall. The great surface of blood that has been exposed to the air in the first stage is now flowing more tardily, and, receiving no sufficient supply of warmth from within, the body is cooling down, leaving all parts reduced in warmth like itself. . . .

“The third degree is marked by a more complete frustration, — by an entire want of proper control of all the muscles, by delirium and mental imbecility, and at last by complete collapse both of body and mind.

“To this third stage of alcoholic depression there may succeed a fourth, in which there is absolute paralysis of the will and of all the voluntary muscles. The body is now entirely anæsthetized, so that a surgical operation of the severest character might be performed on it without the slightest pain. In this stage also the temperature of the body, which has been falling through the whole of the third degree, sinks to the lowest point practically compatible with the continuance of life, namely, to 92° or over 6° below what is natural. To such a low ebb, in short, has life been brought, that only two nervous centres remain true to their functions, — the centre which presides over respiration, and the centre which stimulates the heart into motion. Upon the fidelity of these two centres, so acting

until the body begins to be set free from the alcohol by its slow elimination, recovery entirely depends. Recovery is always attended, under the most favorable circumstances, by many hours, and even days, of depression and degradation of nutrition."

Says Dr. Witter, in a report to the Wisconsin Board of Health:—

"Richardson declares that in the confirmed smoker there is a constant functional disturbance which extends to the blood, the stomach, the heart, the lungs, the brain, and the nerves. . . . That," says Dr. Witter, "does not leave much of the man except his hair and his bones."

Dr. Richardson, always succinct and to the point, says:—

"For the effects caused by tobacco on the human body, there are many, the smoke of tobacco being compound, and the symptoms it produces are also compound. . . .

"The action of tobacco smoke extends to all the animal kingdom . . . to everything living. Cheese mites, flies, bees, wasps, reel over—limbs convulsed—when exposed to tobacco smoke. Frogs succumb more slowly, birds very rapidly. . . . It is no difficult matter to kill an animal by the fumes of common tobacco, and this even if the air be constantly changed, granting that, as it enters the chamber, it is charged with smoke. On dogs, in fact, the fumes of burning tobacco are infinitely more potent than those of opium. . . .

"It will be asked what are the conditions of the organs of the body during the time that a person who is learning to smoke is indulging his penance? As regards the human body, neither I nor any other physician could speak with certainty, for the facts have not been observed; but from

analogy derived from the inferior animals, which analogy must be very perfect, the condition of the vital organs is as follows:—

The brain is pale and empty of blood; the stomach is reddened in round spots, so raised and pile-like that they resemble patches of dark Utrecht velvet; the blood is preternaturally fluid; the lungs are as pale as the lungs of a calf, as we see them suspended in the shambles; while the heart, overburdened with blood and having little power left for its forcing action as a pump, is scarcely contracting, but trembling as if, like a conscious thing, it knew its own responsibility and its own weakness. It is not a beating but a fluttering heart; its mechanism is perfect, but each fibre of it, to its minutest part, is impregnated with a substance which holds it in bondage, and will not let it go."

In considering the effects of tobacco taken in small quantities—the effects being those of accumulation—I quote from an article by Dr. Wright, published in the *London Medical Gazette*. Dr. Wright gave to dogs small quantities of tobacco (two or three grains) mixed with their food two or three times a day:—

"The result," says he, "was a slow declension of nervous power, ending in complete marasmus and starvation. In particular, I remarked an intermittent action of the heart, habitual dragging of the hind legs, a seeming loss of venereal power, . . . the muscles of voluntary motion became soft and shrivelled. The hair at first became rough, and then it fell off; the pupils of the eyes enlarged, and the eyes swam with tears, succeeded finally by purulent discharge. Sloughing of the eyelids and blindness generally preceded death. After death the blood was invariably found fluid, deficient in fibrin, and particularly so in red

globules ; the heart was pale, soft, and smaller than natural ; the body never stiffened, and decomposed very rapidly.

“The gums began to swell and bleed early in the experiments, and the teeth loosened. The mucous membrane of the mouth, nose, and trachea was softer, more tumid, and more vascular than usual.

“In carefully watching the effects of the long-continued use of tobacco upon the human subject, I am not able to fix upon any that are not due, immediately or remotely, to the physiological influence above noted. . . . The nervous system has peculiarly suffered, and thence have arisen obtuseness in the functions of the several senses, — irritability, indecision of voluntary motion, and depravity of the secretions. Particularly have I observed the buccal membrane (in smokers) to become vascular, swollen, irritable, and prone to hemorrhage. I have never observed an exception to the fact, that in smokers the voice has deepened in tone (I suppose from relaxation) or become hoarse or oppressed through excessive mucous secretion. Many an irritable nervous cough, without increased secretion from the tracheo-bronchial membrane, and also upon increased secretion, I have known to follow the frequent use of tobacco in smoking. I believe it to be a great antagonist of the functions of the nervous system, especially in its relations to the organs of sense, of reproduction, and of digestion. I have known it to produce perfect atony with all its train of consequences.”

An interesting article on the general effects of tobacco was published in the *New England Medical Monthly*, by Dr. Brodnax, of Brodnax, Louisiana, a part of which is as follows:—

“An article published on Tobacco . . . seemed to me, from its general tone, to be a strong plea in favor of its

use. It led me to look about. . . . Careful inquiry of over a year in my clientele gives me the following results: 98 out of 123 persons — all white — use tobacco in some way — aged 18 to 78. Of these I find 90 affected with impairment of the senses of taste, smell, and hearing; 82 have periodic headaches, traceable to the habit, for when abandoned for a time this symptom disappears in greater or less degree; 5 have paralysis agitans; 50 per cent have irregular heart action; 89 are dyspeptic — 22 of them badly so; 8 cannot retain all the food taken unless a stomatic is taken; 80 per cent eyes affected; 52 have, after smoking, a slight defect in walking, a vertigo; more than half complain of forgetfulness. . . .

“As to cigarette smokers under eighteen, I find that this class have less power of resistance to morbid influences; and that there is hardly a healthy cigarette smoker within my knowledge, — that, too, at an age when every act of life tends to strength and vitality. They are flabby, irresolute, — cannot stand hard work or play. They take to drinking stimulants to counteract these influences very early in life.

“A country doctor has no hospitals or libraries from which to draw statistics, — only his immediate surroundings. Perhaps these are equally convincing.”

There are other diseases resulting from the use of tobacco which should not be forgotten. It all happens when the nerves become structurally incompetent, and epilepsy, paralysis, etc., follow, or where the brain, chiefly composed of nerves, joins in the desolation, and either suicide, insanity, or idiocy follow; or where the lungs give up the battle, and the germs of tubercular consumption take possession, or where the organs of elimination become tired out, and the system becomes clogged with debris, befouled, so to

speak, and mere bad feelings resolve themselves into the horrors of cancers, tumors, Bright's disease, etc. Many of the works on tobacco treat of these cases in all their fulness. In studying the subject, one will be struck forcibly with one point, namely, that each specialist — of the eye, the throat, nose and ears, the lungs, the kidneys, the heart, the nerves, etc. — will demonstrate both by experience and by scientific experiments, that tobacco is a very important factor in causing the malady he specially treats; and after hard application, with the idea of discovering which organ tobacco especially favors in its scheme of destruction, one ends by finding that all organs in general are equally attacked, and special ones according to individual tendencies.

CIGARETTES

IT is well known that the most injurious method of taking tobacco is by means of cigarettes, notwithstanding that the tobacco used to make them is generally of the milder sort.

The reason is plain. The smoke is generally inhaled and taken directly into the lungs.

The lungs are constructed for the special purpose of absorption. Our physiologies tell us that if the breathing surface of the lungs were spread out flat, it would cover 2,000 square feet; that the wonderfully delicate mechanism of the lungs, made up of some 1,700,000,000 air cells, is moist and extremely sensitive. By means of smoking, one may spread directly

on this absorbent surface of the lungs a poison which is almost instantly taken up and carried throughout the system.

Strong doses of poison tend to overcome the forces of the system, and when a partial paralysis is thus occasioned, it promotes the soothing and reposeful feeling which is much enjoyed. By the inhalation of tobacco smoke and the bringing of its virulent poisons in direct contact with the tissue of the lungs and air passages, the entire system is almost instantly pervaded with that coveted soothing feeling.

Like a buzz-saw which whirls its teeth and cuts from the length and breadth of wood as it is applied, so the inhalation of each poison-laden breath, with its quick and venomous action, cuts into the length and breadth of life. The hæmoglobin of the blood on its mission for oxygen is attacked at the very threshold of the lungs, and for various reasons as heretofore explained, every function of the body has its accounts to render for the ravages of the cigarette.

One would also naturally think that the compound poisons of tobacco were sufficiently virulent to save borrowing still others, and yet several drugs are added to various brands of cigarettes to give them popularity. Opium is mixed in most Turkish cigarettes and is also used more or less in many brands over all the world. An article made from the Tonka bean, which contains a deadly poison, and is called "Havana flavoring," is sold by thousands of barrels in the United States, and is used principally for flavoring cigarettes, although it is used as well for cigars.

It is also said that an active business is carried on

among street urchins in collecting the stumps of cigars from the streets, dram-shop cuspidors, and elsewhere. They may have come from the mouths of consumptives or sufferers from any of the contagious, cancerous, and loathsome diseases which result from the degradation and befoulment of the blood, and which form a natural partnership with the devotees of tobacco. They are sold to cigarette makers of the baser order, who mix them with other ingredients and wrap them in attractive packages.

Of course, growth is impeded by the loss of oxygen, debasement of blood, and impairment of lung tissue, to say nothing of other ills; and that is one of the reasons why growing children who smoke cigarettes are apt to be undersized as well as anæmic.

"Why should we not smoke or drink?" say they; "the father, the doctor, the professor, the clergyman, the bishop, all smoke or drink, and should we do better than they?"

Dr. Roberts Bartholomew, an able writer on medical subjects, said in a recent article: —

"It is high time that something were done to put a stop to this frightful evil, which is stunting the growth and ruining the health of thousands of boys. . . . Parents see their sons getting thin, yellow, and irritable; the family doctor is called in, and, without going to the root of the evil, prescribes *tonics*. The prodigious increase of cigarette smoking among boys in the last few years is an evil which will tend to the deterioration of the race if it is not checked. It is not hard to account for. Boys are very imitative. They follow the fashion with promptness and zeal. It is the correct thing to smoke these

poisonous little rolls at Harvard, and what is fashionable in a great school like Harvard, is sure in a very short time to be fashionable among young men and boys all over the country. Another great cause of mischief is that boys are very fond of imitating their elders. . . . There ought to be sentiment created against it, and the press is the power to create such a sentiment."

Mr. Ruskin was much exercised on the subject. "It is not easy," said he, "to estimate the demoralizing effect of tobacco on the youth of Europe."

In speaking of the effects of tobacco on growing children let us again turn to Dr. Richardson:—

"During the early periods of life, when the youth is approaching to his manhood, all the physical and mental energies are at their full stretch, to attain a certain maximum of growth and power. To throw obstacles, therefore, in the way of this development, is necessarily to inflict on it a penalty which is life-enduring, and is never made up; and I do not think the anti-tobacconists are saying a word too much, when they urge that the increasing indulgence by our children and youths in the use of tobacco, is stunting the national growth, deforming the national life, degrading the national intellect, and establishing a race which must necessarily possess a limited force, and transmit its own degradation to the next generation."

Professor Goodwin (Principal of High School, N. Y.) says:—

"As to cigarette smoking among boys, there is just this much to say: The boy who smokes, whether it be in the cigarette or any other form, between the ages of fourteen and eighteen, may bid adieu to all hopes of scholarship.

He can do next to nothing in the high school grade. There might be exceptions, of course, but this rule will hold in ninety-nine cases out of a hundred. In fact, in the schools under my observation, you may get very closely to the number of incapables and weaklings by counting the number of smokers."

Canada's (the future great Canada!) House of Commons has lately passed, by a very large majority, the following resolution : —

"That the object of good government is to promote the general welfare of the people by a careful encouragement and protection of whatever makes for the public good, and by an equally careful discouragement and suppression of whatever tends to the public disadvantage.

"That the smoking of cigarettes has been proved by overwhelming testimony to be productive of serious physical and moral injury to young people, — impairing health, arresting development, weakening intellectual power, and thus constituting a social and national evil.

"The legislation licensing and restricting the sale of cigarettes has not proven sufficient to prevent these evils, which will continue while the public sale of the cause of the mischief is permitted to go on.

"That this house is of the opinion, for the reasons hereinbefore set forth, that the right and most effectual legislative remedy for these evils is to be found in the enactment and enforcement of a law prohibiting the importation, manufacture, and sale of cigarettes."

THE NEW DISEASE OF PELLAGRE

M. DEPIERRIS in "Le Tabac" devotes a most interesting chapter to this disease. It being unquestionably a disease resulting from the use of tobacco, a few remarks and quotations are here given :

"If one pays serious attention to the alteration of the blood caused by tobacco poison, which can be noticed by a gray leaden color of the skin, one may discover the true cause of a new malady, la pellagre, which at first seemed mysterious in appearance, but which coincides with the progress of the tobacco blight.

"Towards the end of the 18th century, Italian physicians reported a particular malady new to the profession. There was an eruption of *sero-albumineuse* matter, drying in the form of scales on the face, neck, chest, and hands ; but the eruption was only a symptom and the true character of the disease related to a general cachexy (wasting away), which involved disorders of the nervous system (cerebro-spinal). The first symptoms were of weakness and pain in the back and loins, followed by general weakness, trembling of hands, and a hesitancy of movement. Sufferers relaxed into a state of apathy and low spirits with tendencies to suicide and even murder. Insanity followed later, then paralysis and death, the latter of which often came only after long years of all this train of suffering.

"In 1864 the French Academy became much interested and offered a prize for the best examination and report on the subject of this disease. This call, made by our areop-

agus of science, brought together all the observations of physicians upon this new enemy to modern society."

Various opinions of the cause of the disease by different physicians are given by M. Depierris. Two attributed it to some kind of a parasite which was supposed to have some connection with decaying corn. A second opinion reads as follows:—

"La pellagre is a general disease which, if abandoned to itself, progresses in a slow and insidious manner producing a steady decay. Heredity, certain professions, a poor or insufficient diet, and want (*la misère*) are the chief conditions contributing to the development of the disease."

M. Landonzy recognized none of these limits. He said the disease attacked all temperaments, all constitutions, all conditions. It attacked those living in comfort and luxury as well as in poverty. He declared the cause of pellagre unknown.

The consensus of opinion on the subject was as follows:

First. That la pellagre is a disease of recent origin.

Second. That it is found in all countries.

Third. That its greatest ravages are in Spain, Italy, and France.

Fourth. That insane asylums are the centres where the greatest proportion of the disease is seen.

Fifth. That it is hereditary.

Sixth. That one cannot attribute its cause to the taking of spoiled corn, as was at first supposed, as one finds the disease as frequently in countries where corn is not used.

Seventh. That it cannot be attributed to sunstroke

or insufficient nourishment, as generally supposed, as the disease very frequently attacks those not affected by those conditions.

Eighth. That the cause of it can only be attributed to an agent as yet unrevealed, producing in our economy a special cachexia (consumption) with effects quite uniform and constant, and different from cachexia already known.

It is curious how unwilling and slow physicians are to attribute the cause of trouble to any of the favorite poisons.

M. Depierris says that in order to discover the true cause of pellagre, which has created a kind of degradation unknown to ancestors, one must consider two incontestible facts :

First. Mentioning the several symptoms here indicated.

Second. That in insane asylums the disease proceeds reversely. There lunatics and idiots become *pellagres*, while outside the *pellagres* become lunatics and idiots.

“By this *rapprochement*,” continues M. Depierris, “would it not seem that pellagre and insanity, which are invading us with a rapidity very menacing to the future of humanity, are only two varieties, or, rather, two degrees in the manifestation of a same cause? . . .

“To-day there is no longer doubt that the use of tobacco, which casts into the abysses of insanity so many miserable creatures, engenders this very modern leprosy which is called pellagre, and which is only a modification, an aggravation of nicotinism, by the slow and successive march of generations. . . .

"Nicotine intoxication produces exactly all the phenomena reported in connection with pellagre. In fact, tobacco is eminently deleterious to proper nourishment, since it is constantly absorbed into the system. It is of recent regular use among all classes and in all countries. It determines inevitable disorders with *all* who use it ; it causes, and especially in organizations less able to resist it, a particular cachexy called nicotine cachexy, having all the symptoms of pellagre — alteration in the freshness of the skin, an exudation of earthy appearance, abdominal troubles, nervous aberrations, tendencies to suicide, to murder, and to insanity. Also nicotine cachexy like all cachexies is hereditary ; it causes all the human degeneracies of which we have already spoken and of which pellagre completes the sad picture. . . . The degradations of tobacco (direct and hereditary) have always preceded pellagre.

"Pellagre is then an exaggeration of nicotinism by hereditary transmission. Scales, which constitute one of its essential characteristics, are nothing else but the same viscous humor secreted by the skin, which at first produces only the appearance of a wan, pale skin of earthen tint.

"With the *pellagreux*, the morbid secretion is only more abundant because the blood is more altered according to the law of progression of degeneracy, by heredity.

"If the effect of the sun can play so much of a rôle in this malady as is attributed to it by certain physicians, it is only because heat serves to dry more rapidly this purulent albuminous matter, producing scales.

"*La cachexie nicotinique* in producing primarily an alteration of the blood, again manifests itself in boils of a bad character, a livid skin, as in scurvy ; chronic indurations of the tissues, especially about the glands of the tongue, cheeks, neck, and armpits lead to abscesses always slow to

cure; the chronic oozing of ichorous matter through the skin (above all, on the legs) results in a sort of decomposition of the flesh, giving birth to ulcers, often incurable. These are natural outlets by which the nicotinized victim must let escape the impurities of his blood, and which James I. of England referred to in his royal edict — the famous counterblast against tobacco.

“A still further effect of this cachexy (*nicotineuse*) is to develop, as in scrofula, abscesses through congestion in the neighborhood of the peritoneum, the pleura, etc. . . .

“The first symptoms of the hereditary transmission of these troubles is seen in the great number of children of tobacco inebriates who, in early childhood, are affected with eczema of the skin more or less extended. If the latter maladies are not overcome, they remain in a latent state in the constitution, providing conditions for the germs of tubercular consumption which develop later in life.

“In studying the devastation caused by tobacco it is easy to understand how families are formed of this pellagrous transmission, like those of scrofula, consumption, cancer, etc. The primitive constitutional vice increases from generation to generation by the exposure of descendants to the same causes, which degenerated their ancestors, until by an excess of degradation they become sterile.

“This calamity can only be averted by closing the alliance of nicotinized persons with healthy families, as is becoming the rule with others tainted with organic transmissible diseases.”

PHYSICIANS AND TOBACCO

DR. MATHEW WOODS, of Philadelphia, was invited to a board meeting of his fellow physicians, and the gathering was called a "smoker." His address to them was afterwards published in pamphlet form, taken from the *Medical Record*: —

"And can you conceive of anything more monstrous and unprofessional," said he, "than a room full of doctors in an atmosphere of poisonous vapor, their congested lips puckered around a cigar or pipe stem, and their features unbecomingly relaxed into somnolent ecstasy as they suck narcotic vapor from a weed? . . .

"That a collective body of esteemed men should decide to stamp with the approval of a sanitary and presumably sagacious society — recognized custodians of the public health — a custom opposed to health, and that has become the bane of domestic and public ethics, a menace to higher education, a concomitant of nearly every modern error, an enemy of moral reform, a cause of mental decay; . . . that we as an association of physicians should have deliberately decided to feed with the bread of encouragement the procreator of hydra-headed disease, this habit which, according to the opinion of many educational and medical authorities is the worst curse of modern civilization, is indeed one of those anomalies of conduct calculated to make the judicious grieve."

In discussing the subject of tobacco, Dr. Woods especially deplotes the habit which weakens *the power of achievement*, and by an artificial soothing

makes man content with any kind of condition. It is this progressive evoking quality that accomplishes everything.

"And yet," said Dr. Woods, "so oblivious are we of its value (the spirit of progression) as a means of conquest and development, that instead of having it instigate to the removal of obstacles, we merely aim to destroy it with a drug; we put an enemy in our mouth to steal it away, and thousands of young men, as a consequence, under the spell of an artificially induced calm, fail in the race of life as the great world with its struggles and aspirations moves on. West Point rejects them, and so does Oberlin, and many of the better colleges would like to refuse them; success does not attend them; arrested development is their portion, but what care they? Like the Lotophagi in the Homeric legend, they have eaten of the enchanted fruit and are content to live in the effortless idleness of Lotusland. . . . They tell us variously that 'the evils of tobacco exceed those of drink,' that 'tobacco, the sepulchre of ambition, is undermining the health and weakening the will of the present generation, and is as noxious as the giant evil, drunkenness,' . . . that it takes away even the sense of shame in failure; it takes away sense of right in others; that 'the tobacco habit gains ground at the expense of spiritual force,' as witness Spain, Italy, Persia, Turkey, Syria, Mexico, Egypt, and all the retrograde countries where even the women are its prey.

"It was a recognition of this that caused Fourier to exclaim, 'The nation that smokes perishes.' This which seems such an exaggeration will bear inspection, for it needs no lighting of the casuistic candle to see that producing artificial tranquillity by a drug — whether it be opium, cocaine, hashish, chloral, or tobacco — in the place

of growth urging discontent with unfavorable conditions is an offence against our better nature, weakening that power of progressive achievement that ought to characterize nations and men. . . .

“Would it not be better, more manly, instead of thus ‘sicklying o’er the native hue of resolution with the pale cast’ of self-delusive content, to oppose and conquer the ills we have, rather than resort to the reconciliation of a drug?

“The drunkard does not compel you to drink, the opium eater to eat opium, but the smoker makes you smoke, nay, more, visibly inhale the very vapor just ejected from his own mouth.

“‘Tobacco changes thought into reverie,’ says Victor Hugo. ‘It besots the nations,’ says Balzac.

“Is it not again an inconsistency for us physicians, teachers of sanitation, protectors of public health, interested *nolens volens* in the spiritual uplifting of our fellows, . . . is it not an immorality for us to give the sanction of our conduct to the use of this obtunder of moral discrimination, that, to repeat familiar facts, weakens the memory, vitiates the appetite, enfeebles the heart, depresses vitality, leads to intemperance, arrests development, causes insanity, amaurosis, deafness, laryngitis, and cancer, and makes men content with conditions needing correction and reform?

“With every facility for the acquiring of sound principles and learning (\$200,000,000 having been given in private gifts alone for higher education) it is a significant fact that we produce so few men of supreme intellect, that so many of our high public places are controlled by incapable people. . . . The hypnotism of a drug makes men ‘lovers of pleasure rather than lovers of best things.’”

NOT MUCH ABOUT ADULTERANTS

IT is profoundly strange that there should be a more general fear of the poisons used as adulterants than of the king poisons themselves,—alcohol, nicotine, morphine, etc.

Practically all manufactured drinks are, of course, doctored with preservatives of some kind, unless hermetically sealed after boiling, or unless one of the most pernicious of all preservatives, alcohol, is used in sufficient quantity to *preserve*. Salicylic acid, formaldehyde, alcohol, or any other preservative of dead organic matter, is inimical to live organic matter, human life included. It is well known to the trade that, for purposes of economy or for supplying certain flavors or as means for producing sensations which have become popular, the use of various poisons is not only tolerated but demanded. It is also well known to the trade that some wines, supposed to be made from grapes, contain none of that fruit. What matters it, in the interest of physical culture, if the decay of grapes supplies a poison equally pernicious to others used? If one is bound to poison one's self at all, the only difference between the favorite poisons and the more dreaded ones of equally pernicious character, is not worth the mentioning.

There is a present fashion for drinking spirits and soda, or spirits and water to escape from the adulterations of wines. That is, undoubtedly, one of the grimmest jokes of King Poison.

THE JOKE OF KING ALCOHOL. "ALCOHOL
A FOOD"

OUTSIDE the interests of trade, one must naturally hesitate to call that poison alcohol a food, unless, possibly, food for reflection. As food for reflection, it takes one directly to almshouses, to study the chief causes of poverty; to penitentiaries, to study the chief causes of crime; to hospitals, to study the chief causes of disease, and to society, to study the chief causes of degeneracy.

And yet there are brewers and distillers, with the aid of their journals and chemists, who energetically advertise their wares as "liquid food." There is the French maid in America who keenly feels the loss of "*un peu de vin pour fortifier le sang*," because it makes rich red blood according to her traditions. There is again that misnomer, the *viveur*, who does not know the meaning of real life, but who clutches at any excuse for the follies of his drug mania, and there are, strange to say, others of intelligence and good standing, who seriously discuss the merits of alcohol as food.

It was only about forty years ago, when the French scientists, Lallemand, Perrin, and Duroy first took the subject in hand, that the world received scientific evidence that alcohol is no food and no producer of heat in a living system. That alcohol serves "to keep out the cold;" that it provides nourishment

and energy ; that it even aids in the digestion of the ordinary foods, was for ages the popular belief. It is largely due to this erroneous idea that individuals, towns, and nations have been, and are now being, led through degenerative stages to full destruction.

There is much to mislead one in honestly mistaking alcohol for food, that is, wholesome food, which builds and sustains the body or provides heat, its motive power.

First. If one suggests that alcohol is a rather disorderly food, another answers with the keen satisfaction of an absolutely sound remark, that "too much of any food sets up a disturbance." That argument has excused the taking of countless tons of poison. If, like alcohol, the simple touch of any wholesome food is antagonistic to the system, shocking it always, and planting therein the seeds of disease, or if, like alcohol, three ounces of a "wholesome food" in an hour and twenty minutes will kill a healthy dog, let us label that "food" POISON. If it is a poison, it is never a food, and was never so intended by nature.

Second. The fact that alcohol is made from grains, fruits, vegetables, the chief staff of our diet, also misleads. One forgets that these all-important materials in a wholesome state and in a condition of decay are absolutely different. Decay of any kind is always poison. No ingredient or product of decay is fit for food. It is rather fit for burial in the ground. The spirit of putrefaction gains too much respectability from its creditable ancestry.

Third. Again, as alcohol is obtained by a process of decay, and wholesome food in the process of diges-

tion is transformed into new conditions by a chemical transformation, the two processes are too readily accepted as analogous, which is not so.

All *living* chemical processes are absolutely separate and apart from the processes of putrefaction and death, and the products of putrefaction and death of which alcohol is an outcome, are always pestiferous visitors and enemies to the economy of a living body. As Gustafson expresses it:—

“ All fermentation can be divided into two groups, the one for maintaining life and the other for producing death and dissolution into original elements. Alcoholic fermentation belongs to the latter group, because as far as known alcohol can never be obtained from any living organism, substance, or chemic compound containing life,—death and decay being necessary pre-conditions for its natural production.”

The stimulous, the exhilaration, the energy at first experienced after taking a little of any poison, may easily be mistaken for the strength that results from the digestion and assimilation of wholesome food. The rosy flush, the quickened mental activity, the warmth and tingling of veins following the taking of poison would seem to indicate that this warmth and force is hygienically derived from the poison itself. On the contrary, it is fever which reserve strength energetically enkindles in attempting to expel an enemy from the body, be it alcohol, arsenic, the germs of typhoid, or any other poison. One does not stop to think that these sensations of heat and activity represent the symptoms of all fevers. Fevers are but

the outward indication of an interior battle waged against some foreign enemy, which has entered the system. As long as one possesses reserve strength, energy is always developed and pleasantly experienced when poison of any kind is first taken, unless the quantity is great enough to produce paralysis, and until the corresponding fatigue manifests itself.

Fourth. Another argument for alcohol or any poison as food, is in the statement often made that this or that poison prevents waste of other food. Alcohol may not be a food in itself, it is asserted, but if it saves waste of what is really food, it is practically the same thing. There is not the slightest doubt that the taking of any poison does prevent waste, and that this very fact is one of the most pernicious effects of all poisons. In probing the question a little further, we find that we do not wish to prevent the elimination of the waste products of food. It is the want of elimination of waste products of food that largely produces disease. We must again allude to the chapter that tells how alcohol, tobacco, etc., dries and thickens the filtering membranes of the entire body, clogging the way to both the reception of liquid food for building and the passage of waste material for expulsion.

Fifth. Still another plausible and hackneyed reason lately revived by Professor Atwater for proclaiming alcohol a heat food, is because it contains as one of its ingredients, oxygen. In reality one of the worst phases of alcohol and other poisons is connected with this subject of oxygen (see page 82).

Instead of contributing oxygen to help in the burn-

ing of fats, starches, and sugars (for producing heat), it so malforms and perverts the blood globules, the vehicles which absorb, carry, and distribute oxygen, as to impair their capacities for this very work ; their object being frustrated, the body is thus practically robbed of its full quota of oxygen.

Not long ago (1889) world-wide publicity was given a statement by Professor Atwater that he had discovered alcohol to be a food. He claimed to have proved that alcohol is oxidized in the body and must be regarded as a food on that account. One can but little realize what such a statement will cost poor humanity. The statement would not have been taken very seriously, had it not been backed by the very impressive seal of the United States government, Professor Atwater being one of a number engaged by the Agricultural Department to investigate the values of foods. As for that, the seal of a government in connection with any of the favorite poisons need not always be taken too seriously. A government of the people, by the people, and for the people, is not always strictly scientific. Did the great seals of great nations always represent strictly scientific knowledge, dictatorial King Alcohol as well as dictatorial King Opium would long ago have been hurled from their Imperial thrones. Would that what has sapped the vitality, the energy, the intelligence, the judgment, and the best of human life, were really a food and a harmless one, and that the history of its ravages were but a dream !

The Atwater statement first issued to the world was unaccompanied with detail of experiments, and

scientists who reserve conclusions until facts are developed, kept a respectful silence until the experimental details appeared in Bulletin No. 69 of the United States Department of Agriculture. Since that time, scientists from all over the world have literally torn the Atwater statement into shreds.

A pamphlet entitled, "An Appeal to Truth" (3 W. 18th St., N. Y.), includes statements and facts from scientific authorities everywhere on the subject in general, and the widely advertised discovery of Professor Atwater in particular. The pity is, however, that what administers to vicious appetite travels with wings of the wind, while what combats it goes afoot.

Professor Woodbury of the Philadelphia Polyclinic and College for Graduates wrote:—

"Professor Atwater's own figures as set forth in bulletin No. 69 . . . do not support his claim. He states that 'whether the body (the body of the man experimented on) was at rest or at work, it held its own just as well when alcohol formed a part of the diet, as it did with a diet without alcohol.' His tables, on the other hand, show at once that when alcohol is substituted in part for carbonaceous foods, there is an increased loss of body-nitrogen."

Professor Hall, Ph.D., M.D., Professor of Physiology, University Medical School, Chicago, says, regarding the same experiments of Professor Atwater:

"That alcohol protected the material of the body from consumption just as much as the corresponding amounts of sugar, starch, and fat, is far from being a justifiable conclusion from data given in bulletin 69. The experiments

here given in which alcohol was used show an actual loss of nitrogen, showing a consumption of body-proteid during the period. Professor Atwater can draw but one tenable conclusion from bulletin 69, namely, alcohol is oxidized in the system, but is not a food."

Said Dr. Hertzner, Professor of Pathological Chemistry, University Medical School, New York:—

"Indeed, if persons on a diet adapted to keep them in nitrogenous equilibrium regularly, showed such losses of nitrogen while using alcohol as are shown in Professor Atwater's tables, we should have very satisfactory evidence that the alcohol was acting as a poison to the cells of the body. . . . It is difficult to believe that an investigator occupying an important government position should be so unintelligent as to give utterance to views favorable to the use of alcoholic drinks on the strength of experiments of such limited scope as those published in bulletin 69."

Professor Koppe, an eminent German authority, referring to the pretended food value of alcohol, in an address before the International Medical Congress in Moscow (1897), remarked:—

"The consideration alone that a substance is oxidized in the body, in no wise justifies its use as an energy—furnishing food. Morphine, as is well known, burns in our bodies into oxydimorphine. Happily, however, it has not occurred to any one to proclaim morphine for this reason a proper source of energy (a food)."

Dr. Bienfait, of Liège, Belgium, says:

"In order to be a food it is not sufficient that a substance be decomposed or oxidized in the tissues. Under

these conditions many harmful substances would be considered foods. Ether is decomposed in part; chloroform is partially destroyed. . . . Other things than decomposition are necessary to nutrition. It is necessary that the decomposition be made in a way that will not injure the vitality of the cells."

From every source eminent scientific men have hastened to confront the very unscientific and sensational Bulletin 69. It is interesting to note that Professor Conn, an associate in these experiments of Professor Atwater, hastened to place himself before the public as by no means supporting Professor Atwater's views concerning alcohol as a food.

Before quoting from the great physiologist and scientist to whom the world is most indebted for the solution of the alcohol food problem (Sir Benjamin Ward Richardson), let me briefly refer to the researches of others.

To get a very clear view in a short treatise of the various experiments and conclusions of scientists on this subject, one may consult a little book by Dr. William Hargreaves, "Alcohol and Science." One of the questions to be investigated was just what became of all the alcohol which is taken into the living body.

M. Tallemand, Perrin, and Duroy reported, after certain experiments, that alcohol is stored in the tissues of the body, and especially in the liver and brain, and is expelled by every avenue of exit, the breath, the pores, etc., in the same state in which it entered. From the famous drunken woman who tumbled into the Aberdeen, and from others, alcohol had been extracted with all its physical properties intact, a fact

which seemed to prove that alcohol was not transformed in the body into either tissue or heat.

The wide attention given to these reports inspired other scientists to pursue these studies.

The experiments of Drs. Austie, Dupie, and others of England, proved conclusively that the greater part of alcohol which is taken in the body is thrust out unchanged, but a part of it disappears; in what way was the unsettled question. To the votaries of alcohol the proof of its dietetic value rested upon the failure to discover the whereabouts of a small proportion of this poison after it enters the body. It did not count that the whereabouts in the body of alcohol as an irritant may be found anywhere and everywhere without the slightest difficulty—in inflamed and congested organs, in dried mucous membranes, in devitalized blood corpuscles and general demoralization.

As Dr. Richardson says:—

“Even if complete destruction within certain limits were quite clear, this fact alone would not guide us to the dietetic use of alcohol. We have first to trace the effect of the destruction and learn whether it is for good or evil.”

The most valuable research that was ever made for that missing alcohol was a three years' labor on the part of Dr. Richardson, the results of which are published in his book, “On Alcohol.” The imbibers of alcohol who had been exposed to Arctic ice and snow suffered far more from cold than abstainers, which did not speak well for alcohol as a heat-producing

food. The British Association for the Advancement of Science became much interested in having the reason scientifically explained; hence followed the long and accurate work on the part of Dr. Richardson, with the use of the human subject under various conditions, and the sacrifice of many animals and birds. We may take a breath of relief after reading that clear and scientific account of his experiments to find that alcohol has no reason whatever to be called a food — neither a food that can serve to build tissue nor supply heat and energy, but may by irritation only arouse what has been furnished from other sources.

That the missing alcohol cannot serve to build tissue is owing to the fact that alcohol contains no elements which could be utilized for that purpose. Dr. Richardson tells us of what tissue is composed, and how all tissue-building foods necessarily contain the element nitrogen as an essential part. He also tells us that alcohol contains neither nitrogen nor any other element of structure-building foods; and also that it is incapable of being transformed into any of them.

However, the adherents to the alcohol-food theory do not claim that alcohol serves to build tissue, but that it is a heat-producing food, and scientific research in this direction is what is of especial value.

Dr. Richardson was the first to prove that if alcohol is a heat food, it is a heat food that serves to lower the temperature of the body after a first short dash of fever. He demonstrated that less carbonic acid (the residue of wholesome heat foods burnt in the

body) escapes after the taking of alcohol than before ; that however alcohol is disposed of in the body, it is not converted into carbonic acid, but into secondary products called aldehyde, acetal, and acetic acid, — different than are found by the transformation of any wholesome food. Indeed, aldehyde goes a step further than alcohol as a poison, being the more virulent of the two.

Attention is given to the four progressive stages of animal function caused by the taking of alcohol. The first is a stage of excitement, when there exists an increased flow of blood into the blood-vessels of the minute circulation. The second is a stage of excitement with a partial loss of muscular control. The third is a stage of "Rambling, incoherent, emotional excitement," with loss of mental and muscular power. In the fourth stage the heart itself begins to fail and in extreme cases death closes the scene.

"In the first stage," says Dr. Richardson, "the external temperature of the body is raised. In birds, the rise may amount to a full degree (Fahr.) ; in mammals half a degree. In man it may rise to half a degree, and in the confirmed inebriate in whom the cutaneous vessels are already engorged I have seen it run up to one and one half degrees. In this stage the effect on the extremities of the nerves is that of a warm glow, like what it experienced during the reaction from cold. The heat felt in this stage might be considered as due to the combustion of the alcohol. It is not so. It is in truth a process of cooling. It is from the unfolding of the larger sheet of the warm blood, and from the quicker radiation of heat from that larger surface. During this stage, which is compara-

tively brief, *the internal temperature is declining*; the expired air from the lungs is indicating not an increase but the first period of reduction in the amount of carbonic acid exhaled, and the reddish surface of the body is so reduced in tonicity that cold applied to it increases the suffusion. It is this most deceptive stage that led the older observers into the error that alcohol warms the body."

In the second stage the temperature falls slightly below its natural standard, scarcely perceived in a room heated to 65 or 70 degrees, but is quickly detected in a colder atmosphere.

"During the third degree the fall of temperature increases, and as the fourth stage is approached it reaches a decline that becomes actually dangerous. . . . Under favorable circumstances a long period is required before the body receives its natural warmth. . . . Through every stage, then, of the action of alcohol — barring that first stage of excitement — I found a reduction of animal heat to be the special action of alcohol. To make the research more perfectly reliable I combined the action of alcohol with that of cold. A warm-blooded animal insensibly asleep in the third stage of alcoholic narcotism, was placed in a chamber the air of which was reduced in temperature to 10 degrees below the freezing point, together with another similar animal which had received no alcohol. I found that both sleep under these circumstances, but the alcoholic sleeps to die. . . . The other . . . awakes in a warmer air uninjured though the degree of cold be carried even lower and be continued for a much longer time.

"We are landed, then, at last," says he, "on this basis of knowledge. An agent that will burn and give forth heat and product of combustion outside the body, and which is obviously decomposed within the body, reduces the animal

temperature, and prevents the yield of so much product of combustion as is actually natural to the organic life. The inference is that the alcohol is not burned after the manner of a food which supports animal combustion, but that it is decomposed into secondary products by oxidation, *at the expense of the oxygen*, which ought to be applied for the natural heating of the body."

Wholesome foods satisfy hunger and never leave an unnatural craving when one food is supplied for another.

Linnarus in 1762 well described the heat supplied by that so-called "food," alcohol. "Man sinks gradually by this fell poison; first, he favors it, then warms to it, then burns to it, then is consumed by it."

Dr. Klein, a French Staff Surgeon, in a lecture, thus described the "food" alcohol as used by the French troops during the siege of Paris: —

"It was just the time when the wine merchants had bought their stock for the year, when the war broke out, so we had plenty of wines of every description. It was distributed by the Government very liberally indeed. We drank because we had nothing to eat. We found most decidedly that alcohol was no substitute for food. We also found that it was no substitute for coals. We of the army had to sleep outside Paris on the frozen ground, and when we arose in the morning we were as stiff as planks. We had plenty of alcohol, but it did not keep us warm. We thus found by bitter experience that alcohol did not make us warm, and did not replace food of any kind. Let me tell you further that there is nothing that will make you feel the cold more, nothing that will make you feel the dreadful sense of hunger more, than alcohol."

And no wonder, when alcohol actually retards digestion and assimilation, when it actually robs the system of its fluids and also of the spirit of fire — oxygen.

In the *Forum* of August, 1887, is a most interesting article on the "Effects of Alcohol in High Latitudes," by General Greely. General Greely had been repeatedly asked what had been his experience, and that of his party, in the Arctic regions, respecting the use of alcohol. He says: —

"By scores have letters come, asking what manner of men were there (the survivors from the Greely expedition) who defied scurvy, frost bite, and death, and in particular, whether they drank alcohol.

"The British Arctic Expedition in 1875 (96 men) was selected from the flower of the royal navy for that special and arduous service, which was to last two years at least. . . . After one year's Arctic service, having lost four men, the expedition returned to England so reduced, on the whole, in health and strength that another winter within the Arctic Circle would have been most dangerous. . . . The question as to the causes which so speedily undermined the health of this fine body of men was fully discussed by a committee appointed by the admiralty to inquire into the subject. The report published by Parliament did not commend itself to all England. Among the recommendations drawn up by Sir Alexander Armstrong, Medical Director General of the Royal Navy, . . . the one which was most distasteful to the average seaman was doubtless this: 'When it may become necessary to recruit men after great and unusual fatigue, either in working a ship or in long marches, I consider cocoa or tea infinitely preferable to spirits, hitherto generally given, and I think the latter should be abandoned on such occasions as far as practicable.'"

General Greely further remarks that this recommendation was not heeded, but a regular allowance of rum was daily issued, the outcome being that as soon as hard labor under conditions of extreme cold was thrust upon them, 57% of the men were stricken with scurvy.

In the Report of the British Committee it is said : —

“ It is a remarkable fact that the men employed in the Hudson’s Bay Company, who rarely drink alcohol in any form, enjoy almost complete immunity from this disease (scurvy), notwithstanding prolonged exposures to an Arctic climate and fatiguing sledge journeys. . . . The evidence is decidedly opposed to its possessing any power of increasing the amount of work above what may be done without its use, while the opinion has ever been expressed that in place of increasing, it really diminishes the capacity for work. Eleven out of twelve officers of that expedition testified that tea enabled men to support cold better than alcohol.”

General Greely next tells us that : —

“ The twenty-five members of the Lady Franklin Bay Expedition passed two years within eight degrees of the geographical pole. During that time many arduous sledge journeys under conditions of extreme exposure were made, varying from two to sixty days in length. . . . The greater part of these journeys were made at a time when the mercury in the thermometer never thawed and occasionally ranged from eighty to ninety degrees below the freezing point. They endured all this labor and exposure without artificial heat, and upon a limited sledge ration calculated to a nicety of the least amount of food compatible with

health. Despite all this exposure and the demands upon the physical strength and vital energy, no case of serious frost bite or any disabling illness occurred except in one instance; . . . in all these sledge journeys no ration of spirits was ever granted."

Lamont says of the Spitzbergen walrus hunters, that of late years tea and coffee have been supplied them instead of spirits.

General Greely further states that, in view of the foregoing facts, the question of diet and especially whether alcohol should or should not form one of its constituents, was a vital one to the American Expedition, sent to endure the same cold and hardships . . . resulting in adopting the recommendations of Sir Alexander Armstrong. He closes his article as follows:—

"This article will not have been written in vain if it has the effect of correcting among any class of laboring men the mistaken idea that their capacity for work is increased, or their powers of endurance in exposure to cold are enhanced, by the use of alcohol. The English Navy never drinks while working, and the Esquimau and Chukches without alcohol endure unharmed the severest temperatures known to man."

At the close of the Cantor lectures, among the most important ever given to man, Dr. Richardson says:

"In summary of what has passed, I may be briefness itself. The chemical substance, alcohol—an artificial product devised by man for his purpose, and in many things that lie outside his organism a useful substance—is neither a food nor a drink suitable for his natural demands. Its applica-

tion as an agent that shall enter the living organism is properly limited by the learning and skill possessed by the physician, — a learning that itself admits of being recast and revised in many important details and perhaps in principles.

“If this agent does really for the moment cheer the weary and impart a flush of transient pleasure to the unwearied who crave for mirth, its influence is an infinitesimal advantage by the side of an infinity of evil for which there is no compensation and no human cure.”

WATER

THE civilized world has seemingly preferred to drink almost anything than simple water. Pure water for breakfast has been too cold; for dinner, too warm; for hospitality, too thin; and yet, the best of the joke is, that in this very feature of thinness lies one of the most important virtues of water. One may also be surprised to find that man is principally an aquatic machine, being composed of 70% of water.

In the Cantor lectures we are told that: —

“The mass of blood is composed of water, the mass of the nervous system is composed of water, the mass of all the vital organs is made up of the same fluid; the secretions are watery fluids, and if in any of these parts any other agent than water should replace it, the result is an instant disturbance of function that is injurious in proportion to the displacement. When we turn to the physiological construction, either of man or of a lower animal, we discover nothing that can lead us to conceive the necessity for any other fluid than that which nature has provided.”

One also finds that the human "machine" is chiefly made of the minutest ducts and finest threaded conduits for conveying water and nutriment (blood is tissue in solution) to each and every atom of the body; consequently, water should be thin. In the study of water, one finds also that it is a solvent, a disinfectant, and an absorbent; that nothing passes into the blood nor out of it without the intervention of water. That as a solvent, absorbent, and a means of conveyance, this "thin" thing, water, is the agent that not only carries nutriment everywhere throughout the system, but absorbs and carries off all the waste material which is being constantly discharged into the blood from the tissues, so by the most complicated and wonderful system of sewerage the body is cleansed by water inwardly as well as outwardly.

Those of unclear complexion, the gouty, the rheumatic, etc., are among the ones who have learned by experience the disadvantages of clogging the fine threaded conduits of the system, like a neglected machine choked with soot and ashes. Many a sufferer has come to find how effete matter left in the system becomes a poison.

And so a pure liquid which is a solvent and an absorbent, and which is also "thin," is a physiological necessity. The purer it is, the better it accomplishes these hygienic purposes.

"As a constituent of organized tissue," says Dr. Austin Flint, "water gives to cartilage its elasticity, to tendons their pliability and toughness; it is necessary to the peculiar power and resistance of the bones . . . and to

the proper consistence of all parts of the body. It has other important functions as a solvent, etc."

To accomplish best results, water should be absolutely pure, limpid, and odorless — the purer, the better as an absorbent, as before stated. Indeed, a good disinfectant for a sick room is a basin of water. It is also an absorbent of noxious gases, and, left in the ordinary sleeping room over night, is unfit for drinking. It is thus seen what a builder, what a renovator of the human system is water; how it is, in fact, an overwhelming need, and why death by thirst is more rapid and more distressing than by starvation. So positive and marked are its essential qualities that water is also the greatest of curative agents.

"Those," says Gustafson, "who imagine water to be such a weak and vapid thing, would be interested in examining the bibliography on water (by Dr. Plöhn) published in Dr. Ziemsen's 'Handbook of General Therapeutics' (Leipsic, 1883), occupying twenty-eight large octavo, close and small printed pages, showing the medical literature on water to be almost as voluminous as the religious literature on the Bible."

"There is no agent," writes Dr. James Wilson, "applied to the human body externally or internally that has such influence in awakening all the vital powers to their great restorative capabilities, in arresting the progress of disease, or preventing a fatal termination as pure water. Administered at various temperatures, it is the most powerful remedy we possess; a stimulant, a sedative, a diuretic, a sudorific."

"Could pure water," says Dr. Morel, "be permitted to resume its original office in the system, which it would do

in all likelihood in an astonishingly short time, we are justified in believing that it would mark an epoch in the condition of mankind, not only of physical, but of moral, mental, and spiritual health, far closer to the pure ideal of humanity than we have yet reached or prefigured."

Said Dr. Cheyne ("Essay on Health and Long Life"):—

"Water was the primitive original drink, and happy had it been for the race of mankind if other mixed and artificial liquors had never been invented. Water alone is sufficient and effectual for all the purposes of human wants in drink. Common sense will tell us that the purest and thinnest water is fittest to circulate through tubes so infinitely small as are contained in animal bodies, and even that it alone will nourish plants and bring them to perfection."

Now a perfectly healthy human animal like any other animal can, when thirsty, enjoy nothing in the way of drink so much as pure fresh water. Something is wrong when that is not all-sufficient.

In that famous warning of Charles Lamb, he thus speaks of it:—

"Oh, if a wish could transport me back to those days of youth, when a draught from the next clear spring could slake any heats which summer suns and youthful exercise had power to stir up in the blood, how gladly would I return to thee, pure element, the drink of children!

"In my dreams I can sometimes fancy thy cool refreshment purling over my burning tongue, — but my waking stomach rejects it. That which refreshes innocence only makes me sick and faint. But is there no *middle way* betwixt total abstinence and the excess which kills you?

For your sake, reader, and that you never attain to my experience with pain, I must utter the dreadful truth, that there is *none, none.*"

And unless one's stomach is fevered by struggles with poisons, one does not care for water iced, which is quite a physiological barbarism. It is an American custom much and justly criticised abroad. In an article on "The Folly of Ice-Water," Dr. Cyrus Edson explains how the inner coating of the stomach is soft and velvety, traversed by veins and arteries; how when food is taken into the stomach it is moistened by gastric juices which exude from the walls; how these walls are agitated by muscular movements, and how ice-water contracts the arteries, leaving the walls of the stomach bloodless, in which state they remain until the water in the stomach becomes again heated—no very quick process, as one may know by the time it takes to heat cold water over a fire; and how, during that time, the stomach has been deprived of the nourishment which it should obtain from the blood.

"The stomach usually recovers, but if the shock is repeated habitually, the lack of nourishment is also habitual. The coats of the stomach lose their muscular power and grow flaccid. The sound stomach had a certain muscular movement which kneaded the food and digested it, but in its relaxed condition it is motionless, and the gastric juices cease to flow. Ice-water causes indigestion. . . . Digestion ceases when the temperature in the stomach falls below 92 degrees, and when digestion ceases, fermentation soon begins."

As for that, any one may experiment with the digestive ferments which are taken from the stomach of animals and are extensively used medicinally for artificial digestion. By mixing the ferments with milk or any other food, one finds that by merely placing the mixture in the refrigerator, not even near the ice, all digestion ceases ; also, one finds that too much heat arrests or kills digestion. The proper heat for digestion is blood heat, and it is far better to drink water a little too warm than too cold. In fact, habit soon brings a distaste for water colder than the natural temperature of the room.

It has taken the civilized world a long time to appreciate the virtues of water.

“ Look at that,” exclaimed John B. Gough, holding up a glass of water before an audience. “ Look at that, ye thirsty ones of earth ; see its purity ; how it glitters, as if a mass of liquid gems ; it is a beverage brewed by the hands of the Almighty Himself ; not in the simmering still, over smoky fires, choked with poisonous gases and surrounded by the stench of sickening odors and rank corruptions, does your Father in Heaven prepare the precious essence of life, — the pure water, but in the green glade and grassy dell, where the red deer wanders and the child loves to play, — there God brews it ; and down in the deepest valleys where the fountains murmur and the rills sing ; and high up on the mountain tops, where the granite glitters in the sun, where the storm clouds brood and the thunder storms crash ; and away on the sea where the hurricanes howl music, and the waves roar the chorus, — there He brews it — that beverage of life, health-giving water. And everywhere it is a thing of beauty ; gleaming in the dew-drops,

singing in the summer rain, shining in the ice gem, till the trees all seem turned to living jewels; spreading a golden veil over the setting sun, or a white gauze over the midnight moon; sporting in the cataracts; folding its bright snow curtains about the wintry world."

The world is coming to appreciate the value of pure, unadulterated water. People are flocking to curative springs, whose merits and claims are nothing more than pure water. And now on the tables of many, one sees instead of certain brands of champagne or claret, certain brands of pure water, — from the granite hills of Maine; from the Alleghenies; the Catskills; from rocky dells of Maryland; water from pure springs everywhere, tested and branded by expert chemists, and which are serving to pour into the coffers of their fortunate owners the fortunes that have greeted the brewers and the distillers of decayed grains and fruits. A comparatively new and remunerative industry — the industry of bottling pure water — will be a feature of the new century.

Nature is prodigal of water, and yet it is somewhat discouraging after studying Redeal, Mason, and other authorities on the subject, to find how much care is necessary to obtain water at its best. Of course the very qualities that make water of such overwhelming value in carrying off the debris of the human system, enable it to absorb impurities everywhere, and infinite care has to be bestowed to see that it is free from contamination.

As health and success of any kind is the result of eternal vigilance, one must learn that in giving up known poisons one has still to watch for

poisons in water, realizing that drinking impure water creates a lowered vitality as well as breathing vitiated air. Of the different kinds of water it would seem that artesian well water is the most desirable. If it filtrates through proper soil untainted with soluble mineral compounds, and descends to a proper depth, it contains no bacteria, no suspended particles of any kind, and no organic matter in solution. As rain-water is an almost universal solvent, it takes up as it sinks into the ground various soluble matters it meets — possibly organic impurities and mineral substances. If in mixing with the earth it has absorbed too much of lime and salts, it will not so well perform its duty as an absorbent in the human body. In gout, rheumatism, in apparent old age, we have abnormal deposits of lime, etc., and too much of certain salts have their unhygienic iniquities. This surplus is taken up by the drinking of pure distilled water, or of water not already mixed with earth deposits. Surface water may again, in inhabited districts, become contaminated by sewerage that has soaked into the soil. For this reason shallow wells in towns and cities are extremely dangerous. They are also dangerous in country houses when too near sources of pollution — stable yards, manured ground, etc. In rural districts outbreaks of disease are frequently traced to water polluted from these sources. But as surface water sinks lower into the ground, it undergoes a process of natural filtration. Objectionable solid matters are sifted out, and there is often a complete natural purification. This water is also below bacterial dangers.

"Upward surface waters from mountain streams," says Mason, "are almost free from animal impurities, and where they have risen and flowed over the older rocks like granite or slate, they are peculiarly soft or free from lime and magnesia salts, not having had time to dissolve much solid matter from the soil."

Of course, distilled water is the purest of water. A druggist told me that in order to provide it absolutely pure for chemical purposes, he was obliged to build an extra room in his cellar, absolutely free from communication with possible sewer gas, decaying fruits or vegetables, or anything that might pollute the air; besides, the water was kept in glass bottles with glass stoppers, the ordinary cork being insufficient to prevent contamination. But this kind of water, apart from its cost of preparation, is flat and mawkish to taste without aëration, and also becomes rapidly foul.

The ideal water, which is distilled, pure, and properly aërated, is rain-water if it could be properly collected. It is, at least, free from earthy deposits. But there is some difficulty about obtaining pure rain-water. If there is dust or soot, or wandering germs of objectionable character in the air, the water promptly appropriates all. It is also especially ready to absorb lead compounds from painted roofs or lead pipes, and if one desires to avoid alcohol in wine, theine in tea, etc., one does not care for a solution of lead in water.¹ To catch rain-water, the roofs and gutters should not only be absolutely clean, but made

¹ There are frequent discussions in London as to the wholesomeness of water taken from lead pipes, and many select lead pipes containing a tin tube interior.

of slate or galvanized iron, and the water should afterwards be kept in tanks or barrels charred on the inside, or preferably in glass bottles.

Springs originating in grass lands are generally polluted by decaying animal and vegetable manure, etc.

Professor Benard, of Cornell University, in the *Popular Science Monthly*, tells us there are no germs in the best and purest of water. Germs are only invited into stagnant or impure water in order to destroy the dead animal or vegetable matter it contains, causing, for the time, fermentation. Stagnation, decay, and death under the lens is replete with life.

"In fact," says M. Mathew Williams, "water mixed with any organic substance that invites the germs of putrefaction to remove them is of most serious importance. They invite their microscopic abominations, the micrococci, bacilli, etc., which continue their devastating work if taken into impure blood.

"These little pests are harmless and possibly nutritious when cooked, but in their raw and wriggling state are horribly prolific in the blood of people who are in certain states of what is called receptivity. They (the bacteria) appear to be somewhat killed off by the digestive secretions of the blood of some people, and nourish luxuriantly in the blood of others.

"The germs of typhoid fever come more readily with water polluted by decaying animal matter, sewerage, house drainage, etc., while malarial germs prefer water polluted by decaying vegetable matter, as in swamp lands, etc."

Professor Mason tells us that the various germs floating in the air and brought down by showers are

generally innocent in character, or are made so by the influence of sunlight, which is germicidal.

Boiled water is more or less devoid of oxygen; fish cannot live in it, and it is not so wholesome as pure natural water, yet if there be suspicion of unfriendly germs, it should be boiled.

Pure water is always free from odor. It should also be free of sediment, tasteless, clear, and sparkling.

We are everywhere warned of the dangers of ice which is often "harvested" from canals, ponds, marshes, and rivers vitiated by sewerage. We are also told that if contaminated, no amount of freezing will kill pathogenic germs in water. Says the *Chicago Record*: —

"We have boiled the hydrant water;
We have sterilized the milk;
We have strained the prowling microbe through the finest kind
of silk;
We have bought and we have borrowed every patent health
device;
And at last the doctors tell us that we'll have to boil the ice."

A word needs to be said about the increasing habit of drinking mineral waters — Vichy, Apollinaris, etc., — which is another hygienic blunder. Authorities tell us that no water containing so much foreign matter as to be called a mineral water should be used as a diluent in health. For instance, Vichy is a strong alkaline water and can be used as a medicine in case of acidity of the stomach. The mineral waters are not normal waters.

Sir Henry Thompson, in "The Nineteenth Century," thus speaks of them; also of the greater

pleasure of the table when water is taken as the only beverage.

“Before quitting the subject of dining, it must be said that, after all, those who drink water with that meal probably enjoy food more than those who drink wine. They have generally better appetite and digestion, and they certainly preserve an appreciative palate longer than the wine drinker. Water is so important an element to them that they are not indifferent to its quality and source; . . . the importance of an ample supply of uncontaminated water cannot be over-estimated. . . . Disease and intemperance are largely produced by neglect in relation to it. It would be invidious, perhaps, to say what particular question of home or foreign politics could be spared, that Parliament might discuss a matter of such pressing urgency as a pure water supply, or to specify what particular part of our enormous expenditure might be better employed than at present by diverting a portion to the attainment of that end.

“No admixture of wine or spirit counteracts poison in tainted water and makes it safe to drink, as people often delight to believe; but the simple process of boiling renders it perfectly harmless. . . . The table waters now so largely imported from Germany and France, the natural Selzers, Apollinaris, Gieshübel, and St.-Galmier, etc., contain a considerable proportion of mineral matter in solution, and while they are wholesome as regards freedom from organic impurities, are, of course, less perfect for daily use than absolutely pure water. Vaunted frequently as possessing certain medicinal properties, this very fact ought to prohibit their constant use as dietetic agents for habitual consumption, inasmuch as we do not require drugs as diet, but only as occasional correctives.”

The relationship of water drinking to longevity has never been properly considered. Pliability and elasticity of joints and tendons are characteristic of full vigor at any age. They imply a facility and equality of supply and waste. We have seen that the use of water is to lubricate, to dissolve, and to absorb all effete products and convey them from the body, and by the same easy and felicitous way to convey nutrition to every atom of the body for the purpose of building and repair. We also know that no modification of water, and no other beverage of any kind, can perform these invaluable functions so well as pure unadulterated water. The use of other beverages, and especially those of a poisonous nature, by lovers and seekers of abnormal sensations, tends to give us that density, toughness, and rigidity of tissue which marks the stiffness of joints and the ossification of old age.

Undoubtedly more attention will be given in the future to pure rain water, the best of absorbents. The fountain of youth is pure water.

Much of the refreshing character of fruits is owing to the pure distilled water which they contain when fresh.

In concluding the chapter it may be added that public opinion should be educated to *demand* a public supply of good water.

THE POISON HABIT IN MODERATION

“Resist beginnings, whatso’er is ill,
Though it appear light and of little moment,
Think of it thus; — that what it is, augmented,
Would run to strong and sharp extremities;
Deem of it therefore as a serpent egg,
Which, hatched, would, as its kind, grow mischievous;
Then crush it in the shell.”

Temperance means abstinence from all things not good and entirely innocent in their character. — CICERO.

Every moderate drinker could abandon the cup if he would; every inebriate would if he could. — JOHN B. GOUGH.

THE most serious phase of the favorite poisons in the life of man and the community is not presented in criminal records, those compassionless ledgers of human miseries; nor is it told in violent loss of life or property, or in the blasting of certain homes here and there and everywhere; nor is it even to be found in the statistical returns of the census. The police court, the penitentiary, the hospital, the insane asylum, the shattered home, reveal but the melodramatic side of the poison habit. The greater human misfortune lies in the general blight which follows the so-called “moderate” use of poisons. The degenerative process is concealed from view. It is a mere tendency, an influence, a force at first too gentle to feel and fear, but which quietly, gradually, and insidiously undermines health and character, saps vital energies and leaves its victims satisfied with

lower standards of life. Its manifestations in the individual and State are a moral and physical degeneration attributed to every cause but the true one. This subtle influence, so little considered, penetrates every source of life. It wears away the power of the will. It dulls the fine sense of appreciation and nice discrimination. It quenches the fires of ambition and deadens the brilliant glow of hope. It blunts the keen edge of self-respect. It perverts true happiness. It weakens the understanding. It enfeebles the force of worthy endeavor; which in normal health is natural and irresistible. It lowers the physical and moral standards of mankind. The way of moderation is the easy one through which all the wrecks have passed. The appetite for poison grows on this gradual degeneration.

All admit the deplorable effects of the favorite poisons when taken in so-called immoderation, but do not seem to appreciate that any unpropitious assault, however small, upon the system, always wounds; that it always draws upon vital energies for the healing, like drafts upon the reserve funds of a bank, bound for payment sooner or later.

Life, after all, is but a culture of cells which are developed or withered by tendencies good or bad. These cells, continually changing, make up our tissues, our blood, and our character; indeed, as long as there is life, the brain, the liver, the lungs, the heart and every other vital organ are always undergoing these tissue changes, for which every tendency, however little, marks its influence for good or evil. One likes to suppose that forgiving nature repairs injuries,

and that more or less of reserve force is supplied for the purpose ; but one should not forget that this reserve force itself is developed and sustained by the same favorable hygienic conditions which develop and sustain every cell and fibre of the body. Something is never produced from nothing. Nature is never forgiving nor forgetful in the light that she gives for nothing. Nature ever strives for best conditions, but her laws are immutable. Nature repairs, but she charges to account. The debts of nature are paid in loss of vitality and in diminished longevity.

If one is normal or perfect as compared with a perfect tree, one must have been surrounded with influences which have always developed favorably.

The tragic ills which result from the small trip-hammer processes of unfavorable influences, are the ills of accumulation, the "mickles" made up of the "littles." Illness is not so much the result of the last imprudence, as of previous frictions which have finally worn the system threadbare. Sound health is the service of the littles. Disease is the disservice of the littles. Sound health is evolution in advance. Disease is evolution in reverse. Acute diseases may follow heavy draughts of drinking or smoking, but the poison habit in so-called "moderation" weaves the web of the great majority of chronic diseases, with a constant liability to acute forms which are almost invariably fatal.

Again, we do not appreciate the impressive fact that the so-called moderate use of poison is the school for the admitted immoderate use of it. It has been the single glass of alcoholic drink that has opened the

door of inebriety to every tempest-tossed wreck of humanity, who has been engulfed by one of the most relentless destroyers of mankind. It was the first bewitching whiff of tobacco that has resulted in well-nigh poisoning the entire human race.

If we would be sound of constitution we must respect the fact that all stimulants kindle abnormal desires faster than they quench or relieve them, and that the habitual use of any poison, however mild, is but the first stage of a progressive disease, for which the only remedy is the complete and entire eradication of the cause.

Dr. Jackson (Dansville Sanitarium, N. Y.) says :

“No man has ever become a drunkard who was not in the habit of stimulation. By this term I mean such a condition of the circulation of the blood as is above its normal or natural rate. . . . Any substance, however little, the effect of whose introduction into the circulation, no matter by what means introduced, is to put the heart to a labor beyond what it is constitutionally endowed to perform, may fairly be regarded as a stimulant. If it is used so continuously as to subject the heart to its influence long enough to have the effect become habitual, at that point the person has taken the first step towards drunkenness. He is to be described as a person living above his organic or constitutional power to live healthfully.”

We do not stop to think that if our organic forces are compelled habitually to act beyond their natural capacity, death before our constitutional limit to live is absolutely certain.

“Nearly the whole American people,” again says Dr. Jackson, “are living from birth onward in such a way as

to render drunkenness not only possible but probable to immense numbers of them. . . . Men have no moral right to live personally or socially, or to have their children brought up so as to be subjected to constant or intermitting excitement of the heart and all the other vital organs of the body. Yet this is the uniform not to say universal practice. . . . I simply mean that the American people so live as to subject themselves and everybody who lives with or about them, over whom they exercise any personal influence, to habitual exaltation of vital activity. A child properly treated will have complete gustatory gratification in the use of food without stimulating qualities. . . . So while the child lies in the cradle there may originate the slow but sure processes (from mother's milk formed from unwholesome food, etc.) which in years to come will make him a drunkard.

"From this state of more or less mild stimulation seen so often in childhood to that of gutter drunkenness, the chain is unbroken; every link is complete. Keep on stimulating the children, and the more you do so, the more they will desire, and the more they will need to be stimulated, until from eating exciting foods and drinking stimulo-narcotic drinks, they will use drinks which are more intensely stimulating. . . . In popular phrase an intoxicated person is one who is *blood poisoned*. The country is full of intoxicated persons. . . . A very large proportion of them, either of their own will or that of a physician, are under the use of intoxicating or blood-poisoning substances, used either as a luxury or a medicine. . . .

"If we are to have an end to drunkenness we must stop breeding drunkards. . . . Put a drunkard upon simple, healthful, nutritious food, give him proper rest, break up his habits of indulgence by placing him in pleasant and elevating associations, see that he takes no medicines that

can in any measure increase the rapidity of his heart's action . . . and the man's appetite for liquor dies out of him. Give him a body that is healthy *in all its instincts*, and he will dislike stimulants as a new-born baby dislikes salted milk."

Most men abhor inebriety in the usual acceptation of the term, yet fail to grasp the fact that the taking of any poison produces inebriety. No one can use intoxicants and hope to escape intoxication. "Be moderate, be temperate in all things," say they; but that applies only to what in itself is favorable. There is no golden mean in what destroys.

The misfortune of all poison-taking lies not only in the always advancing appetite, but the always receding will. As the habit feeds on itself, what first satisfies in so-called moderation has continually to be increased. There are no natural limits to an unnatural appetite; and so the chief effects of all poisons are their *leading* effects, by chains to which every indulgence adds a link. Continually weaker physiological conditions cry out and demand more and more of artificial assistance in the way of relief. They furnish newly-acquired necessities in the bodily economy,—abnormal desires which become whips and lashes; they become nuisances, and may be conquered only by a re-establishment of normal health through hygienic processes.

The slide into the pit of physical disaster is an easy one. To appreciate it one has but to contemplate the vast army that has slidden into it,—not only slidden into it, but slidden into it in exactly the

same way. Do we not see all about us the nervous, fitful, headaching, skin-beclouded devotees of tea and coffee; the complaining, restless consumers of medicines; the dyspeptics, the rheumatics, the unsteady, heart-failing, sleepless slaves of the weed, or poppy; the red-skinned victims of the rotten products of fruits and grains? Poison is strong and poisoned man is weak.

Again, by simply yielding to a passing gratification, there is, aside from the risk to self, the evil example to others, with a possible chance that the others are less strong in power of resistance. There is danger even in one's own family. It is there that misfortunes most count. It is very disagreeable to hear that some one's else husband or wife or son or daughter have slidden. One is very sorry. It is very sad, indeed; but it is simply nothing at all in comparison with a gradual slide in one's own family. Reader, may that never happen to you!

Again, with every slight abnormal condition, the ghosts of misused faculties appear. What else are those new emotions, — those anxieties, feelings of distrust, ills charged to "bad luck," exaggerations of small grievances? And what are those new conditions, — unrefreshing sleep and all its following? Let us stop and speak more of that. One can say it, and say it emphatically, that the person who has the poison habit in ever so small a degree, never knows the benefit of an absolutely sound and dreamless sleep. From the watch-tower of the body the alert sentinel must announce that "All's well" before the spirit of sleep gives way to full unconsciousness.

The inebriate of ever so small a degree never feels his best in the morning, or until the administration of more poison, — generally a cup of coffee, — to whip up jaded forces. As said elsewhere, the sound and natural animal is at best in the morning. After complete recuperation, and like the early bird that sings, he then best feels his abounding forces of life.

And again, a word about that cup of coffee. It would be difficult to compute the rôle tea and coffee have played in the lowering of the standard of health of the entire civilized human race. It is most regrettable that there is harm in what gives so much of pleasure. But if we are to have health in its full meaning, that superb vital energy, that full capacity that converts work into pleasure, that finds joy both in activity and rest, that needs no poison to spur on what is already perfect in all its parts and relations; if we desire health that expresses itself in beauty, in happiness, in success, then the whole category of poisons, great and small, mild and strong, must be absolutely avoided, once and forever.

If one feels the need of a little poison, it is because one is ill or defective or degenerate. The physically sound and complete need no aid to digestion, no "soothing" of nerves. Those conditions are but created by the use of the petty poisons themselves, and quickly, indeed, is it accomplished. All the insidious drugs induce habits rapidly, and they are always habits of weakness, of senility. How long does it take to form the habit of coffee or tea-drinking so that the collapsed feeling, the fatigue, possibly

the headache, manifests itself, when its use is suddenly stopped? A few weeks only.

The craving for the poison stimulant is not a natural appetite, not a demand set up by the tissues of the body for a new supply of material needed for construction or repair, but the cry of a weakened and abnormal organism for abnormal needs.

Of all the evil spirits that prey upon humanity, the imp of "moderation" gathers the largest harvests. The noisy, bungling, head-splitting monsters that bid all come to the debauch, are easier to meet and circumvent. They are seen and heard and known. It is the insidious imp that readily seduces. He gives his victim no rest. He paves the way in open sunshine and outcounts the others with his endless chain of accumulations. If he does not kill, he at least qualifies his votaries for a life of lesser capacity and enjoyment, for a life of impaired usefulness and pernicious example, transmitting to future generations the seeds of his own impotence. He furnishes "daily dyings" which continually cloud the sunshine of life. If it were not for the imp, there would be no Monster; abolish the imp and man will spring into new glory and the earth into new beauty.

Again, the idea of stopping a bad habit at will is an old and wornout joke. It is the same old tragedy worn to shreds and tatters on thousands and tens of thousands of stages. "I shall stop when I find that my cigar, my dram, my opium, my arsenic (or whatever it is) harms me." If one waits until that time, that time, like the end of the rainbow, forever eludes the grasp. "I prefer to live a shorter life and enjoy

my pipe," says the victim later. Another point. One may notice that the sensualist, like a leaky ship which is ill-favored for the possible gales and storms of voyage, never values life; and here the sensualist and the hygienist radically differ. The hygienist wants the longest life the Lord will kindly vouchsafe to him. "While we live let us live well and long," says he. Death or semi-death before the allotted time he contemplates with horror and dismay. To him the days and hours are priceless boons, full of opportunity and joy. He appreciates that a clear telescope for viewing the affairs of life is better than a cracked one, while the sensualist though scrupulously caring for the mechanism of his watch, scorns the fine works that breathe, that see, that hear, that taste, that feel, that reason.

But in reality, the petty larcenies of health are generally committed through a misapprehension of the true effects of the favorite poisons. The study of their effects has been fearfully neglected. On account of the temporary exhilaration, the temporary feeling of ease and comfort after taking the poison in "moderation," the victim ignorantly thinks it not only without injury, but positively beneficial to health. "I take it to *aid* digestion." "I take it to quiet my nerves." "I take it to induce sleep." "I take it to enrich my blood." "My work is fatiguing, and I need a stimulant after it," and so a second exhaustive process is added — the process of getting rid of the poison.

"I can write better sermons after my glass of wine or my cigar," says the clergyman. Can you? We

know that a man in a perfectly sober state may reason with correctness; in an intoxicated state he does not reason at all; in a moderately poisoned state he reasons inaccurately. Says Dr. Baer ("Alcoholismus," Berlin, 1878): —

"Undisturbed reflection and quiet comparison, critical regard and deliberate judgment, impartial observation of facts and the weighing of their relationships, — such are the mental processes to which mankind owes the entire treasure of positive knowledge; . . . such mental processes are not promoted by alcohol."

The more one studies this question, the more one becomes convinced that the chief cause of all blood and tissue degeneration, of all illness, in fact, is the almost universal practice of self-poisoning in so-called moderation. The human race would expose itself knowingly to no open and sudden onslaught which would seriously impair its reason, judgment, conscience, and vitality, but there is grave danger that generation after generation of the gradual and imperceptible undermining process of the "moderate" poison habit will accomplish the same result.

Again says a young man, "I may be excused for sowing a few wild oats." This brings to recollection that very clever description of "wild oats" in "Tom Brown at Oxford."

"In all the wide range of British maxims there is none, take it for all in all, more thoroughly abominable than this one as to the sowing of wild oats. Look at it at what side you will and you can make nothing but a devil's maxim of it. What a man — be he young, old, or middle aged, — sows, that and nothing else shall he reap. The only thing

to do with wild oats is to put them carefully into the hottest part of the fire and get them burnt to dust, every seed of them. If you sow them, no matter in what ground, up they will come with long tough roots like couch-grass, and luxuriant stalks and leaves, as sure as there is a sun in heaven — a crop which turns the heart cold to think of. The devil too, whose special crop they are, will see that they thrive, and you and nobody else will have to reap them ; and no common reaping will get them out of the soil, which must be dug down deep again and again. Well for you if with all your care you can make the ground sweet again by your dying day. . . .”

The first stage of blood-poisoning is witnessed in the anxious and uneasy feelings which moderate drinkers invariably experience when they have been accidentally deprived of their accustomed allowance. Sensations of this nature indicate the existence and development of the inebriate propensity.

A great mistake is made in thinking that the system easily recovers after small shocks, or that exhausted reserve force can be readily reproduced.

“ I am persuaded,” says Dr. Sewall, “ that tens of thousands of temperate drinkers die annually from diseases through which the abstemious would pass in safety,”

and Dr. Gordon, of Edinburgh, finding by post-mortem examinations of people in the habit of moderate drinking, that invariably there was more or less disease of the liver, pertinently remarked:—

“ And these people had not been in any way intemperate. They were moral and religious people who would have been shocked at the imputation.”

Some most interesting experiments were made by Dr. Parkes, published in the "Manual of Practical Hygiene" (London), to show the exact effects on the nerves by the taking of very small amounts of alcohol. The first experiments were directed to the sense of feeling, which tests, made by the use of certain instruments, demonstrated clearly that the sensory nerves were dulled and their perception of minute differences in size were rendered less keen and delicate. The power of fine discrimination was decidedly diminished by the taking of exceedingly small doses. The average results indicated the sensibility of the nerves to be diminished about one-third. In testing vision, all those who read letters at certain distances had to approach nearer to see them after taking but half a dram of alcohol (representing a tablespoonful of spirits, a small wineglassful of claret or champagne, and not quite a quarter of a pint of ale). Quantities so small are not generally supposed to do harm.

"Indeed," says Dr. Parkes, "the fact is established that from the moment when sufficient alcohol has been taken to affect the nervous system at all, to the total extinction of nervous energy by a fatal quantity, there is progressive paralysis of every form of nerve function, capable of accurate determination, which has hitherto been experimented on.

"It is to be carefully observed that, notwithstanding this real deterioration of various powers, *the individual is not conscious of any alteration*, and nothing but an unmistakable test can convince him that he is not as accurate or capable as he was before ; and *one thing becomes very clear :*

namely, *that the highest possible perfection of the nervous system is only possible with strict total abstinence.*"¹

The Rev. Dr. Howard said of the French that they drink to just that point at which the moral sense and judgment are laid asleep while other faculties remain awake. We have, indeed, in France, an illustration of a country that drinks in so-called "moderation." One rarely sees a staggering *drunken* man, in France, and yet for so-called *respectable* poison habits, for continuous screwing up of nerves and heating of blood, poor crippled France leads the world.

A most interesting and valuable article on "Moderate Drinking" was published in the *London Lancet*, written by George Harley, M.D., F.R.S. Dr. Harley is

¹ From an article in *Harper's Magazine* without signature, is the following: "Sir Henry Thompson testifies that a large proportion of disease is due to the use of fermented liquors taken in so-called moderate quantities. . . . The conventional idea of moderation is quite elastic; the term is stretched to cover habits that are steadily despoiling the life of its rarest fruits. The drinking habit is often defended by reputable men to whom the very thought of a debauch is shocking. It is true you are not drunkards and may never be, but if you could know what is too evident to those who love you best, — how your character is slowly losing the fineness of its texture and the firmness of its outline, how your art deteriorates, . . . how the atmosphere of your life seems to grow murky and the sky lowers gloomily above you, — you would not think your daily indulgence harmless in its measure. It is in just such lives as these that drink exhibits some of its most mournful tragedies.

"Many a mother observes with a heart that grows heavier day by day, the signs of moral decay in the character of her son. . . . The evidence that his mind is becoming duller and fouler, his sensibilities less acute, his sense of honor less commanding. She discovers that his loyalty to truth is somewhat impaired, that he deceives her frequently and without compunction. . . . The man loses little by little the mastery over himself; the regal faculties are in chains."

an English physician, making a specialty of liver and kidney diseases. He says:—

“The deleterious influences of moderate drinking on the bodily functions are so insidious that in the earlier stages they either totally escape detection or, what is more common, lead them to be attributed to some entirely different cause. . . . The men who have most experience of the severer form of functional disease directly traceable to the effects of moderate drinking, are, in general, those who, like myself, make liver and kidney disease a special study; the liver, kidneys, heart, and brain being those organs most affected by alcohol when indulged in within the limits of what is called moderation, etc.”

To sum up, moderate drinking or smoking is intended to be only that amount which does not add extra beats to the heart, but leaves a full pulse, a cool skin, an uncoated tongue, a naturally good appetite, a clear head, a steady hand, undisturbed and refreshing sleep, and the normal reserve power of muscular strength; and this amount is nothing more than no tobacco, no alcohol, and no poisons of any kind.

THREE POISONS COMPARED — TOBACCO, ALCOHOL, AND OPIUM

WHICH of these despotic rulers, these all-powerful potentates, these conquerors of the earth — tobacco, alcohol, and opium — is most pernicious?

In many respects they are alike. They are alike in

having been first used as medicines only. The feeling of exaltation produced by them and so much enjoyed, springs from the same source — the activity of the bodily functions to rid the organism of poison. The soothing effects of each also result from the same cause, — partial paralysis due to poisons too strong to bear. The after effects are also practically the same, — general devitalization and special disease according to individual tendencies.

When studying the records of the three poisons and hoping to find virtues for what so charms the world, the clouds about them become darker and heavier, and it is difficult to believe that the drug last investigated is not the chief arch enemy of mankind, so fascinating, so despotic, so deadly, so universally used is each.

To compare these poisons, they should be “brought home” to the mother, the wife, the sister, the brother, the father. When one’s own son or husband or brother falls into maudlin and silly ways, into a decline of energy, into fits of temper, wild or foolish, into brutishness, possibly wickedness, into loss of social influence or business advantage, into conduct always uncertain, the mother, the wife, or the sister will declare that of all the iniquities concocted and brewed by the evil one for infamous purpose, this product of putrefaction — alcohol — is far the worst.

Or if the father, the wife, the mother in pitiless slavery sinks under the influence of a dreaming and ecstatic narcotism, which without an ever-increasing dose of the drug leads to suffering more maddening than the tortures of the inquisition, that husband,

that son will declare with burning tears that opium is the worst of evils.

Again, when an insidious enemy has quietly crept into the home circle and unexpectedly and unsuspectingly robbed the boy's blood of its building power, his heart of its mastership, his digestion of its superb and wonderful alchemy; when his nerves have become unstrung and his will-power dethroned; when the nice adjustments of the inimitable body-machine have become unbalanced; when, in fact, all the vital functions have become undermined and the chains of the destroying habit clasp like bands of steel, the mother will declare that the subtlest of the drugs, tobacco, is best calculated to delude and destroy the majority of mankind.

Undoubtedly tobacco should take the lead as the greatest of human destroyers, for its influence is the most deceptive. It is less brutal, less violent, less noisy, less stupefying, less maudlin, less besotted, and less offensive than alcohol. It does not madden nor murder. Public ills occasioned by tobacco are not so conspicuous as those of alcohol. Tobacco, unlike alcohol, does not so directly contribute to the volume of crime, pauperism, and political corruption. Compared with opium, tobacco is less annihilating and less torturing. It does not stretch its victims on a rack. As embryo spectres of another world, the procession of worshippers at the shrine of tobacco are less funereal. The train of victims does not drag along with such hollow eyes, such livid skins, such shackling gait.

Tobacco gives no such alarms. Its tactics are insidious and involved in silence. Its effect is soothing.

It apparently helps to think, to act, and to live. It is social and genial. It is convenient; it can be carried in a corner of the pocket, ever ready. It will not break nor spill nor protrude like a bottle of whiskey. A man knows when is he drunk with alcohol or opium, but he does not know his nicotine until the accumulated effects have made themselves permanent; until he finds that his once rich blood-corpuscles, that mark the line of vigor in the thermometer of life, have become diluted, misshapen, and devitalized; until he finds that his throat glands have lost their sense of taste; until he finds that his heart, exhausted by abnormal work, is fitful and irregular; until he finds his digestive functions, weary of imposition, morose, and inactive; until he finds the divine repose of refreshing sleep exchanged for the uninvigorating sleep of disease; until he finds that the continued excitements and becalmings of his nervous system have rendered it chronically fatigued; until, in fact, he finds that tobacco, like opium, has soothed and caressed him while it has spent his energies and sapped and undermined the entire fabric of his being. Tobacco has also created a thirst for alcohol. It has transmitted to progeny the devitalization which demands new stimulant. It has appealed to all, — the rich, the poor, the old, and the young. It has counted its victims by hundreds, where alcohol has counted them by tens. It has become the chief source of the degeneracy of races. In its culture it has even cursed the ground it has fed upon, robbing it with insatiable hunger and irremediable blight. What drug of infernal concoction can match it?

THE RELATIONSHIP OF MICROBES TO THE
FAVORITE POISONS

"God is great in great things, and greatest in least."

Deus magnus in magnis, maximus in minimis.

BY the development and perfection of the microscope, a new power of eyesight has been given us within the last very few years, which has lifted the veil into a new world of life vitally connected with our own, and in which man now counts by millions and billions where he formerly counted by one. Microbe life had before baffled the ordinary eye, not only on account of its infinitesimal size, but on account of its transparency. A size of living and invisible organism was needed to traverse the human body with the ease and rapidity with which a ray of light penetrates transparent glass, and nature provided it.

Scientists tell us that there is no new element or substance on earth; that what is apparently new is but a transformation of the old. A leaf withers, falls, and decays only to be transformed into new plant life. Animal life also blights, falls, and lives anew. There is a continual building process in sound living organisms, and a continual disintegrating, dissolving, decomposing process on the part of either degenerating or dead organisms, which require constant chemical transformations. Nature is never stationary, and the human body, along with other forms

of life, continually grows or decays, advances or recedes. To carry out this work of building or destroying, the laboratory of nature has in its service various sets of germs, — an army of builders and defenders of life and a host of death-dealing scavengers.

For a time these infinitesimal organisms were considered of little consequence. They have now assumed an importance commensurate with an all-powerful influence, and the most imposing of operations. Indeed, without them we now know that the existence on earth of man himself would be impossible. Without them all animal and vegetable growth would come to a standstill for want of the proper manipulation of essential elements needed to form new matter; and without them as scavengers the world would soon be over-burdened with dead matter. Thus, through a microscope, we approach an all-important field in the science of life.

The processes of life, now fast unfolding to view, have been lost in the infinitely great and the infinitely small. The more we are enabled to pick up links in the endless chain of nature's relations, the more we are impressed by the law and order everywhere revealed, and we are forced to the conclusion that all limitations to full development, all failure to enjoy the richest possibilities of human life, are only created by our violations of natural law and order.

Of the living things of earth, proud man has heretofore considered himself the lord and master. The lord and master is now found to be the microbe. In the microbe man finds his conqueror. Whether the microbe is man's friend or enemy depends alone

on man's obedience to hygienic laws. The world's greatest potentates are dependents and slaves of the microbe, and as they or their people abjectly obey his serene and most infinitesimal majesty, so shall they grow or decay. Poor fool! who has not learned the glories, the possibilities, the limitations of mankind.

And yet the warfare is not really between a giant and a pygmy. The body is equipped with an incalculable number of microscopic elements, — microbes and cells, — and the battle of health and disease is carried on between opposing armies composed of an individual and collection of individuals of practically the same size.

Nature could not allow the dead to encumber the earth, *places aux vivants!* And, as before said, the dead are converted into chemical products for the nourishment of the living. Neither does nature respect the physically unworthy. Nature strives for the best, and sets a standard that can only be maintained by the survival of the fittest. When life is degraded to a low physical plane, nature sends her scavengers in the guise of disease. The ill are partially dead, and the germs of destruction attack devitalized man the same as if the process of death were already completed. Forsooth, these germs of death and cleansing agents of nature not only occupy themselves with lifeless clay and with life itself when merely weak, but they also force out of existence the weak man's child, as the before-mentioned gardener, who pulls out weeds and the seeds of weeds.

For the purpose of prompt work in either promoting or destroying life, the air seems to be laden

with microbes of endless species and countless numbers, always ready and qualified for business; and when at work, under what to them are favorable conditions, they develop an almost incredible power of multiplication.

This would be a most lugubrious and distressing state of affairs did not nature take a reassuring interest in upholding, encouraging, and protecting him who yields obedience to hygienic law and order. A comforting reflection lies in the fact that those terrible armies of destructive germs (called pathogenic germs) can find no lodgment in the organism of the physically sound. Disease germs are powerless when soil in the human body is unfavorable to their growth.

We shall speak further on of our microbes of defence, called leucocytes and phagocytes, which abound in the blood, and which fight the germs of destruction in a special way of their own. If they are in a strong and healthy condition they conquer the disease-producing organisms, as man himself swallows and digests articles of food. However, pathogenic germs do not attack us at all if we are in the full vigor of health, or at least they are powerless for evil when taken into the system. They alone cannot produce disease. As M. Bouchard says, "One does not become ill until one is already not in good health."

The human body is an elaborate and delicate piece of mechanism, which in health contains a multitude of organs and functions harmoniously co-operating. This mechanism in normal working order represents health; in a disturbed condition it repre-

sents disease; any vital function disqualified produces death, and whatever interferes with the laws of nature produces disturbed physical conditions.

In violating hygienic rules in any way, knowingly or unknowingly, we induce a condition which the Creator condemns as physically unworthy, and the germs of destruction promptly take possession. In studying the deterioration of races, certain appalling statistics (which but partially tell the truth) lead us to believe that what has most befouled human soil for the propagation of the germs of extermination are our favorite poisons habitually taken.

Scientific researches concerning the germ theory of health and disease are so brilliantly successful, so important in the alleviation of suffering, in the prevention of disease, in the prolongation of life, in the advancement of human happiness, that of all scientific triumphs of the past, the germ discoveries stand at the very head. Samuel Hart says (*Popular Science Monthly*): —

“The literally vital relation of microbic action to human life can be observed in the following general statement: —

“The pathogenic microbes cause four-fifths of all diseases of the human family; they destroy more lives than war, fire, murders, shipwrecks, and all other casualties, and they actually abbreviate the term of life by three-fourths, and constantly depress the health average of the world's population far below its natural standard. They are an insidious but powerful and relentless enemy to human kind. . . .

“It has been, of course, always a matter of common observation that some mysterious invisible influence was con-

stantly at war with human life, but whose nature and intent were believed to be beyond human ken. Scarcely a ray of light seems to have been shed upon this occult cause of human destruction until the present century, indeed until the last twenty years. It is true that microscopy had been gradually unveiling to our astonished vision a new world, teeming with life of incalculable activity and scientific importance. But only recently have improved instruments and methods transformed a former invisible field into a true vivarium of beings, each having its distinctive size, color, form, requirement of food and place, with its cycle of birth, life, and death peculiar to its species."

The true story of the microbes is more wonderful and thrilling than the fertile brain of man ever dared to imagine. We have had the goblin and the genii of fable; the many-headed dragon whose nostrils poured forth flame and smoke; the giant whose strength in the fight doubled as he touched the earth; the ogre of the seven league boots; we have heard of the evil eye and the sinister witch, but now the fanciful is to be succeeded by a world of real organic beings, which in power for good and evil surpass the boldest conceptions of the imagination. The awe-inspiring qualities accorded to fabled monsters fade into insignificance as compared with the prowess of the microscopic germ. What can equal it in its power of rapid reproduction, in its defiance of heat or cold or space, in its endurance and longevity? The evil eye grows dim matched with the evil germ. The many-headed dragon spits his fire to little purpose, while the microbe of disease year by year lays prematurely low his world of victims.

The account of the discovery of microbic life, beginning with the experiences of Pasteur, forms a most interesting chapter in the advance of science. The difficulties confronting investigators in this new world were almost unsurmountable. The life, manners, and customs of these microscopic organisms are also extremely interesting. Some of them are animal, and some vegetable. They have their species and their genera in the endless variety seen in the larger animal and plant life. They live singly and in colonies. They reproduce in kind with the same exactitude of the human species. Some of them gambol and sport like other happy beings.

These microbes are captured and cultivated on beds of gelatine, in meat broths, etc., and with skilful management they soon produce flourishing colonies of the highest degree of development. They can also be starved to such helpless weakness and attenuation as to seem to lose their specific characteristics.

Experiments lately made by Dr. White in the laboratories of the N. Y. Health Department, show that no power of cold that man can produce has power to kill certain kinds of germs. He subjected the bacillus of typhoid fever, diphtheria, etc., by means of liquid air to a temperature 312 degrees below zero. After several hours' exposure to this extreme cold, which turns alcohol into a solid substance and steel into powder, the microbes after a few hours in an incubator revived to a condition as active and deadly as ever. These experiments are especially valuable, in showing that the freezing of water does not neces-

sarily purify it, and that the danger of contagious disease is as great in winter as in summer.

Senator Dolliver facetiously remarked at a recent dinner table: "If you boil microbes they have a picnic in the steam, and if you freeze them they skate on the ice."

Microbes may also be dried, in which state they live indefinitely and forever, awaiting a suitable medium on which to fall, when they resume full activity. Each disease has its special germ, and every species of microbe has its special function.¹

There are the rod-shaped families of bacteria which are called "bacilli" and whose special accomplishments include consumption, pneumonia, diphtheria, etc. They are here represented (greatly magnified) taken from "Pathogenic Bacteria" (MacFarland).

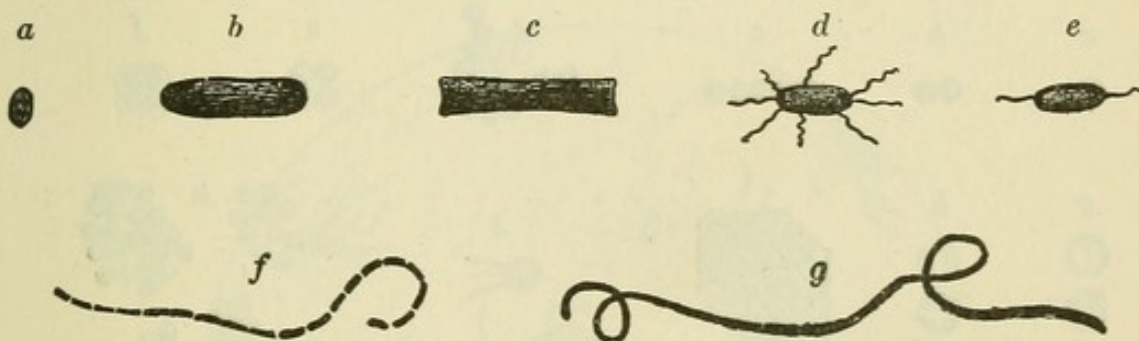
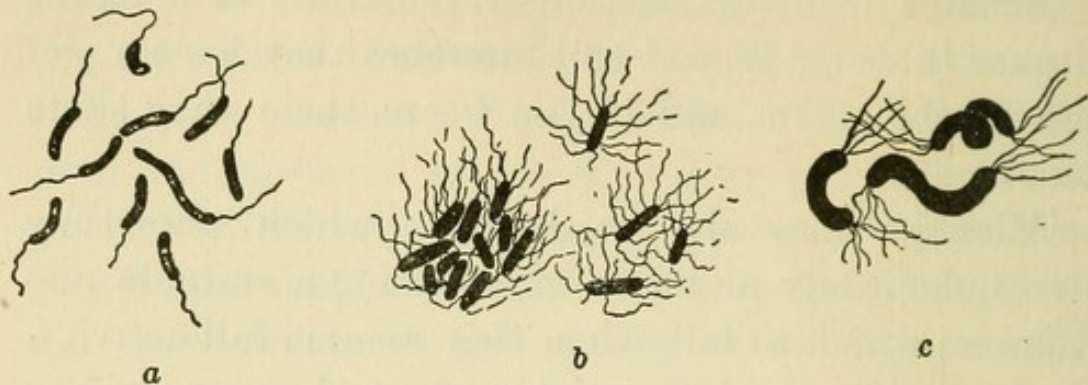


Diagram illustrating the morphology of the bacilli: *a*, *b*, *c*, various forms of bacilli; *d*, *e*, bacilli with flagella; *f*, chain of bacilli, individuals distinct; *g*, chain of bacilli, individuals not separated.

For means of more rapid locomotion, these bacilli are sometimes supplied with hair-like appendages

¹ M. Capitan, in the *Révue Scientifique*, says: "The division of labor is carried among microbes to its extreme limits, so much so that in any chemical reaction each microbe takes its part in producing the process at different stages. Each variety has its duties in the

called "flagella," as shown in the following cut taken from "Principles of Bacteriology," by Abbott.



a. Spiral forms with a flagellum at only one end. *b.* Bacillus of typhoid fever with flagella given off from all sides. *c.* Large spirals from stagnant water with wisps of flagella at their ends (*spirillum undula*).

Then there are the cocci, or micrococci (resembling berries), which include all spherical forms. The germs of putrefaction belong to this family.

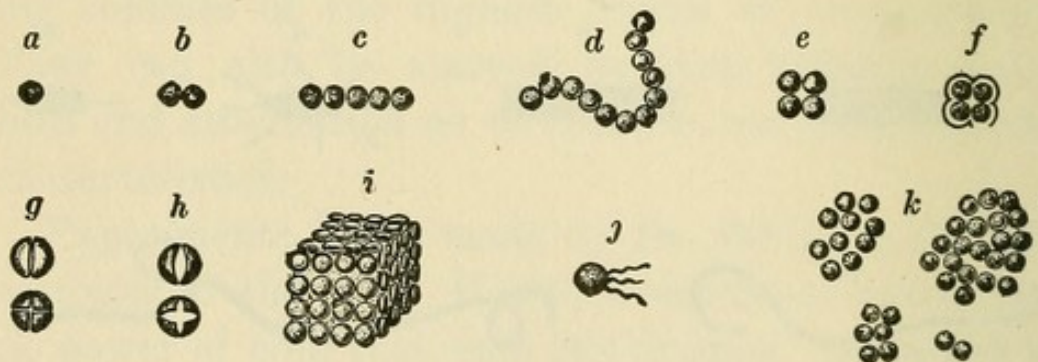


Diagram illustrating the morphology of the cocci: *a*, coccus or micrococcus; *b*, diplococcus; *c*, *d*, streptococci; *e*, *f*, tetragenococci or merismopedia; *g*, *h*, modes of division of cocci; *i*, sarcina; *j*, coccus with flagella; *k*, staphylococci. "Pathogenic Bacteria" (MacFarland).

work, determines a partial dissociation of the material which another species completes, and so on. . . . Their rapidity of reproduction under favorable conditions is most extraordinary, and their numbers in variety and species has never been computed. Investigators have confined their labors principally to the study of the specific germs of the most prevalent diseases."

A third principal division of bacteria are the "spirilla," which resemble snakes and corkscrews. It is to that class of bacteria that the cholera germs belong.

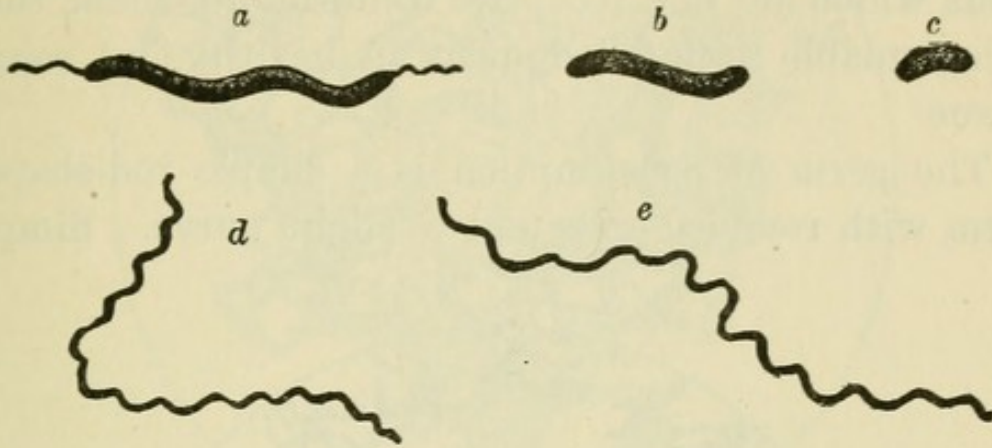
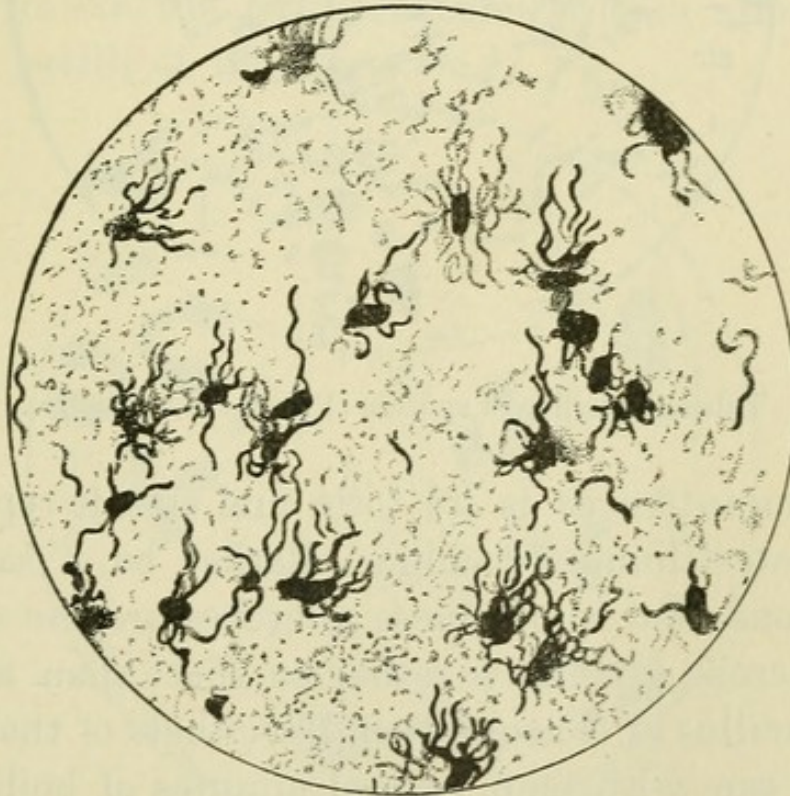


Diagram illustrating the morphology of the spirilla: *a, b, c*, spirilla; *d, e*, spirochaeta. "Pathogenic Bacteria" (MacFarland).

Several cuts are given (generally taken from "Pathogenic Bacteria," MacFarland) to show a few

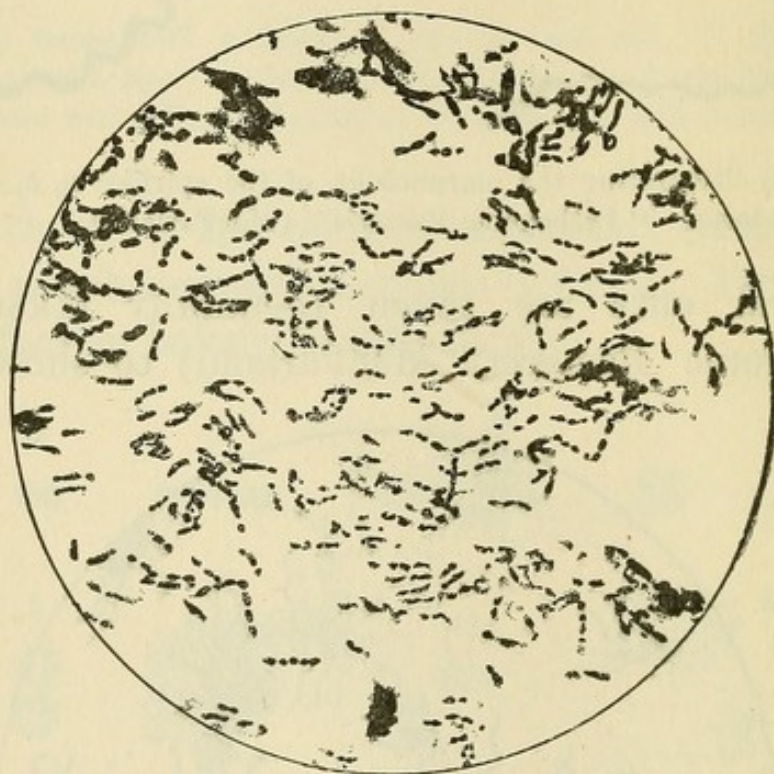


Bacillus typhi, from an agar-agar culture six hours old, showing the flagella stained by Löffler's method; $\times 1000$ (Fränkel and Pfeiffer).

microbes connected with certain diseases. That of typhoid fever resembles a spider.

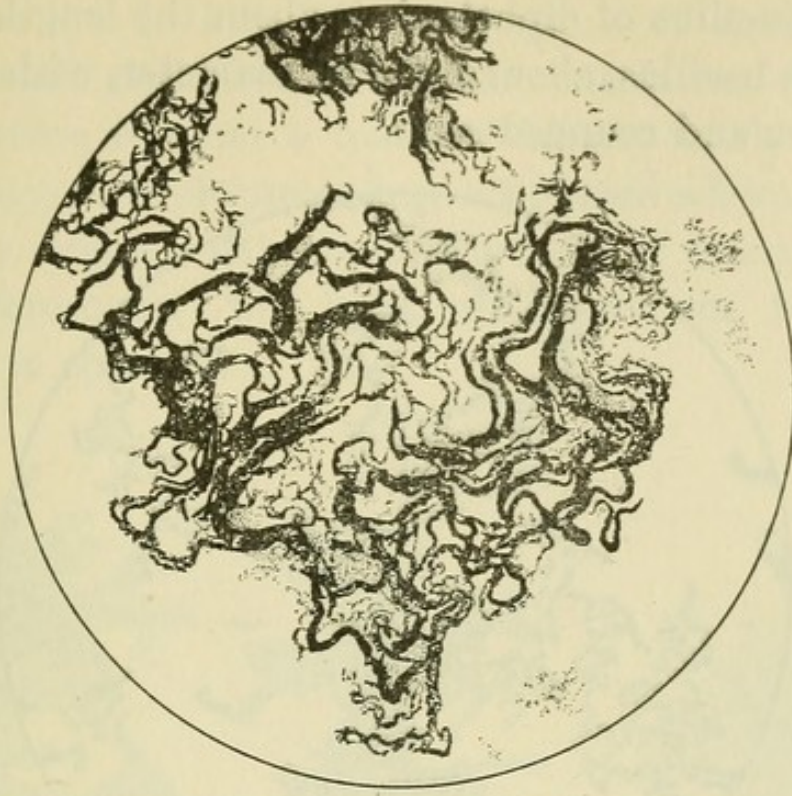
Like all germs of disease they attack only constitutions which are in a receptive condition for them, they being unable to find lodgment in healthy and sound tissue.

The germ of consumption is a simple rod-shaped form with rounded ends and a slight curve. Simple



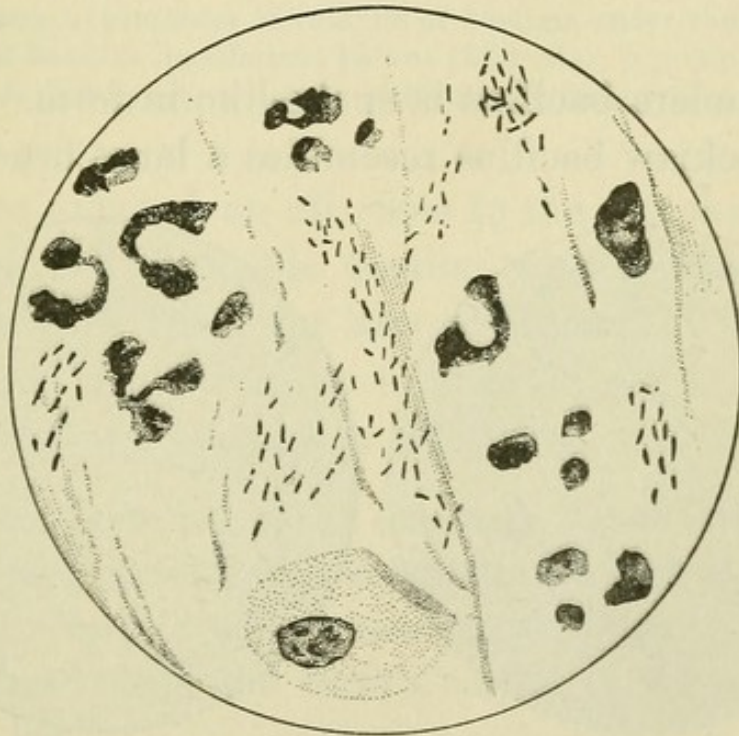
Tubercle bacillus in sputum (Fränkel and Pfeiffer).

and diminutive as is its form and size, it represents the greatest human scourge. Rather be it said that conditions that invite these microbes are the scourge. The microbe represents rather an effect than a cause. This bacillus of consumption, like others of that hardy family, can withstand several minutes of boiling and any known degree of cold.



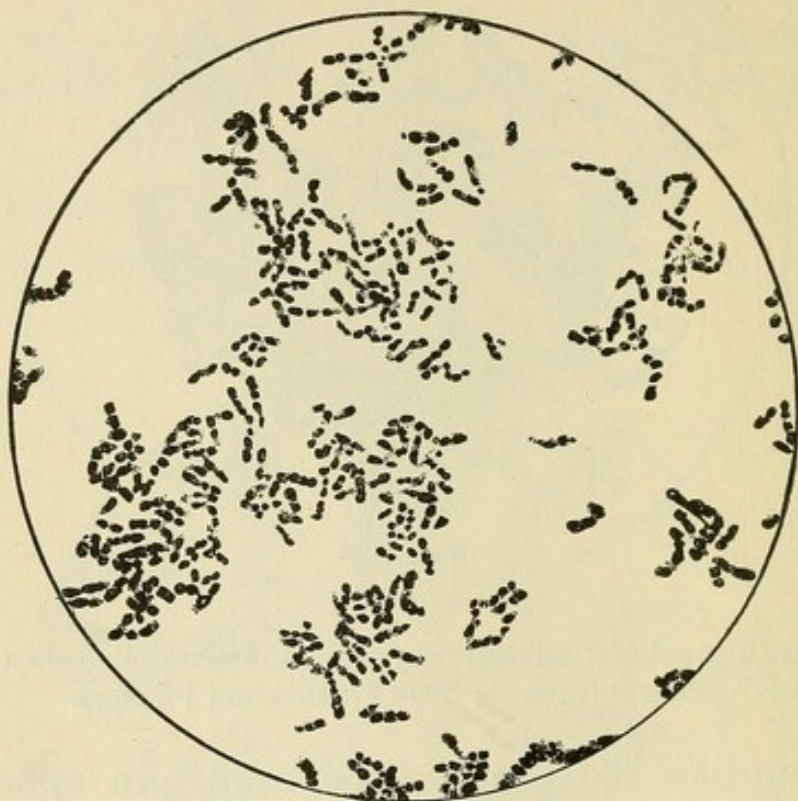
Bacillus tuberculosis: adhesive cover-glass preparation from a fourteen-day-old blood-serum culture; $\times 100$ (Fränkel and Pfeiffer).

Not unlike the bacilli tuberculosis in appearance are the bacilli of influenza.



Bacillus of influenza.

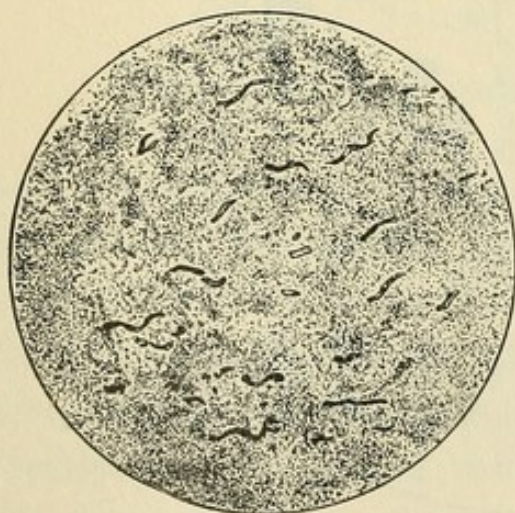
The bacillus of diphtheria is about the length of the tubercle bacillus, about twice its diameter, with a similar curve and rounded ends.



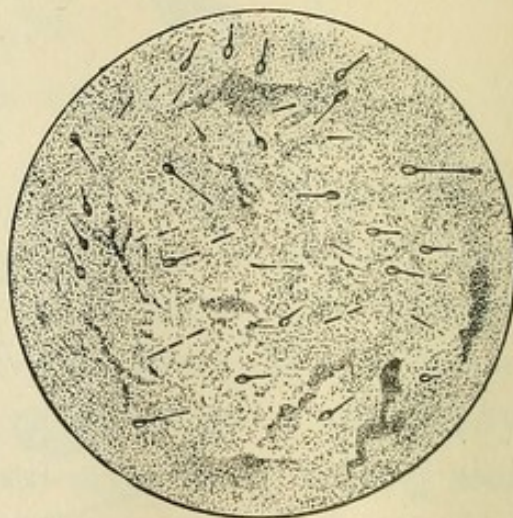
Bacillus diphtheriæ, from a culture upon blood-serum; $\times 1000$ (Fränkel and Pfeiffer).

The cholera bacillus is snake-like in form.

The lockjaw bacillus resembles a large headed pin.

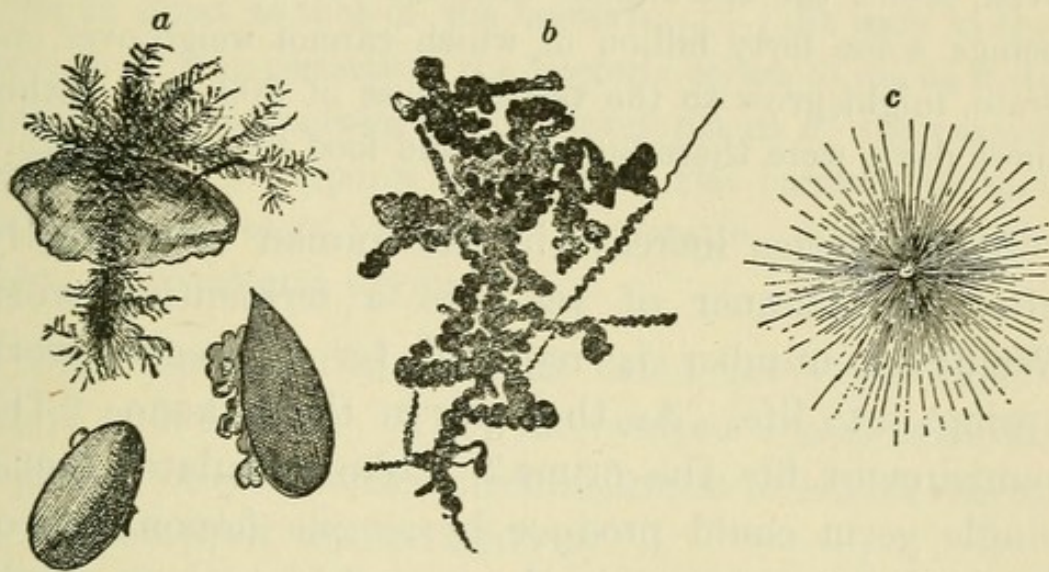


Cholera bacillus.



Lockjaw bacillus.

If we are to have the misfortune of mouldering away while still alive, it is little consolation to know that nature attaches a touch of beauty to the operation, suggestive of forests and woodlands where Hygeia proudly reigns. All mould is a thing of beauty under the microscope. The next cut shows our foes, the germs, in colonies.



The various appearances of colonies of bacteria under the microscope: *a*, colony of *Bacillus liquefaciens parvus* (Lüderitz); *b*, colony of *Bacillus polypiformis* (Liborius); *c*, colony of *Bacillus radiatus* (Lüderitz).

We are exposed on all sides to the attacks of these merciless and invisible assailants. They are everywhere, always ready for any emergency. They need but certain conditions or a suitable soil to multiply by millions and billions in a few hours.

"Indeed," says one of the scientists, "they increase with such amazing rapidity that unless limited by want of nutriment and favorable environment, a single species would in a few years occupy the earth's surface to the exclusion of all other life."

They generally increase by division. For instance, each microbe of a certain family grows and divides into two, grows again in a few minutes, again divides, and so on.

"At this rate," says Professor Gradle (Chicago Med. College), "a single germ can produce over fifteen millions of its own kind within twenty-four hours. More astonishing, even, seems the calculation that one of these microscopic beings, some forty billion of which cannot weigh over one grain, might grow to the terrific mass of 800 tons within three days, were there but room and food for this growth."

Again, germs increase in the human body exactly after the manner of yeast in a fermenting wort. Whatever number is required for a specific work springs into life. As they say in the Mikado: "The punishment fits the crime." Cohn calculated that a single germ could produce by simple fission two of its kind in an hour; in the second hour these would be multiplied to four; and in three days they would, if their surroundings were favorable, form a mass which can scarcely be reckoned in numbers, or if reckoned could scarcely be imagined — four thousand seven hundred and seventy-two billions. If we reduce this number to weight, we find that the mass arising from this single germ would in three days weigh no less than seventy-five hundred tons.

"Fortunately for us," says Woodhead, "they can seldom get food enough to carry on this appalling rate of development, and a great number die, both for want of food and because of the presence of other conditions unfavorable to their existence."

Dr. MacFarland says: —

“When the conditions for rapid multiplication are no longer good, the organism (germ) assumes a protective attitude, and develops in the interior small oval eggs or seeds called spores.

“When the formation of such a spore is about to commence, a small bright point appears in the protoplasm (germ) and increases in size until its diameter is nearly or quite as great as that of the bacteria. . . . As soon as the spore arrives at perfection, the bacteria seems to die as if its vitality were exhausted in the development of the permanent form. . . . Spores differ from the bacteria in that their capsules seem to prevent evaporation and to enable them to withstand drying.”

These spores or seeds thus dried may live indefinitely and forever. They are wafted about as dust, awaiting only favoring circumstances to enable them to resume their wonted activity.

The process of segregating and examining bacteria, hedged in as it is with many difficulties, is also extremely interesting. Of course, the story is told in all works on bacteriology.

There have been various theories advanced in explanation of just how a human being successfully resists the microbes of disease, and a great amount of research has been devoted to this phase of bacteriology. Of course it matters little, as far as the subject of this book is concerned, just how the battles of the germs are fought. It is chiefly important to know that some influence in sound health actually protects us from microbial injury, and that protection is entirely commensurate with and proportionate to

the amount of reserve strength and vitality which we possess.

Some scientists have advanced the theory that our defence against germ foes consists of antiseptic material of a purely inorganic character which is lodged in the serum of the blood, and which in sound health is sufficient to destroy the hordes of scavengers which intrude where they have no legitimate business. Other scientists speak of certain micro-organisms which they call alexines, and which, according to their theories, have the power of secreting certain chemical substances of a germicidal character.

The latest researches give us bacterial news of an extremely interesting character, in that our germicidal means of defence lies in an organized body of soldiers possessed of seeming intelligence and almost superhuman activity, and whose local habitation in times of peace is situated in the serum of the blood. This body of organisms numbering millions and billions are called PHAGOCYTES (devouring cells), also leucocytes (white cells).

It is, indeed, more cheerful to consider these germ friends, for the honor of whose acquaintance we are especially indebted to Surgeon General Sternberg, who made the first publication concerning them, and to Metchenkoff, who first elaborated and developed the subject extensively.

We have been accustomed to consider the personality alone of the individual man who "subdues a disease," or "who makes a splendid uphill fight," etc., whereas the patient himself is but the battlefield, and

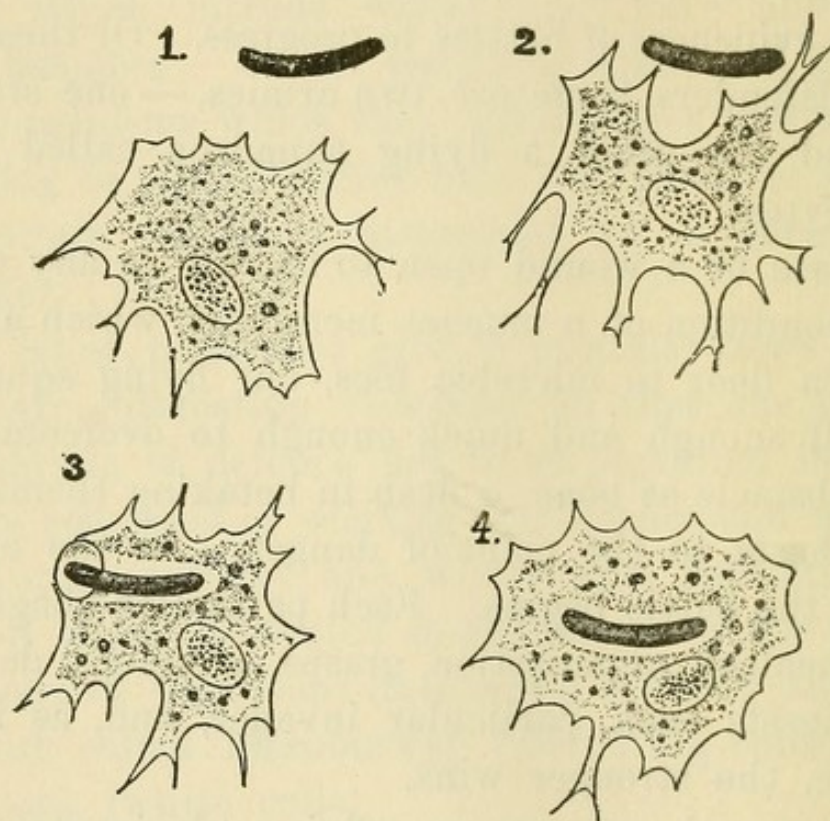
the real contest is between attacking microbes, armed with deadly poisons, and our friends, the phagocytes, which strive to overcome them and thus save our lives. It is a marvellous fact that these battles of the germs are as thoughtfully, as capably, and as strategically conducted as are the wars conducted by man against man. All inflammations are but the visible evidences of battles in progress. Of these, our germ defenders, there are two armies, — one stationary and the other a flying squadron called "free phagocytes."

In case of a wound open to the air, or any weakened condition of a mucous membrane which affords an open door to microbic foes, our flying squadron is small enough and quick enough to overcome any such obstacle as bone or flesh in betaking themselves in all haste to the point of danger. As the enemy enters, the battle begins. Each particular phagocyte, if of healthy organization, grasps, envelops, devours and digests each particular invader, and, as in all warfare, the stronger wins.

In personal appearance, "flying phagocytes" are colorless cellules, with the power of contracting and changing form as they slip into the smallest inter-cellular spaces. The following cut represents them.

Although the phagocytes reside principally in the blood (white corpuscles), they are also found elsewhere, notably in the glands, etc. They are stationed in immense numbers at the most important fortresses — the entrances to the human citadel, the passages of the throat and nose — where they intercept, as far as possible, all enemies organic or inorganic. For

instance, in case of diphtheria, consumption, or other malignant disease in the house, the germs of these diseases are often found in the mouths of individuals who otherwise present no evidence of infection—the enemy being able to get no farther than the precincts of the outlying guard of phagocytes.



1, 2. The phagocyte or leucocyte approaches a bacterium and extends what is called its pseudopods toward it to envelop it. 3. The bacterium, surrounded by the pseudopods, penetrates into the protoplasm of the leucocyte. 4. The bacterium is digested by the phagocyte.

Many experiments are quoted to show the frequency of pathogenic germs at the outlying posts of a sound human body, but which have failed to gain admission. In times of exposure to disease, or in case of wounds, one may take great comfort of mind if sure that one's germs of defence are not worn out with

frequent battles with favorite poisons, and that they may come fresh and strong to the rescue.¹

¹ Dr. Laumonier thus speaks of the leucocytes in an article on "The Blood," in *La Monde Moderne*: "The leucocytes are very sensitive to the action, even at a distance, of certain chemical substances; . . . among the most energetic are the 'toxins' (poisons) or substances secreted within our organism by pathogenic microbes (microbes of disease). When such microbes exist in any part, and their presence is revealed by the presence of 'toxins' carried by the blood, the leucocytes move toward the contaminated point and proceed to devour them by enveloping the bacteria that they meet in their protoplasm. . . . But all the leucocytes do not succeed in thus devouring their prey; a certain number are poisoned by the microbial toxins, and their accumulated bodies form pus. When the leucocytes finally succeed in destroying the pathogenic bacteria, the contagious or virulent malady is stayed, the invalid is cured; when, on the contrary, the leucocytes are vanquished by their adversaries, the malady spreads and the patient is in peril of death. This process of phagocytosis, which was discovered only a short time ago, is one of the most curious processes of defence in our organism."

The resources of nature brought to bear to overcome the invasion of germs of disease, are described by Dr. Sternberg as follows:—

"If we add a small quantity of cultured fluid containing the bacteria of putrefaction to the blood of an animal, withdrawn from the circulation and maintained in a culture-oven at blood heat, we will find that these bacteria multiply abundantly, and evidence of putrefactive decomposition will soon be perceived. But if we inject a like quantity of the same fluid into the circulation of a living animal, not only does no increase and no putrefactive change occur, but the bacteria introduced quickly disappear, and at the end of an hour or two the most careful microscopical examination will not reveal the presence of a single bacterium. . . . The writer has elsewhere (1881) suggested that the disappearance of the bacteria from the circulation in the experiment referred to, may be effected by the white corpuscles (leucocytes) which, it is well known, pick up, after the manner of *amæbæ*, any particles, organic or inorganic, which come in their way. And it requires no great stretch of credulity to believe that they may, like the *amæbæ*, digest and assimilate the captured bacterium, thus putting an end to the possibility of its doing harm.

"In the case of a captured pathogenic organism (germ of disease), we may imagine that when captured in this way it may share a like

We thus see that in every disease there is a constant contest between two opposing forces. On the one side we must reckon with the number and virulence of the germs which gain entrance to the body, and on the other side with the degree of resistance possessed by the body to throw off or destroy them.

fate, if the captor is not paralyzed by some potent poison evolved by it, or overwhelmed by its superior vigor and rapid multiplication. In the latter event, the active career of our conservative white corpuscle would be quickly terminated, and its protoplasm would serve as food for the enemy. It is evident that in a contest of this kind the balance of power would depend upon the vital characteristics of the invading parasite and of the invaded leucocyte."

Mr. MacFarland, in "Text Book Upon the Pathogenic Bacteria," thus speaks of phagocytes:—

"Observation of these phenomena (the movements of phagocytic cells in the human body) is not difficult. If a small capillary tube be filled with sweet oil and placed beneath the skin, only a short time need pass before it will be found full of leucocytes. . . . If the blood of a patient suffering from a relapsing fever be studied beneath the microscope, it will be found to contain numerous active spirilla, all free in the liquid portion of the blood. As soon as the apyretic stage comes on (after the battle) not a single free spirillum can be found. Every one is seen to be enclosed in the leucocytes.

"At the edge of an erysipelatous patch, a most active warfare is waged between the streptococci (germs of erysipelas) and the cells (leucocytes). Near the centre of the patch there are many free streptococci and a few cells. At the margin there are free streptococci, and also a great many streptococci enclosed in cells which are for the most part dead. In the newly invaded tissue we find hosts of active living cells engaged in eating up the enemies as fast as they can. The phagocytologists tell us that at the centre the bacteria are fortified, actively growing, and virulent; in the next zone the leucocytes, which have feasted upon the bacteria, are poisoned by them; outside the cells, which are more powerful and which are constantly being reinforced, are waging successful warfare against the streptococci. In this manner the battle continues, the cells now being obliged to yield to the bacteria and the patch spreading, while the cells subsequently reinforce and destroy the bacteria so that the disease comes to a termination."

In other words, we are more or less susceptible to disease as our phagocytes are more or less vigorous, and as throughout all nature, the battle ends with the survival of the fittest. At what a fearful cost do we weaken our phagocytes!

Like other organisms our phagocytes or leucocytes are developed and strengthened by hygienic processes. For instance, they thrive in the sunlight, and so we should court the sun. They strengthen and thrive in pure air laden with its proper measure of oxygen, and so we should insist upon pure air properly oxygenated and uncontaminated with sewer gas, tobacco smoke, opium smoke, or any other poisonous substance. The proper development of the phagocytes demands, in fact, all hygienic conditions.

Bacteriologists have experimented with such accuracy, that in case of animals of normal condition they can approximately tell the number of germ foes it takes to overcome the defenders. Cheyne in 1886 reported the results of many such experiments. For instance, he found that in a very susceptible animal the introduction of a single bacillus or microbe (they call the germs by too many different names) of a very virulent type would produce a fatal infection. In introducing the microbe of fowl cholera he found that the fatal dose was three hundred thousand or more; that from ten thousand to three hundred thousand caused a local abscess, showing that a portion of the defending germs were overcome and killed, and that an injection of less than ten thousand produced no appreciable effect. In case of germs of putrefaction (the staphylococci) it required two hun-

dred and twenty-five millions of them introduced into the muscle of a rabbit to cause death; nine millions to one hundred and twenty-five millions producing only a local abscess.

The science of health, therefore, is to study and follow principles and habits of living which in a general way strengthen and exalt the vitality of the system, and which at the same time especially prevent chronic affections of the mucous membranes of the air passages and stomach — those gateways into the fortresses of the body.

We should thoroughly understand how foul air, improper food, impaired nutrition, and, most of all causes, a poison habit, will soon reduce the resisting power of a normally healthy organization, and create a soil favorable to the development of disease germs which the victim may chance to encounter, or to which some inherited weakness has made him more or less susceptible.

The way to escape disease is to train the forces which nature has provided for our defence. The fighting qualities of the army of phagocytes with which we are all supplied, depend wholly upon their own vigor, — that vigor depending, of course, upon our general health. To keep the army of defence up to its highest standard of fighting strength is the only rational method of resisting disease. With crippled and weakened forces of defence there is nothing to prevent a sudden invasion of disease-producing bacteria, which nature, according to her own inscrutable methods, sends forth to destroy the physically unworthy. With the "germs of defence" narcotized

and enfeebled, the guard asleep, the enemy takes possession.

If the taking of poison added to life a new comfort or a new source of strength; the human family might rightfully grasp the habit most eagerly. Even if physical transgressions were but temporary in effect, one might still easily be led to petty transgressions in the hope of forgiveness by that relentless avenger — outrage nature. But when one comes to realize that petty physical licenses but till the soil for the orgies of the germs of extermination, and that everything counts for good or ill, it has all a new aspect. Disagreeable as is the idea of being consumed by microbes after the mortal struggle is over, it is still more disagreeable to think of being consumed by them while still alive; and worse still, before the allotted time of a too short natural existence at best. It is a state of affairs not to be tolerated if prevention is a possibility. If polluted water is avoidable, let us seek pure water; if vitiated and pestiferous air suffocates our respected vital functions, let us in all meekness seek pure life-giving air! If insidious poison slides us gently and fascinatingly into the pit of the physically unfit, scorned of nature, and man himself, farewell former tempter, for we seek the best of earth!

The man is glorious who can defy the germs of disease. The world lives for him. Who shall measure his influence or his power? Says Emerson: —

“Health is good, — power, life that resists disease, poison, and all enemies. . . . A good tree that agrees with the soil will grow in spite of blight or bug or pruning or

neglect, by night and by day, in all weathers and all treatments. . . . All successful men have agreed to one thing ; they were causationists. They believed that things went not by luck, but by law ; that there was not a weak or a cracked link in the chain that joins the first and last of things. . . .

“For performance of great mark it needs extraordinary health. . . . There is no chance in results. With adults as with children, one class enter cordially into the game and whirl with the whirling world ; the others have cold hands and remain bystanders, or are only dragged by the humor and vivacity of those who can carry a dead weight. The first wealth is health. Sickness is poor spirited and cannot serve ; it must husband its resources to live. But health or fulness answers its own needs and has to spare, runs over and inundates the neighborhood and creeks of other men’s necessities. . . .

“The advantage of a strong pulse is not to be supplied by any labor, art, or concert. It is like the climate, which easily rears a crop which no glass or irrigation or tillage or manures can elsewhere rival. It is like the opportunity of a city like New York or Constantinople, which needs no diplomacy to force capital or genius or labor to it. They come of themselves as the waters flow to it. So a broad, healthy, massive understanding seems to lie on the shore of unseen rivers, of unseen oceans, which are covered with barks, that night and day are drifted to this point ; that is poured into its lap which other men lie plotting for. . . . This affirmative force is in one and is not in another, as one horse has the spring in him and another in the whip. There is always room for a man of force and he makes room for many. . . .”

“The friction in nature is so enormous,” said Democritus, “that we cannot spare any power. It is not a ques-

tion to express our thought, to elect our way, but to overcome resistance of the medium and material in everything we do."

"I am made immortal," again says Emerson, "by my possession of incorruptible goods. . . . I admire great men of all classes who stand for facts and thoughts. . . . I like a master standing on legs of iron . . . loaded with advantages; . . . let in reason, this subtilizer and irresistible upward force into our thought; . . . the power so great that the potentate is nothing. "

And yet at what low estimate is human life valued? How is it cursed with social customs of our own making!

The new discoveries of germs have added little to the cure of disease. The germs of diphtheria and malarial fever have been partially baffled, also certain germs that affect cattle. New discoveries will doubtless be made which will enable us wholly or partially to conquer other germs of destruction; but nature's laws and nature's great principle of the "survival of the fittest" will never be changed. If one set of germs is annihilated, another set will take its place that will accomplish the main purpose. Penalties for violating nature will never be overcome. The discoveries of modern bacteriology have revolutionized the science of cure in making known the causes, processes, and effects of disease, and the limitations of man in its treatment. Where they have accomplished their greatest and most practical work is in the prevention of disease, in which the new century will be chiefly engaged. Heretofore man has only known a mysterious invisible influence at war with human life,

which beyond the rules of hygiene could only be treated theoretically or from chance observation. In giving precision to knowledge of the causes of disease, the bacteriologists have made possible the employment of intelligent and efficient means for its prevention. This is particularly true of the greatest scourge of the universe — consumption — the tragedy of “bad air” in which tobacco plays so leading a rôle.

Scientists over the entire world have vainly endeavored to find an antidote or any enemy which might destroy these germs which will live in both heat and cold beyond what human life can endure.¹

¹ In the *Forum* (1894), Dr. Biggs says of consumption: “From both a sanitary and economic standpoint all other communicable and preavailable diseases sink into insignificance when compared with this one. If as many deaths occurred daily for one month from Asiatic cholera in New York as regularly occur from pulmonary consumption, the city would be well-nigh depopulated from the panic resulting. It has been shown that one-seventh of the total mortality of the civilized world is due to tubercular consumption, and one-fourth of the deaths occurring during the working period of life is caused by it. Over 30,000 deaths were reported to the N. Y. City Health Department as having been caused by the tubercular diseases during the five years ending Jan. 1, 1893.”

One of the pathologists to the Vienna General Hospital (the largest hospital in the world) told Dr. Biggs that there were found in 85 per cent of the autopsies performed on persons dying in that institution, changes indicative of the existence of tuberculosis in some organ at some time of life, and in 45 per cent of the cases death was ascribed at the autopsy directly to this disease. The mortuary tables of the Mutual Life Insurance Co. of N. Y. for a period of thirty years show that more than a third of all deaths among its policy holders during early manhood are due to consumption.

Dr. Biggs speaks of the insidious nature of consumption, weeks and months elapsing after infection before the first symptom of tuberculosis is considered more than a cold, a bronchial affection, malaria, etc. After reiterating the statements of others, that bacterial

Man, like a pendulum, has swayed between "the savage who howls and chants to ward off evil spirits, and the *ingenu* who carries a horsechestnut in his pocket to ward off rheumatism," or the blind follower of superstition who gropes for any unknown poison drug in the hope of finding a remedy for his infirmities. We have lived in reckless carelessness, contemptuous of physical consequences, and when the destroying agent appears have cringed in abject fear and helplessness.

Dr. T. Mitchell Prudden, in an address before the graduate class of Yale Medical School (1895), says on this subject: —

"The superstitious red man is much more reasonable and logical in his procedures for the cure of disease, considering the civilization he represents, than are large numbers of white folks in the midst of highly civilized and cultured communities, who bow still at the altars of sanitary savagery, cherish a devotion to drugs almost pathetic, and utterly fail to grasp the significance of the new conceptions of disease which have at last made of medicine an exact science. . . .

"But it is safe to say that if we were ready to follow such dictates of science in sanitary measures as are now of research has tended to prevention rather than cure of disease, he again states: "The knowledge we now have of the causation of tuberculosis makes possible the formulation of perfectly efficient means for its prevention. Of the infectious diseases, it is without question one of the easiest to prevent, and when thoroughly established one of the most difficult to cure." Dr. Lawrence Fink thinks that with our present knowledge we could completely wipe out consumption in a single generation, adding, "Were half the energy which is being spent in the almost hopeless task of searching for a specific cure for tuberculosis devoted to its extermination, the accomplishment would be secured."

known efficacy, we could secure the birthright of long life to a larger proportion of that forty per cent of people who, as statistics show, are now destined to perish from preventable infectious maladies. . . .

“ While our science and our art are now steadily growing in precision and usefulness, our practical accomplishments are greatly limited because general enlightenment regarding the things of the body has not kept pace with the acquisitions of science. . . .

“ Our new outlooks in preventive measures have made it plain that a very wide curtailment of suffering and a large saving of human life are possible if only the people can have an elementary knowledge of the human body, and of such simple principles of hygiene that they may be able to guard against common forms of infection and against unwholesome modes of life which not only invite infection but other forms of ills. . . .

“ It seems to me that schools and colleges have high responsibilities. One often marvels at the pitiful ignorance of the body and of the simplest principles of healthy living common among learned and cultivated men and women of to-day ; ashamed not to know the origin of a word, or to fail in the comprehension of a literary allusion, masters in theology, wise in the law, keen in business, versatile and brilliant in society, they are prone to court disaster in senseless modes of life, and fall easy victims to charlatans and unscrupulous drug vendors — an association which they share with the illiterate and uncultured in a fashion highly democratic, and which suggests the survival of traits less incongruous and much more picturesque in the North American Indian. . . .

“ Our new outlooks in medicine have not been won without toil and sacrifice on the part of the devotees and these will still be necessary. . . .

"What, now, is the attitude of the physicians in the light of the broader and more exact science of to-day? It may be at once conceded that his physical presence has mainly lost his old-time picturesqueness. It is inevitable that as soon as he laid aside the mysteries and frictions and superstitions with which erstwhile he was wont to invest his calling, . . . obliged to abandon secret remedies, etc., . . . his claims to confidence must more definitely rest on a substantial basis. . . . It is a very wide-eyed generation which is coming on the scene."

Dr. Cyrus Edson says:—

"It would seem as though obstacles had been placed in the way of medical science which all of the force of man is powerless to remove. . . . After all has been said, it must be admitted that a proper observance of the rules of personal and public hygiene on the part of every individual belonging to the civilized world, would do more to effect a reduction of the death rate, and prolong the average duration of life, than any discoveries in the cure of diseases that at present seem within the bounds of possibility."

Does our great inventor Thomas A. Edison go too far when he says:—

"The doctor of the future will give no medicine, but will interest his patients in the care of the human frame, in diet, and in the cause and prevention of diseases. Surgery, diet, antiseptics—these three are the vital things of the future in the preservation of the health of the community. There were never so many able, active minds at work on the problems of disease as now, and all their discoveries are tending to the simple truth—that you cannot improve on nature."

THE THREE KINDS OF IMMUNITY

(ONE OF WHICH IS A CONSIDERATION OF IMMUNITY
FROM POISON)

WHEN examining the subject of the favorite poisons, the question of immunity assumes paramount importance. There are, indeed, three kinds of immunity : —

First, a security from all disease, owing to sound health or the proper and harmonious working of the vital machine.

Second, an immunity from the germs of some special disease, such as measles, smallpox, etc.

Third, a so-called immunity from poison, which is an acquired toleration of poison gained by a perversion of functions, brought about by gradual and continued indulgence in the use of the poison.

Let us first consider the third kind of immunity. The inebriate flatters himself that he is immune from his favorite poison and that he has acquired a new strength because he can take, without death, a quantity of it which would instantly kill a sound and normal man. This seductive theory has furnished an excuse for continued indulgence by the victim himself, as well as an inducement for others to follow his example. Science has made the reason for this species of seeming immunity absolutely clear.

Normally, vital force is furnished equally for all the normal needs of the body. This marvellous

human machine is so constructed, however, that, to a certain extent, its stock of vital energy can be gradually diverted from its normal duties to go to the rescue of special functions which are in danger and trouble, as by the invasion of poison. This forced assistance is always at the expense of legitimate work, and normal functions are, so to speak, cheated out of their due. It is like time and strength devoted to needless illness, which is, of course, lost to regular and legitimate work. It is energy diverted and devoted to reparation rather than to construction. By long-continued habit, this abnormal work of fighting poisons becomes fixed — a second nature. The machinery of the body has gradually set up new adjustments and relationships, and structural changes have also come about to conform, as far as possible, to continued adverse circumstances. The chief resources of the body are at last schooled to resist the attack of the enemy — poison. In the meantime, and on account of neglect and overwork, normal working faculties have become weaker and weaker. They now, of course, manufacture less and less of new vital force, and as they lose in vigor, the poison must be increased in strength in order to fire them into action.

With the inheritance of a superb machine, able to maintain a large fund of reserve force, the inebriate may sometimes discipline his abused body to endure without death very large quantities of his favorite poison. The tobacco inebriate has been known to smoke fifty cigarettes a day and manage to live; the sot has swallowed without collapse a pint of pure

alcohol, and the tea or coffee inebriate has introduced into his system a quart of his distilled stimulant, and still been able to sleep; the arsenic and opium inebriate has been able to administer to himself large quantities of his special drug and still postpone the grave.

It is a boasted but false immunity and at the cost of what? The true state of affairs is not realized until the customary poison is suddenly withdrawn. The machine is then found to be out of gear. The new abnormal adjustments are found to be fixed and crystallized, and so weak in power that without provocation of imminent danger, which the poison has supplied, they threaten to collapse from sheer exhaustion. The feeling engendered may be one of fatigue or of untold agony, according to the degree of vital bankruptcy. A general devitalization has now resulted from waste of reserve force and fatigue of normal functions. The poor body is now a prepared field for the germs of disease.

In times of cholera or other epidemic, the inebriate is the first to succumb. At best he is continuously forced to fight nervous fatigue, dyspepsia, catarrh, and the endless minor diseases.

Many an inebriate considers that the extra strength experienced by the taking of his poison is derived from some virtue in the poison itself — a fatal error. The materials for the making of vital force are of quite a different order — proper food and drink, proper sleep, proper exercise, pure air, sunshine, and a vital machine in sufficient working order for the utilization of it all. Vital force is developed and fed

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only from purely hygienic sources, and is expended but once. Vital force is never the product of poisons. Neither is vital force manufactured from tonics — another name for poison. Tonics are but gay deceivers.

“A food introduces force from without,” says Dr. Haig, “a stimulant merely calls out force already in the body, as athletics know; . . . for, once their final reserves have been called, nothing is left, and collapse results.”

Again says Dr. Haig: —

“Stimulation is not strength but force rendered a little more quickly available; and it is always followed (and must be so) by an exactly corresponding amount of depression, when the force used up is not available and has to be replaced;”

and replaced by hygienic methods just indicated.

IMMUNITY No. 1

(Exemption from disease, owing to sound constitution.)

The incalculable importance of knowledge concerning the relationship of germs to the poison habit, is due to the fact that bacterial parasites attack only weakened organisms, and that the chief reason for weakened organisms is the poison habit.

We have seen how we are protected from germs of disease by our germs of defence. In the economy of life what is more important than, by hygienic means, to keep this body-guard, upon which we must rely to protect us, in the best possible condition of health

and activity? There is no influence so potent to devitalize and enfeeble it as the poison habit. This habit may be compared to an imaginative government which has the poor sense to persistently spike the guns of its own army, or wilfully paralyze the efficiency of its own soldiers. Many experiments have been tried to demonstrate the helplessness of phagocytes when fatigued or enfeebled by any cause.

Experiments were made in the Hygienic Institute of the University of Rome by Alessi, to show how animals first weakened by a poison were rendered susceptible to germs of disease. The experiments were made upon rats, guinea-pigs, and rabbits. The rats were confined in a close cage with perforated bottom, and set over a place infected with sewer gas, sewer gas being a volatile product of putrefaction.

Dr. Sternberg's account of it in "Immunity and Serum-Therapy" is as follows:—

"The animals which breathed an atmosphere vitiated in this way (sewer gas) lost, after a time, their usual activity, although they continued to eat greedily. When these animals were inoculated with a very small quantity of a culture of the germs of typhoid fever, they died within twelve to thirty-six hours. The same amount of the typhoid culture injected into healthy animals produced no injurious effect. The time required to produce this predisposition for typhoid infection was from five to seventy-two days for the rats, seven to fifty-eight days for the guinea-pigs, and three to eighteen days for the rabbits. . . . The natural immunity of healthy animals may also be neutralized by other agencies which have a depressing effect upon the vital resisting power. Thus

Nocard and Roux found by experiment that an attenuated culture of the anthrax bacillus, which was not fatal to guinea-pigs, killed these animals when injected into the muscles of the thigh after they had been bruised by violence. Aberin also found that white rats, which are not susceptible to anthrax, became infected and frequently died if they were exhausted previous to inoculation by being compelled to turn a revolving wheel for a considerable time. Pasteur found that fowls, which like white rats have a natural immunity against anthrax, become infected and perish if they are subjected to artificial refrigeration after inoculation. Chauveau states that sheep which have been freely bled contract anthrax more easily than others. Certain anæsthetic agents have also been shown to produce similar results. Platania communicated anthrax to immune animals, dogs, frogs, pigeons, in bringing them under the influence of curare, chloral, or alcohol. . . . In man clinical experience shows that those who are addicted to the use of alcohol are especially liable to contract certain infectious diseases — pneumonia, erysipelas, yellow fever, etc.”

Similar experiments on different animals and with different germs of disease are related in all works on bacteriology — all demonstrating the superior power of resistance in a healthy organism over one weakened by any cause.

It scarcely needs the sacrifice of poor dumb animals to demonstrate this connection between a weakened physical condition and the various germs of decay. Observations on human life illustrate it on all sides. The trained athlete laughs at catching cold or any other pestiferous germ. He must take to

some poison or live under some unhygienic condition before that degenerate physical state of being is attained which opens the way to germs of destruction. Any normally sound person may scorn disease. The subject of disease is absolutely foreign to him except as it may claim his attention through pity (or contempt) for the physical degenerates all about him. Indeed, it would be physically impossible for disease to touch him. He can defy and laugh at it, for the rules and laws of nature are absolutely unchangeable and immutable; nature caresses the physically just with all her wealth of advantages, and alone scorns and removes the physically unfit before the allotted time of ripe old age. Accident may overcome a sound man, not disease.

It is therefore encouraging and comforting to know that microbes alone cannot produce disease, and that it requires for their attacks a fatigued or disordered state of the organism. Professor Bouchard says : —

“The organism is a strong place, the microbe is its assailant, and the struggle between them is the disease. The condition of the organic state which the microbe endeavors to seize is all-important. If the person is in general good health he will offer a vigorous resistance to the microbes. If, on the other hand, his health is not perfect, there will be a point where the defences are weak, and his danger will be proportionately great.”

In other words, a person is more or less in a condition of “receptivity to microbes” according to his general health. M. Capitan says : —

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“The hostile microbe is, in fact, everywhere — within and without us. . . . When protective barriers are overcome, the microbe will penetrate to the interior of the tissues, and will be able to bring on some of a great variety of diseases.”

Indeed, the conditions being known, it can be told almost to a certainty who is immune or not, and just how much it requires to kill.

IMMUNITY No. 2

(Immunity from germs of some special disease.)

We are told just how the dreaded microbes of disease are grasped, enveloped, and digested by the germs of defence which live in our bodies, and of which we all have an abundant supply, always ready and in training, if only these microscopic and willing slaves are not devitalized or worn out by fights with previous enemies. Now it is a curious fact that if our germs of defence once succeed in conquering certain species of invading microbes of pestiferous tendency, the latter species will, as a rule, never again invade the same body. Seemingly they dare not return to an assault if they have once lost. This fact was first discovered by Jenner in the case of smallpox. He weakened a culture of smallpox germs by introducing them into the blood of a healthy cow, whose “germs of defence” gave them so royal a battle that there was little left of their former vigorous constitutions. The mild disease they did succeed in producing was called “cowpox.” By inoculating a human being with this “attenuated virus” obtained from the cow,

the human germs of defence could easily master them, and these defensive germs were thereafter rendered more invulnerable to all that particular family of invaders.

Pasteur was next to reap honors by similar discoveries regarding chicken cholera, etc. (1880), showing that animals could be made immune against certain infectious diseases by a like process of administering to them attenuated virus, or, in other words, the germs of disease once partially conquered in battle by the phagocytes. He found and cultivated the parasites which produce chicken cholera, and discovered that they became attenuated or starved after having been kept for some time in what to them were unhygienic conditions, — fresh air and sunlight, — and again discovered that fowls inoculated with these enfeebled organisms suffered a comparatively mild and non-fatal attack of the disease characteristic of them. He then noted that such fowls were subsequently immune against the attacks of more virulent cultures of the chicken cholera bacillus.

For the successful conquering of the microbes of all infectious diseases, it is most unfortunate that the habits and endurance of several species vary. One species succumbs when treated to a certain degree of cold, and another can survive both a certain amount of boiling and any amount of freezing, enough, in fact, to kill the patient before the microbe. Again, other bacterial parasites, as, for instance, those of cholera, pneumonia, and influenza, like some generals, do not know when they are defeated. Still others, malarial fevers, etc., seem to predispose their victims to sub-

sequent attacks. Worse than all, various sets of microbes of varying degrees of endurance have their separate parts to perform in the progress of the same disease.

M. Capitan, in the *Révue Scientifique*, says : —

“Every species, every race, every variety of microbe is charged with a special function; the division of labor is carried among them to its extreme limits, so much so that in any chemical reaction each microbe takes its part in reproducing the process at different stages.”

It is quite unfortunate, that as yet but two antidotes have been found for conquering virulent pathogenic germs, — the anti-toxin for the germ of diphtheria, and quinine for the germ of malarial fever. What tons of medicine have been poured down the throats of afflicted invalids as antidotal to the germs of consumption, etc., and which have been but an extra burden to bear! We care little for the antidotes for germ diseases when all the world learns to live according to rules of hygiene. When that time comes we shall be troubled no more with pestilential germs.

HAPPINESS AND THE CAPACITY FOR IT

I am groping for the keys of the Heavenly harmonies.

WHITTIER.

There is an instinctive appreciation of the fact that poor humanity is being cheated out of its birthright; that a loving Creator never designed us for a sad and sorrowful career; and all mankind are busy with the problem how to find the happiness which we are conscious was intended for us, but which eludes our grasp. — DR. KELLOGG.

'T is life, not death
For which we pant,
More life and fuller
That we want.

TENNYSON.

Happiness is the greatest of earthly blessings and if sought aright — is easier than not. — HORACE FLETCHER.

Talk happiness. The world is sad enough
Without your woes
Talk health. The dreary never-changing tale
Of mortal maladies is worn and stale.
You cannot charm or interest or please
By harping on that minor chord, disease.

ELLA WHEELER WILCOX.

It is well to believe that there needs but a little more thought, a little more courage, more love, more devotion to life, a little more eagerness, one day to fling open wide the portals of joy and truth. — MAURICE MAETERLINCK.

His heart, in short, was as a fountain, so filled with happiness that it welled over, and the waters sparkled as they overflowed the brim. — J. P. R. JAMES.

Language fails to describe the aggregate of woe entailed by unnecessary physical weakness. — DR. SEARLE.

The body is not to be ignored. It is to be carefully watched and tended, to be enjoyed as a friend. — EUSTACE MILES.

We, therefore, who live to reform the present age in this respect (poison habit), are stretching our powers to the next to purify it, to beautify it, and to lead it toward that millennial happiness and blessedness which in the fulness of time shall visit even the earth, making it, under an increasing light of knowledge, a garden of human delight, a Paradise regained. — SIR BENJAMIN WARD RICHARDSON.

THERE is a heaven on earth and within us all; or rather, it was so intended. Happiness is the natural birthright of all mankind, and of all earthly blessings it is the most valuable to possess or confer. "Happiness," says Pope, "is our being's end and aim;" and yet the poor unfortunate sprite called happiness has been so misunderstood and maltreated by the human race, that it has been doubted at times if the Creator intended felicity for his creatures of this world. The reputation of happiness, indeed, has at times been so steeped in disgrace, that for ages whole generations of people, with best intentions, repudiated it and worshipped sorrow. To them true happiness was to be found only in another existence, and in order to deserve it they must scorn in this world the mocking, iridescent, dreaming thing called by that name, as but something that entrapped to deliver to the evil one.

The most unfortunate error lay in mistaking a spurious, illegitimate, counterfeit happiness, induced by artificial means, for the genuine blessing. These people of old accepted and endorsed the unhygienic sins of life, the chief of which was the general poison

habit of the people, and naturally believed that man is by nature vile and that the body is chiefly composed of sin and corruption. Happiness to them was largely a manufactured article of doubtful ingredients and conducive of sin. Both man and nature to them were under a shadow. The human body to them was but something to neglect and disdain with becoming humiliation and gloom. The religion of health to them was a closed book. They did not know that health is harmony, strength, action, accomplishment, virtue, hope, and joy; that health culture is an education of all our powers for the capacity to accomplish best work as well as to enjoy life; that with a more conscious recognition of values in the fields of thought and action, life ever increases in splendor and glory to him who lives hygienically; they did not even dream that health is not only the mainspring of that crowning gift from Heaven, the true and genuine happiness, but that it radiates it like the perfect flower; that disease of the body (and ill conduct which is disease of the mind) depresses all with whom it comes in contact; that it misconceives, misconstrues, vitiates, consumes, and destroys the best of life; that real happiness may expand or contract, blossom or decay from purely physical reasons; that "the spirit sickens with the body, and the withering of earthly roots may equally blight the highest flowers of the spirit."

It was all very gloomy indeed.

These religionists of old would not have so erred, had they been better physiologists and hygienists. The kind of happiness they knew, they justly con-

demned, being chiefly the outcome of unnatural conditions. We have attempted to explain just how the poison habit degenerates and benumbs all faculties for natural pleasures, requiring ever stronger excitants to fire them into action. Like the palsied palate which no longer enjoys natural foods, excepting when spiced, decayed, or otherwise vitiated, palsied capacities in general call for the abnormal and unnatural to arouse them, as gambling, killing, etc. The natural instinct calls for pleasures which benefit only; the vitiated instinct calls for what destroys or degrades only. Genuine happiness is lasting, vivifying, and ennobling; illegitimate happiness is short, wasting, demoralizing, and demoralizing.

For centuries the rational joy of living does not seem to have been understood except for the little time in Greece and Rome. For ages the physical (including mental) structure of man was scarcely comprehended, and even to-day physiology, the science of life, and psychology, the relation of mind to body, are the least taught of all the sciences. However, as Felix Oswald says:—

“This worship of physical sorrow in the morning of the new light, disappears like the spectres of the night; the rising of the sun of the new century scatters the mist; nature is coming to be our study and our guide. From it we shall learn the lesson of order, and from it we shall gather the flowers of human joy of which the stems and roots shall be the laws of nature,”

and from it a new and happy race of men will be developed, of which the great Creator will have better reason to be proud.

The more one studies natural laws, the more evidence one finds that nature has harmony and felicity everywhere for its dominant principle. After the hours of sleeping, a laughing morning sun rises to greet an expression of happiness from all animate and inanimate nature,—save that of man. The air vibrates with the chirping and humming of the tribes of the air; the redbreast and the lark pour out a welcome in the wildest abandon of joyous melody; the denizens of the sea and land gambol and sport, swing and dance in gay exuberance of life. In the glisten of the dew, and with happy smiles, flowers open their petals to the sunshine, while leaves and waters and air dancingly vibrate to the pleasing song of life. Nature celebrates in a veritable festival of play and song. But lift the veil, and nature undefiled is harmony, and harmony is happiness everywhere. It is the harmony of law and order; harmony of sound for the ear, beauty for the eye, and delight to all the senses. None save man look sad, glum, and hopeless.

“In the midst of universal joy,” says Dr. Kellogg, “why is man, of all God’s creatures, so sad and wretched, so seldom in a mood to join the great anthems of praise which the world beside pours out to its Maker? . . . Man has all but ceased to sing; . . . man has lost the joy from his heart, and no longer feels in common with the world about him a compelling impulse to sing; . . . man has wandered away from rectitude, and fallen out of harmony. His soul is full of discord—sin. His body is full of discord—disease.”

Above all living creatures, man is best endowed with powers to enjoy. He was not only given the

most refined and complicated of all physical structures, suitable to great capacities and possibilities, but at the same time, creative power, liberty of development, subject only to natural law. It is only in the abuse of that power that man physically has proved the greatest failure of all animal creation. Notwithstanding his superb triumphs over inanimate nature, he has by unhygienic habits forfeited his capacity for happiness. Man would probably have been happier stripped of his power, when power is easy to abuse. The abuse and misuse of power seems to be the chief cause for the inharmonies of human life. Instead of constant growth and evolution in advance, human life has by almost constant abuse been largely an evolution in reverse.

The problem of happiness can scarcely be solved without a proper understanding of what it consists physiologically. What are the discordant notes which have spoiled man's song of life? What is the new philosophy of happiness?

The student of happiness must learn how much our happiness as well as our character depends upon sound health. He will find that there is no lasting unhappiness with sound health, and no real happiness without it. He will find that upon the integrity, not only of cerebral cells but of every cell in the human system, happiness depends. He will find that every feeling of comfort or discomfort, high spirits or low spirits, hope or despair, cowardice or bravery, depends chiefly upon active nutrition of the tissues, strength of heart-beats, vigor of nerves, in fact, upon the harmonious working of the entire

human instrument, so interdependent and intricate of construction.

What happiness is physiologically is very simple, — relating directly to a cell and a nerve. This cell, of which the body is composed of millions, has a double labor to perform — that of gathering force and that of expending it. It gathers force by nourishment obtained from food and air. The nerve, of which there are also millions in the system, guides the operations of the cell and reports it, like any well-regulated telegraph system.

An external agent, — a sound, a light, an idea, — excites the action of a nerve and a cell, which nervous and cellular expenditure calls for an immediate repair. This produces a movement — a vibration as on a sounding board. As Professor William James (Harvard University) says, in "The Principles of Psychology : " —

"We must say that every possible feeling produces a movement, and that the movement is a movement of the entire organism, and of each and all its parts. What happens patently when an explosion or a flash of lightning startles us, or when we are tickled, happens latently with every impression which we receive. . . . A process set up anywhere in the centres reverberates everywhere, and in some way or other affects the organism throughout, making its activities either greater or less, like a conductor charged with electricity."

Professor Bain thus speaks of it: "Every mode of emotion has a definite wave of effects."

Now happiness consists in feeling life, — in having

a perception of favorable vital movements. To enjoy is to feel one's self gaining in favorable conditions. To suffer, is to feel one's self losing in favorable conditions. The greater one's stock of physical force, the greater may be the expenditure. The greatest happiness consists in the vibration of intense expenditures supplied with equally intense reparation. Just here one may appreciate the morality of happiness.

Fouillé, Herbert Spencer, and Darwin among others, explain it scientifically. Not only is there a connection between pleasure and the increase of vitality, but this connection is imperatively established as a necessity of evolution. Pleasure is a feeling which we seek to retain; pain, to keep out. Normally, what is pleasant is beneficial; what is painful is injurious. "If we could imagine beings to have ever been created by any sport of nature whose pleasure was connected with injurious actions and their pains with useful ones, they must have died out because of the vice in their constitutions." Whole nations have already almost died out from the counterfeit pleasures of the poison habit, as we all know. We also know that immoral men as well as degenerate nations are the unhappiest. Trampled soil is not calculated to grow perfection.

According to Darwin's principles, the essential condition of the proper development of life through ages, is that agreeable acts be also on the whole favorable to development. This is a mechanical necessity. It may be said, indeed, that happiness is the spontaneous product of health, the slightest disturbance of physical function producing despondency.

Depression is the kind danger bell that nature rings as a warning, and its message tells oftenest of vital expenditures beyond normal power of reparation.

Mr. Schneider is about ready to believe that nature is never mistaken when its rules are unbroken:—

“In the normal condition,” says he, “the feelings always tend to their true end; errors originate only in the morbid conditions ingrafted upon nature by civilization. With the natural and healthy man the feelings are healthy. Practical right and good conduct are dependent on health of the body.”

“Abnormal relations appear,” says Fouillé, “chiefly among cultivated men, particularly among those who are diseased by their own fault or by that of ancestors.”

Happiness, then, is simply the result of the harmonious normal action of all the powers of body and mind.

But we are wandering too far away from the tiny cell and nerve. Now when expenditure and reparation are perfect or equally balanced in the cell, and the expenditure is moderately great, we have calmness and repose of feeling; indeed, “every normal and proportioned action of a properly fed and properly assimilated man causes enjoyment,” whether the expenditure be great or small.

A wholesome fatigue results from a slightly greater expenditure of force than the supply at hand can immediately warrant, but which reserve force can readily command and supply when given the proper time for re-creation, — assuming proper food and working machinery. Such fatigue is still something

to enjoy. Sleep is profound and agreeable, and waking hours of rest are reposeful and blissful. Ennui, disquietude, nervousness, unhappiness, indicate more or less physical bankruptcy, more expenditure than the cells are able to afford. Such condition indicates impaired machinery, of which the nerves, the telegraphic outfit, tell a mournful or angry tale. It means that the delicate structure of our machinery is being worn and weakened. It is an expression of exhaustion of the sensitive tissue which supplies natural force, and which may be brought about by unhygienic cause. Everything that tends to harass or antagonize, expends reserve force extravagantly. The abnormal stimulation of poison is the chief cause of tissue degeneration.

This power of easy transformation into living energy, is the simple physiology of happiness. The easy transformation into living energy depends largely upon the proper and easy working order of the entire body-machine.

Life is always movement. When anything animate ceases to vibrate, or, as a pendulum ceases to move according to nature's equilibrium of expenditure and supply, it withers and dies. Habit or conduct is good which tends to increase the permanent quality and fulness of life. It is bad when it exerts a contrary influence; and the evolution of conduct which lengthens life, broadens and deepens it, glorifies it and renders it happy.

The same rules apply to mental action. One normally abhors a sentiment or an action which is mean, sinful, or unwholesome. Unwholesome sentiments

vitiates a high standard of deportment. Anything unwholesome to the mind or body gives no real pleasure. On the other hand, a worthy thought or action elevates the standard of life and produces the greatest happiness.

There should be a new book written on the morality of happiness, for the benefit of a greater worship for natural law (divine law) which is bound to come.

We have now located that ephemeral spirit called happiness in so small a thing as a cell, but must remember that the body-machine is an intricate and wonderful thing made to supply many needs. Were man's desires and needs less ambitious, the human mechanism might have been less complicated, like that of the fish or worm; but having been made glorious, many cells and organs bear upon the other, — and more the pity to abuse them!

Let us glance over various ideas concerning happiness as advanced by different writers.

The poet likes to associate that organ, the heart, with happiness. Those who associate happiness with the liver, the chairman of the committee on the burdens of the system, may possibly have a better reason for it. The heart labors, falters, flutters, and quivers in its fight with deleterious influences, but the owner and proprietor of an aggrieved heart may still aspire to a dull mediocrity of happiness if only the liver will keep its peace. That large organ, as stated elsewhere, is possibly the most morose and revengeful of all the organs. An outraged liver like an outraged tooth regards and respects neither fame, station, wealth,

education, nor religion, as far as that laughing fairy called happiness is concerned.

Tout lasse ;
Tout casse ;
Tout passe ;
Hélas !”

The author beamed with joy at the futile thought of having discovered happiness and entrapped it in — work. Eureka! The most precious of earthly jewels was found! The hand of the worker is alone strong enough to draw up the bucket from the deep well of pleasure. Work, and hard work, the promotor of the circulation, is the richest source of happiness. One must know how to work to know how to play. In work we have the benefit of physical activity and the satisfaction of acquisition. The busy man trains his powers to ever greater usefulness, and has no time to worry and fret. The moments which hang heavily on the hands of the idle, pass quickly when well employed.

“To be happy requires little, and he who is happy is a king,” says the pretty little German song. All may work a little! All may be kings!

Further investigation, however, into the literature of the subject, revealed the fact that this discovery that work insures happiness was not original, but has been much exploited by philosophers — to be afterwards modified in importance.

Carlyle declared that the gospel of happiness was the gospel of work. “Blessed is the true worker,” says he, “the creative man, great hearted, clear seeing, lover of light and not of darkness, of order

and not of chaos, of truth, of justice, and withal of labor."

Matthew Arnold declared that happiness is the reward and result of labor, courage, and veracity. And yet poor Carlyle, who had all three, was the most miserable of men. A friend of his said, "He is stretched always upon some invisible rack."

Carlyle thus wrote to Emerson of himself: "The background of my being is blackest darkness." This reminds one of that recalcitrant organ before mentioned.

Carlyle afterwards qualified his theory relating to happiness and work thus:—

"We are here to carry forward the work which the eternal Maker has designed, and that man is blessed, if not happy, who faithfully takes his part in that work."

Matthew Arnold also later qualifies his assertions in telling us that, "It is well to be happy, but happier to be clean, clear-seeing, and morally inspired."

Granting that man is *physically sound* the keynote of happiness is undoubtedly good work. The mere existence of society depends upon work, and as the work is, such is society, good, bad, or indifferent. In doing good work the individual not only gains himself but profits others, while he himself profits by the work of others. Each works for the whole, the same as the heart, the lungs, the stomach, and all members of the body work and gain strength by the general welfare.

It was a wise provision of nature that man should find his best happiness in the power to create, in liv-

ing to some objective aim, be it either in the interest of self or family or the service of humanity.

Said Charlotte Perkins Stetson : —

“ We think the pleasure of life is in receiving sensations — a most . . . limited idea. The main pleasures of life come through expression rather than impression. It is more pleasant to paint a picture than to look at it, — to sing rather than to hear singing. Supplied with every conceivable means of gratification, a human being soon exhausts the pleasure of having things, but given right avenues to employ his energies, he never exhausts the pleasure of doing things. The receiving power of an organism is not so great as its giving power. Expression is greater than impression. We fondly imagine that it is better to have things than do them, — an error carried to its natural height when the Shah of Persia gazed in wonder at English ladies and gentlemen dancing. ‘ Can they not hire persons to do it for them ? ’ he said. He supposed that to look at dancing was more pleasurable than to dance. He was wrong. Acting under this mistake we seek to avoid work and look down upon the worker.

“ We all know the delight which every skilled professional takes in his own performance, and the distress and disease which follow those who do not work at all.”

The happiest person is one who first possesses a sound and easy working vital machine, and next, the broad vision of the common good, as an incentive to work.

Paley gives us to understand that happiness is evenly divided among the social strata of mankind ; that the luxurious no more enjoy their dainties than the peasant his bread and cheese ; that the idle and

rich become fastidious and languid in enjoyment, yet miserable without the excitement of continual emotional gratification, which becomes indifferent when habitual; the organs cannot hold on to them but a short time, when they decay. Those whose professed pursuit is pleasure, with no restraints of fortune nor scruples of conscience, are restless, with a passion for variety. Much of their time is vacant and irksome. He also reminds us that the superiority of rank yields no satisfaction save over those with whom we immediately compare ourselves. The shepherd does not especially enjoy his rank over the dog; the farmer over the shepherd; the lord over the farmer; nor the King over the lord. The pleasures of ambition are common to all conditions. He tells us what do not especially in themselves confer happiness, — riches, rank, idleness, exemption from labor or pain or business.

Paley's receipt for happiness is composed of: —

- 1st. Social affections — family and friends.
- 2d. Pursuit of some engaging and salubrious occupation with something always to hope for.
- 3d. Good habits, which change only for the better.
- 4th. Health.

Thomas Jefferson's receipt for happiness was much the same: —

"Our greatest happiness," says he, "does not depend on the condition of life in which chance has placed us, but is always the result of good conscience, good health, occupation, and freedom in all just pursuits."

Herbert Spencer would inaugurate a new school in the philosophy of happiness. He considers that happiness and morality owe much to science; that truth of every kind is moral; that happiness is a test of duty—a measure of moral obligation.

Happiness should be sought as a duty to others for the benefit of self, and for self for the benefit of others. Happiness should be a means, a chief end. Without good conscience, good conduct, there is no happiness.

Rasselas found that law and order constitute happiness. It will be remembered in the story that Rasselas was a young and reigning prince who, disguised, left his kingdom to wander about the world and study the habits of all conditions of men, in order to solve the problem of happiness for the benefit of his people. It runs as follows in the extremely interesting account of his experiences:—

“Rasselas joined the young men, youth being the time of happiness. To such societies he was readily admitted; but a few days brought him back weary and disgusted. Their mirth was without images, their laughter without motive; their pleasures were gross and sensual, in which the mind had no part; their conduct was at once wild and mean; they laughed at order and law; the frown of power dejected and the eye of wisdom abashed them. . . . ‘Happiness,’ said he, ‘must be something solid and permanent, without fear and without uncertainty.’”

Sir John Lubbock published a book called “The Pleasures of Life,” which had an enormous sale in England,—all going to show that the English peo-

ple are anxiously groping for the "keys of the harmonies;" and no wonder, when it is said that "Merry England" once so-called, is now taking even her pleasures sadly.

Sir John is naturally pleased with all that has been said about the "happiness of duty," but wishes more were said upon the "duty of happiness," to which theme he devotes a chapter.

The chapter, "A song of books," is an exuberance of joy over the pleasures of reading. The quotations are also delightful, of which we must here insert two or three.

"I have friends," said Petrarch, "whose society is extremely agreeable to me; they are of all ages and of every country. They have distinguished themselves both in the cabinet and in the field, and obtained high honors for their knowledge of the sciences. It is easy to gain access to them, for they are always at my service, and I admit them to my company and dismiss them from it whenever I please. They are never troublesome, but immediately answer every question I ask them. Some teach me how to live, and others how to die. Some by their vivacity drive away my cares and exhilarate my spirits, while others give fortitude to my mind and teach me the important lesson, — how to restrain my desires and depend wholly on myself. They open to me, in short, the various avenues of all the arts and sciences, and upon their information I may safely rely in all emergencies. In return for all their services they only ask me to accommodate them with a convenient chamber in some corner of my humble habitation where they may repose in peace; for these friends are more delighted by the tranquillity of retirement than with the tumults of society."

"He that loveth a book," says Isaac Barrow, "will never want a faithful friend, a wholesome counsellor, a cheerful companion, an effectual comforter. By study, by reading, by thinking, one may innocently divert and pleasantly entertain himself, as in all weathers, so in all fortunes."

"If the crowns of the world were laid at my feet in exchange for my love of reading, I would spurn them all," said Fénelon.

"Imagine," says Aiken, "that we had it in our power to call up the shadows of the greatest and wisest men that ever existed, and oblige them to converse with us on the most interesting topics, — what an inestimable privilege should we think it! How superior to all common enjoyments! But in a well-furnished library we in fact possess this power. We can question Xenophon and Cæsar on their campaigns; make Demosthenes and Cicero plead before us; join in the audiences of Socrates and Plato, and receive demonstrations from Euclid and Newton. In books we have the choicest thoughts in their best dress."

Sir John gives us a list of carefully chosen books, which so whet the mental appetite that one wishes to immediately abandon even the glories of the earth, the companionship of delightful living friends, the excitements of travel, the pursuits of engaging avocations, to get to a quiet corner and for the time live in them.

But, then, alas! Sir John, on the subject of happiness, — like nearly all philosophers, rulers, statesmen, historians, and divines, — treats the very essence of it with the lightest touch of a feather. They all forget that to appreciate and enjoy reading, like other occupations, requires a human mechanism conducted on principles of law and order, in which the eyesight is

sharp, the photographic sensitive plate of the brain is in condition to receive sharp and lasting impressions, and physical endurance is supported by an adequate supply of vital force which may warrant a generous expenditure. In the garden of thought, clear and unfatigued perception may alone cull the choicest flowers.

Other searchers for happiness think they have entrapped the glittering fairy through emancipation of the heretofore unnoticed and bad habit of worry :—

“What is the use of worrying,
And flurrying and scurrying
And breaking up one's rest ;
When all the world is teaching us,
Praying and beseeching us,
That quiet ways are best.”

Worry is of course a mere physiological discord, an outgrowth of abnormal conditions of life. One aim of this book is to show how much such conditions are brought about by unhygienic habits. As the stronger wall may bear the heavier burden, the man of absolutely sound constitution naturally does not worry. The man whose weakened cells and tired nerves have been habitually harassed and tormented by poison excitants and other burdens, naturally worries.

There is a waste of vital force unnecessarily expended by worry. It has been said that worry is like an ocean steamer's revolving screw out of water, —nothing but wear and tear. While there is a general wear and tear, worry also especially excites too long one set of cellular and nervous functions,

exhausting their vitality. A change of work is comparative rest, in that it relieves one set of functions while others are in use.

In speaking of nervousness, however, one must not misunderstand the expression, "I am nervous." If a nerve reports accurately, it shows that it is at least in a fair condition of health, and that it but reports a disordered state of a cell which is being worn upon by expenditures greater than its insufficient force can meet. Every expression of pleasure or pain must necessarily come through the medium of nerves. When the nerves themselves are degraded or impotent, as often induced by combats with poisons too strong for them to bear, there is simply little or no report at all. Physiologically speaking, if there is feeling at all, one could more correctly say: "I am cellular or cellulous," than "I am nervous."

Within the last few years a number of books have been written on this subject of worry, and numerous anti-worry clubs have been formed about the country. A philanthropic man of Vermont was so pleased with an admirable book written on the subject called "Menticulture," by Horace Fletcher, that he ordered two thousand of them, one of which he presented to each household of his town, as an experiment for promoting the general happiness of the people.

Each habit of either worrying or self-poisoning develops the other. In other words, harassed cells and nerves lead to worry, and the bad habit of worrying and wearing out particular sets of cells and nerves leads to a desire for artificial stimulants.

A simple cure for the merely bad habit of worry is given in Mr. Fletcher's book. He gives us to understand that worry confers no benefit, but rather is like a poison in breaking up one's sleep, one's rest, one's beauty, one's happiness, one's power; that when we come to think of it, instead of casting off worry with an easy grace, we rather embrace any annoying idea, and worry about it; not only embrace it, and encourage it, but coddle it and sometimes luxuriate in it; that if some real misfortune arrives, *the power* to circumvent it is partially lost by the debilitating habit of worry; that when worry is cast away, nervousness while singing or speaking before assemblies disappears; and other habits being hygienic, insomnia is cured by this abandonment of worry: —

“Anger and worry,” says Mr. Fletcher, “are the most unprofitable conditions known to men. While they are in possession of the mind, both mental and physical growth are suspended. Anger and worry are thieves that steal precious time and energy from life. Anger is a highway robber, and worry is a sneak thief. . . . Anger and worry do not stimulate to any good end. They not only dwarf and depress, but sometimes kill. They are bad habits of the mind, and not necessary ingredients. Anger and worry are no more necessary than other passions civilized man has learned to control, and it is only needful to realize that they are unnecessary in order to make it impossible to feel, much less to show them. . . .

“The natural tendency of the emancipated mind is towards growth, both intellectual and spiritual, just as the tendency of plant life is toward vigorous growth and perfect blossoming if it is kept free from the gnawings of

cankorous worms. Anger and worry are as much parasites as are the cankerous worms that attack plants. The intelligent horticulturist knows that the worms are parasites, picks them off his plants and throws them away too far to return. The intelligent menticulturist of the future will treat anger and worry in the same intelligent manner."

Worms and insects of destruction do not attack sound trees, and parasitical germs of worry do not gnaw sound constitutions; however, scarcely one is sound, and Mr. Fletcher's suggestions for checking loose worry habits are very helpful.

My first suggestion for anti-worry and restful sleep would be, first: no drug or other unsanitary habit; second, simply empty the brain of thoughts, and, mind you, without effort. Effort is inimical to rest. Third, if we do as well as we can for others, why worry? Worrying but handicaps our faculties *to do as well as we might* for others.

Mr. Fletcher's very charming and clever definition of happiness is as follows:—

"True happiness is the evidence and fruit of conscious usefulness; and quarantine against obstructions to normal, altruistic energy is the best means of attaining happiness."

It is delightful to notice how all who take to physical culture and attain normal conditions seem to enjoy doing their best for others.

THE KEY TO HAPPINESS (*Further Considered*)

As "the plant of human happiness like the palm grows from inward outward," the first requisite of

felicity is sound health. That the senses may be alert to the endless gifts the Creator has offered His living creatures, the human mechanism must be in order, the supply of vital force must be equal to expenditure, reserve force must be ready for emergencies, sleep must be profound and recuperative. This world is made for health and happiness, and the miseries of life result from defiance of nature's laws. Human life is a splendid campaign, and what naturally follows healthful activities of body and mind is delight in work, creation, acquisition, ambition, and hope. What befalls us in life is but the nature of ourselves. Whom one meets in life is one's self. As Lillian Whiting tells us:—

“Every circumstance and every fact in life is as plastic to the individual concerned, as is clay in the hands of the potter, and to recognize this truth and to discover how to remould circumstances and fact, and thus create conditions, is the true secret of success and joy in life.”

We see also that in regard to happiness the health aristocrat is quite independent of external affairs. The centre of gravity in himself is not changing with every circumstance. He possesses what no person, no rank or wealth can give or take away. He has what he *is*. Some envy the proprietor of a petty landed estate. How does it compare with the ownership of the entire ocean, the boundless sky, the landscape bordered by the horizon, with the power to see it, to comprehend and appreciate it?

As all external objects or affairs exist for the individual but in his own consciousness, all depends

upon that consciousness, as may be realized by comparing the pleasure taken in external affairs when in sound health or when depressed with illness. To one the earth is a paradise, full of meaning and beauty ; to another, a dull and barren desert.

“No land is so well off,” says Schopenhauer, “as that which requires few imports or none at all ; so the happiest man is one who has enough in his own inner wealth, and asks little or nothing from outside for his maintenance. For imports are expensive things, reveal dependence, entail danger, occasion trouble, and when all is said and done are a poor substitute for home produce. No man ought to expect much from others or, in general, from the external world. What one human being can be to another is not a very great deal ; in the end every one stands alone, and the important thing is, *who* it is that stands alone. . . . Fate is cruel and mankind pitiable ; . . . a man who is rich in himself is like a bright, warm, happy room at Christmastide, while without are the frost and snow of a December night.”

We are told of the happiness of Joseph Priestley, who declared that he was born happy and had always remained so, notwithstanding many vicissitudes of fortunes that would have crushed others.

“He lost his mother in child life ; left his home to live with an aunt whose powers of gloom would have soured the lives of most mortals ; as a preacher he was tossed about penniless from pulpit to pulpit, owing to ecclesiastical theories not popularly endorsed ; turned teacher, to be first petted by a nobleman, and next turned off without explanation ; he made one of the grandest discoveries of the century, and saw it accredited to another man, to

whom he had confidently communicated it ; he was suspected of sympathy with children of liberty, and under the vengeance of a priest, became the victim of an ignorant mob which burned his house and all his valuable papers ; . . . escaped barely with his life, went to London, where he was obliged to hide from enmity, and (cruelest cut of all) was disowned by, and cast out of, the learned society he had helped to immortalize. At last, driven in old age from his native country, he went to a foreign and distant land, lived happily, forgave every one, and died in perfect peace."

Whether right or wrong in his philosophy, Joseph Priestley's cells and conscience were evidently perfect. He was physically in tune with nature. He enjoyed the simple breath of life, he enjoyed nature, he enjoyed his work, and he enjoyed *himself*, all of which is independent of man.

The great philosopher, Epictetus, was but a poor slave. Said he : "I must be put in chains, must I, then also lament ? . . . You can put my body in prison, but my mind not even Zeus can overpower."

But one does not like to associate misfortune or ill luck with our health radiant man, as indicated in these quotations, for as a rule the successful men in life are the sound ones. The man of cell integrity is popular. The charm of personal magnetism comes largely from the latent fires of reserve force. The sound man is magnetic, radiating good feeling which touches the heart. One naturally inclines to his glow of countenance, and as naturally avoids the man who is ill, whose cells are starved, and whose blood globules are crooked, spiculated, and pale, as else-

where described. Our hero of the cell is not only successful in popular favor, but his honest conditions render him successful in the various affairs of life.

A word about the power of appreciation. This want of appreciation is marked when the young man of any poison habit almost invariably insists that he is not caring to live to a great age, — prefers to enjoy life for a shorter time. The world seen through a spyglass in which the lenses are blurred and cracked cannot of course be expected to look its best.

We should be taught the science of life in order to more fully develop an appreciation of it. We need more of those "whose intellects, like crystal mirrors, are brilliantly sensitive of all objects about them, not convex or concave, — distorting all proportions, — nor clouded nor twisted, — to garble truths."

Matthew Arnold especially counsels us to acquire the *power* that builds up life; "the power of conduct, the power of intellect and knowledge, the power of beauty, and the power of social life and manners."

Man likes to feel his power. From every point of view, power, properly used, brings happiness. In the power of successful acquirement, man has derived his keenest pleasure. The satisfaction of accomplished duty is magnificent. It is a compliment to sound sense, sound judgment, sound health. Power confers the privilege of benefits. Power is inspiring and ennobling — not the misused power of a savage or a brute who wounds or destroys in the name of "sport" what is at his mercy, or in the name of "war" for

selfish or savage purpose, but the power that adds to the happiness and welfare of mankind and the lesser tribes of earth.

And society worships him that has power. Society is only hero worship, as Carlyle and Emerson both declare. All hail, heroes!—not destroyers and consumers, but the savers of mankind and the producers. The world expands and grows through your successful efforts! Your work nourishes and feeds, and your influence spreads like waves on the ocean. Is that influence small? So is the seed of a flower or tree. It requires but the spark of an idea to set the world aflame, for the sounding board of society is very resonant. Some one has said that a bad idea can demoralize a country, break up a universe, and astound eternity.

Some one has again said that in his receptivity man is like water. Every drop of water in a glassful is sweetened more or less by the introduction of a grain of sugar; soured by a drop of acid; embittered by a drop of gall; poisoned by a drop of alcohol. After all, the world pines for the genuine, and the power of a very little good influence penetrates and vivifies us all. As Emerson says:—

“One worthy man in a town lifts the standard of the whole town, and to imitate him makes life gladder and more nutritious. . . . The world is upheld by the example of good men. . . . Life is sweet and tolerable only in our belief in such society; and actually or ideally we manage to live with superiors. We call our children and our land by their names. Their names are wrought into the verbs of language; their works and images are in our houses and

every circumstance of the day recalls an anecdote of them. The search after the great men is the dream of youth, and the most serious occupation of manhood. . . . Certain men affect us as rich possibilities, but helpless to themselves and to their times — the sport perhaps of some instinct that rules in the air ; they do not speak our want. But the great are near ; we know them by sight. . . . A sound apple produces seed, — a hybrid does not. . . . Is a man in his place, he is constructive, fertile, magnetic. . . . People delight in a man. . . . Here is a head and a trunk ; what a front ; what eyes ; . . . the whole carriage heroic with equal inward force to guide the great machine. . . . True genius will not impoverish, but will liberate and add new senses."

And then best of all it is so easy to be a hero. It is a great mistake to feel that it requires great talent or genius or circumstance to make a hero. The power of good would be enormous if every one contributed a tiny seed of wholesome thought to checkmate evils, a feather's weight in the right direction. He whose acquaintance confers only what is beneficial is a hero ; he who battles against any evil tendency is a hero, for men may fight like wild beasts of the jungle and shout for flag and freedom and yet cringe and wilt before a silly fashion or a popular prejudice that may eventually blast the life, the honor, and glory of a nation.

This quality called talent or genius is really little more than genuine exuberant health, which thinks calmly and acts judiciously ; and as for accomplishment — a thing is half done when begun.

THE COUNTERFEIT AND ILLEGITIMATE HAPPINESS OF
POISON

The human race not having yet learned the true secret of happiness, notwithstanding the vast amount of theory on the subject, and finding itself full of ennui, full of aches, pains, and misery as a result of its own and many generations of physical law-breaking, is extensively engaged in the attempt to manufacture artificially a counterfeit happiness, by the same tactics that first stole its genuine happiness away. This is the chief reason for taking all the brain-obtunding and nerve-exciting drugs which human ingenuity can discover or compound. Never in the history of mankind has there been such a demand for them as to-day. The nineteenth century will be known in future ages as the century of drugs. In other ages one or two poisons sufficed to befoul the human system, and many, especially the masses, were spared. Civilization has multiplied them so that we now can scarcely eat, sleep, or think without the prick of some poison that affords, not the happiness which swells the heart with pure delight, but a cheap counterfeit that either excites by burning out the reserve fires of life, or soothes by partial paralysis of vital organs. "They produce a felicity which has not been earned, a surcease of pain which is undeserved, an oblivion to sorrow without the removal of its cause." They lead their victims to the most contemptible of bondages, but it matters not to them, if they can for the moment produce a new sensation.

This endless and universal craving for means to pay the debts of profligacy has well-nigh plunged the human race into vital bankruptcy, and generation after generation is cheated of its birthright — happiness. The human race is degraded, civilization is retarded, and good government is impaired. We need not only what makes us live, but what makes us want to live. "While we live let us live," is the admirable motto of the sensualist; only let us not be mistaken about the manner of getting the best of it. Let us fully realize that there is no such ecstasy, no such stimulant, no such tranquillity as that given by sound health; that there is no such poem of existence as living close to nature.

Considering the amount of poison that is taken daily by the great majority of mankind, all of which supplies an unnatural felicity to be followed by certain sorrow, a universal physical degeneracy, it is no wonder that in this famine of real felicity men are unrestful, reckless, hopeless, melancholy — sometimes stranded, generally rebellious, and ready to follow any unscrupulous leader who promises relief.

The kind of happiness which poison brings is also most unsatisfactory, even without considering the depression which always follows unnatural stimulation or the miseries of advanced stages of inebriety, or the bitterness which follows disrespect and neglect given sinking ships. The man of the poison habit in so-called moderation is always a pendulum between over-excitement and depression, and the feverish pleasures of inebriety in no way compare with the rich exaltations of sound health. Drugged sleep is a poor

exchange for natural sleep; nervous excitement for natural enthusiasm. The glass of wine at dinner may add a certain liveliness; it may transpose a poor joke into something amusing, or kindle the commonplace into a sort of wit; it may galvanize the physically unsound or mentally stupid into something like the genuine blessing. But sound health needs no medicine for the sake of feeling comfortable or happy. The health aristocrat is strong and joyous as a matter of course.

This illegitimate and counterfeit happiness of the drugs leads only to evil, — to sensuality, brutality, impotency, crime, disease, insanity. It is this counterfeit happiness, this low, base, and unwholesome happiness, that has turned real happiness into decay, the sweetness of human felicity into gall.

The poison habit has furnished the tenets of much religious doctrine. The false theory of human need for poison stimulants and narcotics has been taken for granted. This is especially illustrated by certain religionists of the East, whose highest aim is the Nirvana — a state of mind which implies a blowing out, an extinction of everything. Despaired of finding happiness in this world, and to avoid sin, they take to passiveness, to nothingness and meditation. They scorn even the struggle against what is to them the difficulty of existence. They have capitulated absolutely. To them, as in the Turkish proverb, "It is better to be walking than running, sitting than walking, lying than sitting, and dead than lying."

Their happiness is expressed in the following

verse (translated by Whinfield) with which Omar Khayyam opens his quatrains:—

“ We sojourn here for one short day or two,
And all the gain we get is grief and woe;
And then, leaving life's problems all unsolved
And harassed by regrets, we have to go.”

Or in Sir Edwin Arnold's version of the Deva's Song to Prince Siddârtha:—

“ We are the voices of the wandering wind,
Which moan for rest, and rest can never find;
Lo ! as the wind is, so is mortal life —
A moan, a sigh, a sob, a storm, a strife.”

In Germanic and Celtic works of literature, one also finds many of these pessimistic, maudlin doctrines. The root of other doctrines springs also from indulgence in the illegitimate happiness of drugs, from whence mortal man finding no happiness in life such as he has it, seeks his spurious happiness in anything not already possessed, and in the suppression of personal exertion.

“ Let us,” says Emerson, “ with auger and plumb-line bore an artesian well through our theories and pierce to the core of things.” With the impressive laws of nature as a guide, religionists of the new century will overcome the evils of existence rather by looking at them deliberately and calmly, taking their measure and boldly attacking them. Happiness here below, and deservedly hereafter, will entail freedom from unworthy physical entangling alliances.

The study of the philanthropist, the statesman, the churchman, the educator, the parent of the new cen-

ture will be — health. As is said in the *Herald of the Golden Age* (Eng.), “We will study life and know it, and knowing, love it, and loving, live for it.” We shall know if the human system can be poisoned and escape degeneracy; if one can drink of corruption and remain pure; if one can be corrupt and happy.

If poisons conferred any real happiness on mankind; if they made life merrier; if they lifted the clouds of even the little worries, and forgiving nature kindly repaired the damage; or if their partial paralysis suspended sadness or misery without adding to it in the aggregate, we should all hail poison as something beneficent indeed. If, on the other hand, nature can be commanded only by its laws, and it is inimical to Nature’s laws to take poison; if the taking of poison gladdens but to wither and destroy; if it befouls human life; if in suspending misery it not only fails to remove the cause but adds to it; if it increases unrest, discomfort, disease, and crime; if it be the father of the miseries and practically all the incapacities; if it steals the energies; if it sucks out the manhood of the country and beclouds the motherhood; if it but cheapens life; if it is base as well as unprofitable to impose upon nature, then this habit of poisoning one’s self, even in the slightest degree, is a clear blunder. It is easy to destroy. Does it pay?

SOME OF THE DRUGS AND HAPPINESS

Concerning wine taken in small quantities and happiness, Rev. Mr. Brooke, in Mr. Reade’s work, “Study and Stimulants,” so well describes my own experience that I must quote him:—

“It has been said that moderate doses of alcohol stimulate work into greater activity and make life happier and brighter. My experience since I became a total abstainer has been exactly opposite. I have a greater command over any powers I possess. I can make use of them when I please. When I call upon them they answer, and I need not wait for them to be in the humor. It is all the difference between a machine well oiled and one which has something among the wheels which catches and retards the movement at unexpected times. As to pleasure in life, it has also been increased. I enjoy nature, books, and men more than I did; and my previous enjoyment of them was not small. Those attacks of depression which come to every man at times, who lives too sedentary a life, rarely visit me now, and when depression comes from any trouble, I can overcome it far more quickly than before. The fact is, alcohol even in the small quantities I took it, while it did not seem to injure health, injured the fineness of that physical balance which means a state of health in which all the world is pleasant. . . . I appeal to the young and to the old to try abstinence for the very reasons they now use alcohol, — in order to increase their power to work and their enjoyment of life. . . . Alcohol slowly corrupts and certainly retards the activity of the brain . . . and the older men who cannot enjoy leisure because they have a number of slight ailments which do not allow them perfect health, or which keep them in over excitement or over depression, let them try — though it will need a struggle — whether the total abandonment of alcohol (and all other poisons as well, Ed.) will not lessen all their ailments and restore a better temper to the body; for the body with alcohol in it is like a house with an irritable man in it.”

In *Scribner's Magazine*, Dr. Richardson speaks of what has been considered one of the least harmful of the poisons — *tea* : —

“The alkaloid (theine) in tea, following the rule of all agents which stimulate, causes a short and slight felicity. It causes a large number of persons a long and severe sadness. There are many who never know a day of felicity owing to this one destroying cause. In our poorest districts among the poor women . . . the misery incident to their lot is doubled by this one agent.

“There is another agent more determinate in its effects and contrasts than tea, and that is wine. I am a total abstainer, but I am an honest observer also ; and I confirm from direct observation the old saying that ‘Wine maketh glad the heart of man.’ If it did this and no more, I should say let the felicity of the wine remain in the world. Wine, like the alkaloid in the tea, relaxes, lets loose the channels of the blood ; . . . but here, alas ! is the rub.

“The whole of the narcotic series of substances, in the use of which human beings indulge in order to secure felicity, comes under the same condemnation as the two last named agents. They differ somewhat in mode of action, for they stupefy, and by that means produce a negative condition, which is not pleasure but which may be considered to be an abolition or suspension of misery. This were to some extent excusable, if not reasonable, did the quiet end in these negatives. But it does not ; it is followed by a depression, which, less acute, is more prolonged than that which follows the excitement of alcoholic stimulation. Tobacco is one of the narcotic substances which produces the suspension of anxiety, or, as it is said, soothes irritability . . . and in time leaves in many per-

sons long depression coupled with an appetite for renewed indulgence, which becomes one of the most intense . . . and morbid of passions.

“The confirmed smoker who can stand out against the indirect effects, whose taste for food and whose digestive endurance is comparatively little injured, is kept, during the whole time he indulges in the habit, in a state of suspension. He does not enjoy felicity, but for a time experiences a relief from infelicity. . . . The world would be happier if tobacco were unknown or unemployed.

“The habitual use of opium for the desire of felicity is of the same erroneous character. The opium taker tells us of certain dreams and phantasies which are for the moment felicitous wanderings of the mind. I have visited the opium den to see the effects, and whatever the dream may be subjectively, it presents to the observer no signs of felicity. The expression of the opium smoker is one of restless and intense anxiety. His eyes are joyless; his features contorted; his skin palid or dark; his pulse slow and laboring, his breathing hard and heavy, . . . then he falls into dejection, which deepens and deepens, until the desire to return to the cause of the dejection is too overpowering to be resisted. . . . From the use of such an agent . . . there can be no result of felicity. There could soon be produced by an extension of the use a madder world than now exists and more miserable; a happier one, never! And this saying, according to my knowledge, extends to all narcotic substances. There are some, like methylic ether and nitrous oxide gas, which produce infinitely more refined felicity than those I have named, but in the end the results are the same.”

Let us read a Frenchman's view of happiness and alcohol, as quoted from *Le Figaro* of May, 1899:—

"When you tell drinkers that they are shortening their lives, they answer you readily, 'Short and sweet.' . . . Rather is his motto, and he should wear it on his forehead, 'Short and sour.'

"The proof is, that in every country the number of suicides increases with the consumption of alcohol. The proof is the same in regard to insanity. From 1861 to 1865, 14,983 lunatics entered the public asylums of France. Twenty years after, more than 57,000 were entered in the same space of time. On the registers of the asylum of Sainte Anne may be seen what part alcoholism played to produce this frightful increase. You may be sure that those victims, if in a condition to think, would no longer have said, 'Short and sweet.' Ah, no! They had passed through too many delusions, too much anguish, too much horror before becoming completely insane. Their device, indeed, should have been 'Short and horrible.'

"The proof is again the same in regard to criminality as well as insanity and suicide. . . . Dr. Serieux, of the insane asylums of the Seine, has made investigations with regard to convicts from the view-point of alcoholism. He found that of those sent back for a second offence, 78 out of 100 were drinkers; of those condemned for assault and battery, 88 out of 100, etc. In Germany 60 out of 100 crimes in general have been committed under the influence of drink. Do you believe seriously that all these people experienced great joy in strangling their mistresses or in crippling their comrades? Do you believe that the guillotine or the prison does not more than compensate for the pleasure of the crime, if pleasure there be? . . .

"There is proof again in the fact that the French workman who was formerly so intelligent and so skilful, who was in reality one of the ornaments of France, is fast losing his industrial value in the districts where he drinks. He

is unlearning. He has no longer either ambition or will. He is falling from one generation to another, from the rank of foreman to that of simple laboring man, knowingly and voluntarily, without even trying to struggle. . . . We know that Normandy is one of the provinces of France where there is most drinking. A cotton manufacturer of Rouen, said to Dr. Brunon that he had at the present time much difficulty to find young men willing to learn the delicate parts of the trade. They are not capable of the least initiative, he said. The slightest responsibility is too heavy for them. The intellectual standard is lowering rapidly, like the standard of height. . . .

"You should see them coming out of the saloons of Rouen Monday evenings. The father, the mother, the children, friends, supporting one another, dragging one another and staggering all together.

"One cannot imagine, without having seen it, what a laboring man's home becomes when the mother drinks. I have lived in a village two hours' ride from Paris, where half the population of both sexes was addicted to drink. . . . Can one call this happiness?

"What an enduring race these Normans are, not to have yet disappeared! But that will hardly be slow to come. Already they cite a canton of the Orme where the council of revision did not find one single recruit having the required height. In the next generation they will all be Tom Thumbs, and the end of the race will be near."

FIVE RULES FOR HAPPINESS

1. Health culture as a predominant principle of life.
2. Work in pursuit of worthy aims.
3. Social affections — family and friends.

4. Choice of amusements which benefit rather than degenerate.

5. An eye to the future in all our actions.

With sound health of body, mind, and morals, social affections are lasting. A happy present is assured by respect and provision for the future.

BEER

WE had supposed this most pleasing beverage, beer, so very refreshing and appetizing with a salad, a biscuit, and a bit of cheese for luncheon, to be comparatively unobjectionable from a hygienic point of view. We had, at most, considered it less unwholesome than tea or coffee; we had even supposed that for some vague reason the cordial relations between a certain bitter ingredient of beer and the liver were all that could be desired; moreover, skilfully worded advertisements had convinced us that the golden effervescing fluid is a liquid food, which in some misty way was due to certain beneficent qualities of malt and unknown ingredients of some kind. What is unknown assumes any proportion when encouraged by inclination. — “*Ignotum pro magnifico.*” The idea that this harmless concoction of so little alcohol could take the place of stronger drink was also pleasant to dwell upon. In a more benighted period of existence, we even supposed that man was so constructed as to be obliged to take some kind of poison as a habit, and it was a subject for thanks if he chose the least objectionable.

Again, what there is of geniality and *camaraderie* in the taking of beer outside the home, the head of the family does not monopolize. The gin and whiskey drinker slides in at back doors or slips stealthily behind screens at any hour of day or night, while his family at home is given over to loneliness and anxiety. The beer drinker, accompanied by wife and children, repairs in the cool of the evening to pleasant gardens, shady trees, growing flowers, and refreshing air.

Of course, if one concludes that health is the most important of worldly blessings, then must Timothy Titbottom's spectacles be adjusted, — the same through which (in the story) a certain woman was found to be nothing but a wisp of straw, and a certain man but a barrel of beer. The physical culturist wishes to know something more definite about this cherished beverage — beer.

First, what about it as regards alcohol? We find that the ordinary beer for home use contains from five to ten per cent of alcohol, while that for transportation contains over ten per cent. Professor Newman took the trouble to analyze the different beers of general use, and found the weakest to contain from five to six per cent of alcohol, the most popular being stronger. A beer containing five per cent of alcohol would give a glassful of pure alcohol to every twenty glasses of beer. To one particular in the matter of hygiene, this fact furnishes "food for reflection."

An article from the *Medical Times and Gazette* (London) says, regarding beer: —

“Its intoxicating power is far greater than can be accounted for by the mere alcohol it contains ; . . . the hops, a plant nearly allied to Indian hemp (of which hashish is made), may be capable of producing a furious delirium quite apart from alcoholic intoxication.”

Query. Would King Beer be king at all if it were not for the alcohol or some other poison equally strong,—enough, at least, to excite the system to the first stage of inebriety? The first stage of inebriety is, according to authorities, when the vital organs are stirred into a warm commotion, the heart beats beyond the normal, the nerve centres at the brain are more or less hushed, the restraining influences of will and judgment are more or less released from duty, and the animal instincts are more or less assertive.

Would beer without poison be popular as a drink? Does the beer drinker crave the flavored water or rather the poison it contains?

And what about beer as a food?

We find that one has to drink six barrels of beer to get what is contained of nutriment in the three bushels of barley used to make it. Baron Liebig says:—

“If a man drinks daily eight or ten quarts of the best Bavarian beer (equal to our lager beer) in the course of twelve months, he will have taken into his system the nutritive constituents contained in a five-pound loaf of bread.”

He further says:—

“Beer, wine, and spirits furnish no element capable of entering into the composition of the blood, muscular fibre, or any part which is the vital principle.”

In the process of brewing, the nutritious principle of barley is almost entirely sacrificed by fermentation for the production of alcohol. It seems that $2\frac{1}{2}$ bushels of barley are used to make a barrel of beer (31 gallons). There will then be 5.2 pounds or 83.2 ounces of barley to the gallon of beer. In the process of malting, there is lost 20 oz.; mashing, 27.4 oz.; fermenting, 13.4 oz.; refining, 9 oz.; in all, 70 oz.; and the remaining "food," consisting of 13.2 oz., is principally a gum which has little if any nutriment in it. We find barley is decayed for the sake of obtaining the alcohol which makes beer, just as grapes are decayed to obtain alcohol for wine, or corn or rye for whiskey, etc. The processes of putrefaction necessarily destroy all wholesome foods for further use as foods. It appears that malt, a little of it being left undecomposed after the brewing, was once fed to cattle. Although the malt is not altogether decomposed, it has still undergone a process of decay which is always an organic degradation. Whether malt is now considered of value as a food even for cattle might be questioned after reading the following item from the "Encyclopædia Britannica:" —

"Malt was made duty free for cattle feeding in 1864 ; it was, however, found to be useless except in small quantities as a condiment, and the practice of giving it is entirely discontinued."

The fallacious idea concerning the food value of beer is again illustrated by studying the process of its manufacture. We find that barley is first malted and

then brewed, the processes being generally conducted by separate establishments. For malting, the barley grains are first soaked in warm water for about forty hours, when they swell to nearly double size. They are then thrown into a heap to undergo a process of decay or what is called "sweating." Kiln drying follows, after which they are mashed or bruised. In the "sweating" process, general changes have taken place. The starch has been converted into sugar, the gluten, from three parts to one, etc. The brewing consists of again soaking the bruised malt in warm water and allowing it to remain for partial decay, though other words than "decay" are used to express its meaning. There are first, second, and third mashes (different degrees of decay and straining). A process of straining removes the husks and other matters (formerly used for feeding cattle), and what is left is boiled with hops which supply a bitter flavor and something in the way of poison. The boiling serves the double purpose of furnishing the hop flavor and also of separating a certain quantity of nitrogenous matter (the *nutriment* of the grain) not fully decomposed nor drained off at the first straining. This separates out as "flakes and stringy solid." If it remained "it would further decompose and destroy the beer." This, then, is the "food" part of the beer, which would "*further decompose*" if allowed to remain. There is also a residue called mucilage, which is also removed, or partly removed, by huge sieves or false bottoms to the vats, this having been also formerly fed to cattle. What is left after all these eliminating processes, is a sweetened liquid

containing a small amount of degraded matter, of the flavor of barley and hops. This is then mixed with yeast, kept at the putrefactive temperature, and fermented. The greater the time allowed for this process, the greater, of course, is the amount of alcohol generated.

What gives the ruddy complexion and fat rotundity, that superficial appearance of health, to beer drinkers, is expressed by Gustafson as follows:—

“The fat in the beer drinkers is composed of these albuminous residues which, having been alcoholized, resist the action of the various solvents in the system, and therefore, being neither fit for use in the body nor reducible to a form in which they can be excreted, they have to be stored away so as to prevent obstruction to the circulation; hence so long as there is room they are packed away, much of them under the skin, and thus the fat and healthy appearance of the beer drinker! When there is no more room under the skin, the fat has to be deposited in the interior of the body, and hence the common disease of fatty degeneration of the heart, kidneys, etc.”¹

Again, any food taken and admixed with beer tends to produce fat. This is readily explained by the fact that any pure food becomes vitiated by

¹ Says Dr. Brunton, in “Influence of Stimulants and Narcotics on Health,” London, 1883: “As the beer drinker takes beer in addition to other nutriment, he has a tendency to become fat . . . from his digestion also suffering like that of the spirit drinker. Notwithstanding the stoutness and strength of beer drinkers, they are by no means healthy. Injuries which to other people would be slight, are apt to prove serious to them; and when it is necessary to perform surgical operations upon them, the risk of death is very much greater than in others.”

either an admixture of alcohol or an admixture with any food already partially decomposed. The process is well understood after studying the habits of germs and a knowledge of the marvellously rapid increase of the germs of putrefaction when in contact with degenerated food. As beer is generally taken with food, its own element of degraded food may be quite as objectionable as the alcohol it contains.

The beer habit is almost universal among German soldiers. I find accounts of the difficulty of saving German soldiers when wounded, inflammation almost invariably setting in with fatal results. Indeed, the percentage in the German army of death from wounds is very great compared with that of soldiers of nations less addicted to the use of the favorite poisons.¹

There has been a popular fallacy that the malt of beer contains some elements which assist the digestion of food. This is absolutely impossible, in that the process of boiling the infusion of malt for the manufacture of beer necessarily destroys any digestive quality. Digestive ferments of any kind are destroyed at a temperature of 130 degrees. Beer, therefore, has no power whatever to aid digestion. The effects of alcohol on digestion have been already discussed. Assuming that there are no more harmful ingredients in beer than those just indicated, regardless

¹ Sir James Paget says: "Be rather afraid of operating on those, of whatever class, who think they need stimulants before they work; who cannot dine till after wine or bitters; who have always sherry on the sideboard, or are always sipping brandy and water, or are rather proud that because they can eat so little they must often take some wine. Many who mean no harm thus daily damaging their health, making themselves unfit to bear the storms of life."

of adulteration, the study of its actual physiological effects is important.

Of course structural degeneration and the development of the "poison crave" is as easily developed in weak beer as in weak wine, and the beginning of blood-poisoning holds always the essence of the deepest possible fall.

The general effects of beer are discussed in the *Scientific American* as follows: —

"For some years past a decided inclination has been apparent all over the country to give up the use of strong alcoholic drinks, using beer as a substitute. This is evidently founded on the idea that beer is not harmful and contains a large amount of nutriment; also, that bitters may have some medicinal quality which will neutralize the alcohol it conceals, etc. These theories are without confirmation in the observations of physicians and chemists. The use of beer is found to produce a species of degeneration of the entire organization, profound and deceptive. Fatty deposits, diminished circulation, conditions of congestion, perversion of functional activities, local inflammations of both the liver and the kidneys are constantly present. Intellectually, a stupor amounting almost to paralysis arrests the reason, changing all the higher faculties into mere animalism, sensual, selfish, sluggish. . . . In appearance the beer drinker may be the picture of health, but in reality he is most incapable of resisting disease. A slight injury or a severe cold will commonly provoke acute disease. The beer drinker is generally diseased and very incurable. The constant use of beer every day gives the system no recuperation, but steadily lowers the vital forces.

"It is asserted by competent authority that the evils of heredity are very positive in beer drinkers. Public senti-

ment and legislation should comprehend that the use of all forms of alcohol is dangerous."

Says Dr. Charles Drysdale, in his address before the Public Health Section of the British Medical Association:—

"The drinking of beer is the greatest cause of gout among the population of London. Habitual beer drinking and excessive meat eating will undoubtedly form a duo of conditions that will take one to gout on a gallop."

Says Dr. Murchinson, in his lecture to the members of the Royal College of Physicians on Functional Diseases of the Liver:—

"It is the prevalence of beer and spirit drinking, and consequent liver-clogging, which accounts for the widespread use and countless forms of patent pills. . . . They are taken by millions every week, and people find if they do not take them they become bilious and unwell. They are all of a purgative nature, and by occasionally hurrying unspent material out of the system, they give temporary relief to the overwrought liver. The wear and tear of this process must, however, tend to shorten life."

There is much testimony regarding the injurious effects of beer drinking reported from many sources. When there appears to be so general a misunderstanding concerning it, it is a temptation to fill a volume of quotations on the subject.

The testimony of Colonel Greene, President of the Connecticut Mutual Life Insurance Company, one of the oldest and largest companies in the country, is especially interesting. Colonel Greene writes:—

"It has been my duty to send records of, and to make inquiry into, the last illness and death of many thousand persons of all classes, in all parts of the country. Two great features are shown in these records: the value of a man's inheritance of vitality, and the modifying force of habits of living upon that vitality. . . .

"I protest against the notion so prevalent and so industriously urged that beer is harmless. . . . What beer may be, and what it may do in other countries and climates, I do not know from observation. That in this country and climate its use is an evil only less than that of whiskey, if less, on the whole, and that its effect is only longer delayed, not so immediately and obviously bad, its incidents not so repulsive, but destructive in the end, I have seen abundant proof. In one of our largest cities, containing a great population of beer drinkers, I had occasion to note the deaths among a large group of persons whose habits in their own eyes and in those of their friends and physicians were temperate; but they were habitual users of beer. When the observation began, they were, upon the average, something under middle age, and they were of course selected lives. For two or three years there was nothing very remarkable to be noted among this group. Presently death began to strike it; and until it had dwindled to a fraction of its original proportions, the mortality in it was astounding in extent and still more remarkable in the manifest identity of cause and mode. There was no mistaking it; the history was almost invariable; robust, apparent health, full muscles, a fair outside, increasing weight, florid faces; then a touch of cold or a sniff of malaria, and instantly some acute disease with almost invariably typhoid symptoms was in violent action, and ten days or less ended it. It was as if the system had been kept fair outside, while within it was eaten to a shell, and

at the first touch of disease there was utter collapse ; every fibre was poisoned and weak. And this, in its main features, varying of course in degree, has been my observation of beer drinking everywhere. It is peculiarly deceptive at first ; it is thoroughly destructive at the end."

The Voice sent this published article to several presidents of life insurance companies, asking if their impressions concerning beer corresponded with that of Colonel Greene. It is interesting to find that nine presidents of our leading life insurance companies replied in letters published in *The Voice* (October, 1884) endorsing and practically repeating the experience of Colonel Greene.

The next quotation from the *Pacific Medical Journal*, and since endorsed and used in form of a circular by the officers of the Home Life Insurance Company (N. Y.), is too interesting to cast aside : —

"The fashion of the present day, in the U. S., sets strongly towards the substitution of beer for other stimulating liquors. An idea appears to be gaining ground that it is not only nutritious but conducive to health, and, further, that there does not attach to it that danger of creating intemperate habits which attends the use of other drinks. The subject is one of great magnitude, and deserves the attention of medical men as well as that of the moralist.

"Many years ago, and long before the moral sense of society was awakened to the enormous evils of intemperance, Sir Astley Cooper an undisputed authority in his day, denounced habitual beer drinking as noxious to health. Referring to his experience in Guy's Hospital, he declared that the beer drinkers from the London breweries, though

presenting the appearance of most rugged health, were the most incapable of all classes to resist disease, — that trifling injuries among them were liable to lead to the most serious consequences, and that so prone were they to succumb to disease that they would sometimes die from gangrene in wounds as trifling as the scratch of a pin.

“We apprehend that no great change, either in beer or men, has taken place since the days of the great surgeon.

“Of all intoxicating drinks, it is the most animalizing. It dulls the intellectual and moral, and feeds the sensual and beastly nature. Beyond all other drinks, it qualifies for deliberate and unprovoked crime. In this respect it is much worse than distilled liquors.

“A whiskey drinker will commit murder only under the direct excitement of liquor, a beer-drinker is capable of doing it in cold blood. Long observation has assured us that a large proportion of murders deliberately planned and executed without passion or malice, with no other motive than the acquisition of property or money, often of trifling value, are perpetrated by beer drinkers.

“We believe, further, that the hereditary evils of beer drinking exceed those proceeding from ardent spirits. First, because the habit is constant and without paroxysmal interruptions, which admit of some recuperation; secondly, because beer drinking is practised by both sexes more generally than the spirit drinking; and thirdly, because the animalizing tendency of the habit is more uniformly developed, thus authorizing the presumption that the vicious results are more generally transmitted.

“It will be inferred from these remarks that we take no comfort from the substitution of malt drinks for spirituous liquors. On the contrary, it is cause of apprehension and alarm that, just as public opinion, professional and unprofessional, is uniting all over the world in the

condemnation of the common use of ardent spirits, the portals of danger and death are opening wide in another direction."

On account of the alarming growth of the use of beer among our people, and the spreading delusion that the encouragement of beer drinking serves to promote the cause of temperance, the *Toledo Blade* published the opinions of the leading physicians of Toledo on the subject.

Dr. S. H. Burgen, a practitioner of thirty-five years, writes :—

"My attention was first called to the insidious effects of beer drinking years ago, when I began examining for a life insurance company. I passed as unusually good risks five Germans—young business men—who seemed to have superb constitutions. In a few years I was amazed to see the whole five drop off, one after another, with what ought to have been mild and easily curable attacks of diseases. On comparing my experience with that of other physicians, I found that they were all having similar luck with confirmed beer drinkers, and the incidents of my practice since then have heaped up confirmation upon confirmation.

"The first organ to be attacked is the kidneys; the liver soon sympathizes with them, and then comes, most frequently, dropsy or Bright's disease, both of which are certain to end fatally. Any physician who cares to take the time will tell you . . . that the beer drinker seems incapable of recovering from the effects of mild disorders and injuries not usually regarded as of a grave character. Pneumonia, pleurisy, fevers, etc., seem to have a first mortgage on him, which they foreclose remorselessly at an early opportunity. . . ."

Dr. S. S. Thorn, a physician of an experience embracing a period of service in the army, as well as some twenty years' practice in Toledo, said:—

“Adulterants are not the important thing in my estimation; it is the beer itself. It stupefies and retards his intellection, because it is a narcotic and cumulative in its effects. For instance, mercurials are cumulative. They gather in the system. A dose of one-sixteenth or one-thirty-second of a grain would have no appreciable effect upon the system; but a number of these small doses administered consecutively would soon produce salivation and other destructive results.

“So beer accumulates and gathers certain pernicious agencies in the system until they become very destructive. Every man who drinks beer in any quantity soon begins to load himself with soft, unhealthy fat. This is bad, because it is the result of interference with the natural elimination of deleterious substances. No man, no matter what his constitution, can go on long with his system full of the morbid and dead matter which the kidneys and liver are intended to work off. If you could drop into a little circle of doctors, when they are having a quiet, professional chat over matters and people in the range of their experience, you would hear enough in a few minutes to terrify you as to the work of beer.

“One will say, ‘What’s become of So-and-So? I have n’t seen him around lately.’ ‘Oh, he’s dead.’ ‘Dead! What was the matter?’ ‘Beer.’ Another will say, ‘I’ve just come from Blank’s. I’m afraid it’s about my last call on him, poor fellow.’ ‘What’s the trouble?’ ‘Oh, he’s been a regular beer drinker for years.’ A third will remark how —— has just gone out like a candle in a draft of wind. ‘Beer’ is the reason given. And so on, until the

half dozen physicians have mentioned perhaps fifty recent cases where apparently strong, hearty men, at a time of life when they should be in their prime, have suddenly dropped into the grave.

“To say they are habitual beer drinkers is a sufficient explanation to any physician. He never asks anything further as to causes. The first effect on the liver is to congest and enlarge it. Then follows a low grade of inflammation and subsequent contraction of the capsules, with the effect of producing what is known in the profession as ‘hob-nailed liver.’ The surface of the liver becomes covered with little lumps that look like nail heads on the soles of shoes. This condition develops dropsy. The congestion of the liver clogs up all the springs of the body, and makes all sorts of mental and physical exertion as difficult and labored as it would be to run a clock, the wheels of which were covered with dirt and gum. The life insurance companies make a business of estimating men’s lives, and can only make money by making correct estimates of whatever influences life.

“Here is the table that they use in calculating how long a normal, healthy man will probably live after a given age : —

Age.	Expectation.
20 years	41.5 years
30 years	34.4 years
40 years	28.3 years
50 years	20.2 years
60 years	13.8 years
65 years	11 years

“Now, they expect that a man otherwise healthy, who is addicted to beer drinking, will have his life shortened from 40 to 60 per cent. For instance, if he is 20 years old and does not drink beer, he may reasonably expect to

reach the age of 61. If he is a beer drinker, he will probably not live to be over 35, and so on. If he is 30 years old when he begins to drink beer, he will probably drop off somewhere between 40 and 45, instead of living to 64, as he should. There is no sentiment, prejudice, or assertion about these figures. They are simply cold-blooded business facts, derived from experience, and the companies invest their money upon them just the same as a man pays so many dollars for so many feet of ground or bushels of wheat.

“All beer drinkers have rheumatism, more or less, and no beer drinker can recover from rheumatism as long as he drinks beer. You will notice how a beer drinker walks about stiff on his heels, without any of the natural elasticity and spring from the toes and ball of the foot that a healthy man should have. That is because the beer has the effect of increasing the lithia deposits—chalk stones they are sometimes called—about the smaller joints, which cause articular rheumatism. BEER DRINKERS ARE ABSOLUTELY THE MOST DANGEROUS CLASS OF SUBJECTS THAT A SURGEON CAN OPERATE UPON. Every surgeon dreads to have anything to do with them. They do not recover from the simplest hurts without a great deal of trouble and danger.

“Insignificant scratches and cuts are liable to develop a long train of dangerous troubles. The choking up of the sewers and absorbents of the body brings about blood-poisoning and malignant running sores. . . . It is very dangerous for a beer drinker to even cut his finger. No wound ever heals by ‘first intention,’ as it does upon a healthy man, but takes a long course of suppuration, sometimes with very offensive discharges, and all sorts of complications are liable. . . . I do not regard beer drinking as safe for any one. It is a dangerous, aggressive evil that no one can tamper

with with any safety to himself. There is only one safe course, and that is to let it alone entirely."

Dr. M. H. Parmalee, physician and surgeon of twelve years' practice in Toledo, says :—

"The majority of saloon keepers die from dropsy, arising from liver and kidney diseases, which are induced by beer drinking. My experience has been that saloon keepers and the men working about breweries are very liable to these diseases. When one of these apparently stalwart, beery fellows is attacked by a disorder that would not be regarded as at all dangerous in a person of ordinary constitution, or even a delicate, weakly child or woman, he is liable to drop off like an overripe apple from a tree. You are never sure of him for a minute. He may not be dangerously sick to-day and to-morrow be in his shroud.

"All physicians think about alike on this subject, as their observations all lead them to similar conclusions. It is a matter so plain that there is hardly room for any other opinion. I have come to dread being called upon to take charge of a case of sickness in a man who is an habitual beer drinker. Experience has taught me that in such persons it is impossible to predict the outcome. The form of Bright's disease known as the swollen or large white kidney is much more frequent among beer drinkers than any other class of people, and its prevalence seems to have kept pretty fair pace with the rapid increase in the consumption of beer in this country."

Dr. W. T. Ridenour served during the war as surgeon of the Twelfth Ohio Infantry, was medical inspector of the Department of West Virginia, has resided in Toledo for fourteen years, has served some years as health officer of the city, and has been lec-

turer on physiology in the Toledo medical schools for three years. The following is his testimony : —

“The first effect of the habitual use of beer is upon the stomach. . . .

“In making a post-mortem examination, a physician instantly recognizes a beer drinker's stomach by its greatly increased dimensions. The liver is the great laboratory, the great workshop of the body. Any derangement of it means the immediate derangement of all the rest of the vital machinery. There can be no health anywhere when the liver is out of order. Beer drinking overloads it and clogs it up, producing congestion. . . .

“One of the functions of the liver is to separate from the blood excrementitious and effete substances that should be thrown off through the kidneys in the urine. Naturally, when the working capacity of the liver is crippled, this function of preparing the excrementitious matters for elimination by the kidneys is interfered with. . . .

“I have always believed that Bayard Taylor fell a victim to the German beer that he praised so highly. He died of Bright's disease at fifty, when he was comparatively young, and should have lived, with his constitution, to a green old age. He did not want to die, either. He was full of ambition, and had much work that he was eager to do before he passed away. But he went, just as habitual beer drinkers are going all the time and everywhere. My first patient was a saloon keeper on Cherry Street, as fine a looking man physically as I had ever seen — tall, well built, about thirty-five years old, with florid complexion, and muscles well developed. He had an attack of pneumonia in the lower lobe of the right lung.

“It was a simple, well-defined attack, which I regarded very hopefully. Doctors are confident of saving nineteen

out of twenty of such cases. I told my partner — Dr. Trembly — about it, and to my surprise he said quietly, ‘He’ll die.’ I asked what made him think so. ‘He’s a beer drinker,’ answered Trembly, and he persisted in predicting a fatal termination of the case in spite of all my assertions to the contrary. . . . Beer drinkers are peculiarly liable to die of pneumonia. Their vital power, their power of resistance, their *vis medicatrix nature*, is so lowered by their habits that they are liable to drop off from any acute disease, such as fevers, pneumonia, etc. AS A RULE, WHEN A CONFIRMED BEER DRINKER TAKES PNEUMONIA HE DIES. THEY MAKE BAD PATIENTS.

“Beer drinking produces rheumatism by producing chronic congestion and ultimately degeneration of the liver, thus interfering with its function, among others its metabolic function, by which the food is elaborated and fitted for the sustenance of the body, and by which function the refuse materials resulting from the nutrition and action of the tissues of the body are oxidized and made soluble for elimination by the kidneys, as before stated, thus forcing the retention in the body of the excrementitious and dead matters I have spoken of. The presence of uric acid and other insoluble effete matters in the blood and tissues is one of the main causes of rheumatism, and I have shown how beer drinking retains it in the system.”

Dr. S. S. Lungren, one of the leading homœopathic physicians and surgeons in the country, has been practising in Toledo for nearly a quarter of a century: —

“It is difficult to find any part of a confirmed beer drinker’s machinery that is doing its work as it should. This is the reason why their life-cords snap off like glass rods when disease or accident gives them a little blow.

Beer drinking shortens life. That is not a mere opinion, however; it is a well-settled, recognized fact. Physicians and insurance companies accept this as unquestioningly as they do any other undisputed fact of science. The great English physicians decide that the heart's action is increased 13 per cent in efforts to throw off alcoholic stimulant introduced into the circulation. The result of this is easily figured out.

"The natural pulse beat is, say, 76 per minute. If we multiply this by sixty for the number of minutes in an hour, and by twenty-four for the hours in a day, and add 13 per cent to the sum total, we will find that the heart has been compelled to do an extra work during that time in throwing off the burden of a few drinks equal to $15\frac{1}{2}$ tons lifted one foot high. The alcohol in the beer causes a dilation of the superficial blood-vessels, as it does of all of them, in fact. This gives the ruddy look. But it is really an unhealthy congestion there and everywhere. Everywhere — heart, brain, stomach, lungs, liver, kidneys — it breaks down, weakens, enfeebles, invites attacks of disease, and makes recovery from any attack or injury precarious and difficult.

"The brain and its membranes suffer severely, and after irritation and inflammation come the well-known dulness and stupidity. There is no question in my mind that many brain diseases and many cases of insanity are produced by excessive beer drinking. But it is everywhere the same, everywhere it is degeneration; and this ruinous work is not confined to the notorious drinkers, but every one must suffer just in proportion to the amount he or she drinks. NO MAN WHO DRINKS MUCH BEER IS THE PHYSICAL AND MENTAL EQUAL OF ONE WHO ABSTAINS. HE DIMINISHES HIS PRESENT POWERS, SHORTENS HIS LIFE, AND WRECKS HIMSELF BY HIS INDULGENCE IN IT."

Dr. J. T. Woods, three years in the United States service as surgeon-in-charge of important brigade and division hospitals, five years professor of physiology in the Cleveland Medical College, now chief surgeon of the Wabash system of railroads, has practised in Toledo sixteen years. He says:—

“The indiscriminate use of beer as a beverage produces the most damaging effects, as other drugs would do. I can conceive of no greater fallacy than that any active medicine can, even in small quantities, be used with impunity. It does not follow because we cannot measure results that there are none. That beer is foreign to nature’s demand is plainly evident.

“The whole organism at once sets about its removal. Every channel through which it can be got rid of is brought into active play and does not cease its efforts until the last trace is gone. The reaching of a certain end depends only on the frequency of the repetitions. The whole is made up of the parts; each and every drink counts one. These ‘ones’ added together make the wreck, and to secure this result it is only necessary to make the single numbers sufficient. I do not see how to excuse any one from its effects. In short, each leaves its footprint in one way or another, and the idea that because you stop before you stagger, the system takes no note of the damaging material you put into it, is a ruinous delusion.”

Dr. W. C. Chapman served during the war as a surgeon in the Army of the Potomac, and since then has practised in Toledo. He is professor of materia medica and therapeutics in the Northwestern Ohio Medical College. He says:—

"Alcohol is a cerebral sedative, that is, an agent which, having first stimulated the brain and nervous system to an abnormal degree, causes sedation, an exactly opposite condition. It matters not in what form the alcohol is taken, whether as whiskey, brandy, wine, or beer, this physiological effect is always shown as the principal one.

"There are other results from its use, which, although perfectly well established and understood by the physiologist, remain unknown to the drinker, as the condensation of albumen, congestion of the stomach and liver, thus impairing digestion, and even causing structural changes in the various organs themselves; causing enlargements, followed by contractions of the liver, fatty degeneration of the blood, the blood-vessels, heart, and kidneys, and the brain itself may be similarly affected. . . ."

Dr. G. A. Collamore, in practice about twenty-five years and formerly division surgeon of the Third Division, Twenty-second Army Corps, said:—

"Beer contains from three to five per cent of alcohol, and produces the well-known effects of that substance on the vital organs, especially the brain, stomach, liver, kidneys, and blood. The brain is kept in a congested condition, which prevents the accurate use of the mental faculties. The stomach becomes catarrhal, inactive, and finally dilated. The liver is first congested, then contracted or cirrhotic, which condition partially stops the free circulation of blood through it and leads to abdominal dropsy. The kidneys are overworked and become first enlarged and then contracted (Bright's disease), a state of things which results also in enlargement of the heart (hypertrophy), derangement of the circulation, and, eventually, general dropsy. The lungs have an extra amount of labor thrown

upon them, and are in a favorable condition for attacks of congestion, inflammation, or œdema (dropsy), which are very liable to prove fatal.

“Every physician and surgeon will testify that, other things being equal, the beer soaker has a much smaller chance of recovery, if overtaken by serious illness, accident or the necessity of surgical interference, than the one who abstains.

It seems that dealing with poisons of any kind as food and drink is enough to corrupt “the angels and ministers of Grace.”

Because hops are not cheaper and more plentiful (such vast amounts of beer made) there has been found a substitute in part for them — a poison which in exhilarating effects is altogether delightful. For brewers it has also the virtue of being extremely inexpensive. It is the extract of a berry and is called *coculus indicus*. It is a virulent poison. Some of the fishermen of India (chiefly poachers) use it for a special kind of fishing. They pour a small quantity of it into a stream and the poisoned fish immediately present themselves on the surface of the water, ready to be skimmed off like cream from milk. The habit may be adopted, when generally known, as an expeditious way of fishing for market, and we may have in time certain kinds of fish which, if they do not kill immediately, will, like beer, produce “perfectly delightful effects.” If one is not particular about one’s poisons, why invidious distinctions? It seems that the brewer offers even pleasanter effects with his *coculus indicus* than with his alcohol, in that a quicker intoxication results. The quicker the intoxicating

effects the better the tonic, so-called, and this particular kind of tonic serves to make the beer more popular, and all at a cost, — next to nothing. The *anamirta coculus* vines are now regularly cultivated, and from India the black bitter berries are shipped in large quantities to the chemical supply dealers of breweries. It is said that many European brewers use it with the consent of their customers, there being many beer drinkers who insist upon the admixture as a condition of their patronage.

Mr. Vizetelly in his work on "Wines" (London, 1880) says: —

"The popular notion that the intoxicating influence of English beer is due exclusively to its alcoholic strength is an erroneous one, for there are many beers containing only a very small quantity of alcohol that are highly stupefying, most likely due to the use of *coculus indicus*."

Gustafson says: —

"As substitutes for hops, a number of bitter stuffs are used. Picric acid, aloes, quassia, buckbean, *coculus indicus*, and gentian supply the taste for hops; phosphoric acid, the hop aroma; and for the headings or froths there are concoctions of alum, copperas, and *coculus indicus*. As a substitute for alcohol, the *coculus indicus* berry, which in its poisonous power surpasses alcohol, is being imported in steadily increasing quantities into England. . . . To give age or rectify staleness, oil of vitriol or sulphuric acids are chiefly employed. Sulphate of iron is the ingredient which gives it the metallic bitter taste so loved by beer drinkers. Lime and lead composites are resorted to for neutralizing the acids."

Beer for exportation is also generally treated with preservatives.

The Press all over the world has lately had much to say about recent deaths in England due to arsenical poisoning on account of beer drinking. The Correspondent of the *New York Evening Post* thus writes about it (Dec. 18, 1900):—

“In Manchester, Salford, and elsewhere some two or three thousand cases of arsenical poisoning and some deaths have occurred, and it proves on analysis that the poisoning is directly due to the beer consumed in these localities. . . . In some cases the beer, when analyzed, was found to contain one-third of a grain of arsenious acid; that is to say, every pint and a half of beer would have its one-sixteenth of a grain of arsenious acid. . . .

“Needless to say, the brewers, who hold the beer trade of England so absolutely in their own hands that it is difficult to find a house that is not ‘tied’ more or less strictly to one particular brewery, have taken alarm at these revelations. In the Manchester district they have poured down the sewers \$250,000 worth of beer, and all manner of public notices and devices are being contrived to restore public confidence in the national beverage. . . .

“Now, these totally unexpected revelations open up a clear way for the temperance reformer. For years past a little group of men, who may be classed among the moderate temperance advocates, have preached the gospel of pure beer. One of their number has brought again and again before Parliament a measure with this end in view, only to be laughed out of the House by the mere politician. But now ‘pure beer’ is the political cry. And the English law is certainly in a most peculiar state on the point. In fact,

it allows a brewer to make beer from any material he likes, so long as the revenue does not suffer. That is all very well for the revenue, and no student of the annual budget speeches in the House of Commons can have failed to notice the broad gleam of satisfaction which suffuses the Chancellor of the Exchequer's face when counting up the stupendous revenues which beer provides. Last year the excise derived from beer alone was no less than \$58,000,000. And the Chancellor of the Exchequer smiles over his gold with little or no thought for the humble beer drinker, whose twopenny half-pints go to make up this gigantic total.

"And it is not alone in Lancashire that these discoveries concerning arsenic have been made. Beer is, of course, the national drink in England. . . .

"But looking at the matter in the light of a little experience of my own, I doubt whether the British workingman wants really 'pure beer' or will drink it when provided. This I believe to be easily provable. The other day I was being shown over one of the large breweries which form so marked a feature in the recent industrial development of England. The proprietor pointed with pride to his bursting vats and to the up-to-date equipment of each department. Presently we came to the 'sugar-room,' where were kept the very materials which have caused the present trouble in Manchester and elsewhere. 'Of course,' said the brewer, 'we don't talk about the sugar and these things. They are quite within the law and are absolutely essential to the production of a popular beer, but there is no purpose in telling the public that what it drinks is not so much hops and malt as German glucose, gentian, quassia, and the rest of it.' And he went on to tell me how, when his business was converted into a limited liability company, one of the incoming capitalists, who was something of an

idealist, made it a condition of his co-operation that the beer supplied to the public should be absolutely unsophisticated. 'We knew that was ridiculous,' said the brewer, 'but to humor him we tried his plan. We produced sound, honest beer (the ingredients of "sound, honest beer," are quite bad enough, Ed.), and nothing but sound, honest beer, and what do you think was the result? Not one public house on our list would give us a second order for it. They told us that their customers, one and all, flatly refused to drink what they called dish-washings, and demanded the true adulterated article.' "

Why should the word "pure" be attached to beer — "pure beer"? Webster's Dictionary thus describes the word: "Free from that which contaminates, defiles, or blemishes."

If the word "pure" is supposed to have any relationship with the word "wholesome," it cannot apply to beer or any other unwholesome thing. When so used it but deceives the people.

The brewers dominate politics in England, and it is said that in no country are they so all-powerful. Lord Rosebery was free to say that if England does not master the brewer, the brewer will master England: —

"To what good is it," said Lord Brougham to the House of Lords, "that the Legislature should pass laws to punish crime, or that their lordships should occupy themselves in trying to improve the morals of the people by giving them education? What could be the use of sowing a little seed here, and plucking up a weed there, if these beer-shops are to be continued to sow the seeds of immorality broadcast over the land, germinating the most frightful produce that

ever has been allowed to grow up in a civilized country, and, he was ashamed to add, under the fostering care of Parliament."

There has been a popular feeling that the establishment of beer-shops would tend to clear out rum-shops, and the experiment has been abundantly tried.

"Experience," says Carlyle, "is the best of school-teachers, but he takes dreadfully high wages."

The *London Times*, in 1871, thus speaks of the free beer-shop bill, which was authorized by the Government in 1830:—

"The idea entertained at that time was that free trade in beer would gradually wean men from the temptations of the regular tavern, would promote the consumption of a wholesome national beverage in place of ardent spirits, would break down the monopoly of the old license houses, and impart, in short, a better character to the whole trade. . . . The results of this experiment did not confirm the expectations of its promoters. The sale of beer was increased, but the sale of spirituous liquors was not diminished."

In 1850, the Rev. John Clay, chaplain of the Preston House of Correction, and a student and authority on social science, speaking of the passage of the "Beer Bill" (in his testimony before the Committee of the House of Lords) said:—

"Instantly 40,000 dens were opened, each of which breeds more immorality and sin in a week than can be counteracted by the minister of religion in a year. . . .

I believe it impossible for human language to describe the misery and wickedness added to the previous sum of our moral and social ill by beer-houses."

This "free beer act" (which was a temperance experiment on the part of the English, allowing the absolute free sale of beer as a harmless beverage), was well described a fortnight after its passage by Sidney Smith, who had been a supporter of the measure:—

"The new bill is in operation. Everybody is drunk. Those who are not singing are sprawling. The sovereign people are in a beastly state."

In the life of Chaplain Clay, published by his son, is the following:—

"Drunkenness is the main topic of his first and almost every subsequent report. For some years it was only the old-fashioned drunkenness of the public houses which he had to describe, but after the passage of the beer-bill in 1830, and the consequent springing up of an enormous crop of beer-shops, his fear of the great national sin turned almost to consternation.

"In 1853 the Committee of the House of Commons concurred with the lord's report, and declared that the beer-shop system has proved a failure. . . ."

There is now a decided *penchant* in France for the once hated German beer. In place of the abominable *vin ordinaire*, the liqueurs, the absinthe, the black coffee, it would seem that Frenchmen were doing well to take to beer, even if the only kind of beer that could satisfy palsied palates were a strongly

"fortified" concoction. In certain accounts of *Paris qui passe*, we learn that the Frenchmen who formerly repaired to the café to chat, now repair to the *brasserie* to drink; that the former glass of liqueur at the café, which was supposed to sharpen the Frenchman's wit, is now changed for the stupefying "demi" of beer, which latter tankard is as large as the most generous German schooner.

The more foam and froth in the drink the less talk, they now say. They also allege that the second German invasion, as they call this malt-siege of Paris, has brought along consequences which do not so conspicuously follow in Germany. The German takes outdoor exercise from youth to old age, and works off much of the deadening effects of beer-drinking by his active physical exertions. Without beer and the other favorite poisons what a nation would they be! Athletic clubs are almost universal in Germany. They are yet but a curiosity in France. To the anæmic Frenchman, exercise but of the gentlest sort is unknown, and upon him the concoction of hops, coculus indicus, copperas, oil of vitriol, picric acid, arsenic, etc., exerts an influence quite unchecked.

The brewers are a large organized force, and a growing political power in our own country. A little account of one of their meetings held in Washington, May 11 and 12, 1882, is interesting. It was the annual meeting of the United Brewers' Association:—

"The convention was called to order by —— who, in his address of welcome, congratulated the brewers upon their having come to the Capital when the United States

Congress was in session, with an opportunity to meet and greet their senators and representatives and the officers of the government, with whom they have, as brewers, business contact, — concluding with an expression of the hope that their coming might be made instrumental in clearing the dark clouds which in many parts of the country threaten our time-honored business.”

The President of the Association then delivered his annual address, in which he congratulated the brewers that in this country the consumption of beer had gone up during eighteen years 679 per cent. He gave the number of breweries as 2,474, stating that 30,000 persons were employed in the beer business, and that it had a capital of 152,524,720 dollars invested. There were 8,536 retail and 2,034 wholesale dealers in malt liquors during the special tax-year, ending April 30, 1881. There were reports submitted from the “Agitation Committee,” and the Publication Committee. The Agitation Committee reiterated their claims for beer as a “temperance beverage.” The Publication Committee reported that they had printed and distributed nearly 115,000 pamphlets and broadsides.

The report of the Attorney, Mr. —, recounts, among other things, his successful opposition in Congress to the Commission of Inquiry Bill, and to the measures for the prohibition of the liquor traffic in the District of Columbia and the territories: —

“In response to the petitions from the brewers of Iowa, Michigan, and Indiana, for financial aid to defeat prohibition in those States, \$2,000 were appropriated to Michigan, \$3,000 to Iowa, \$5,000 to Indiana, and \$500 to Kansas.

Much larger sums are understood to have been contributed through other channels."

There is a grim humor in the circulating pamphlets of the Brewers' Associations, which assert that "beer is a food," "beer is a temperance drink," and that "Germany is a temperate country."

THE COCAINE HABIT

IT would seem that any new poison but needs an introduction to become popular.

From the New York *Medical Journal* is taken the following personal experience of an apothecary:—

"As a sufferer from toothaches, a dentist suggested inserting cotton impregnated with cocaine solution in the tooth. I was relieved for a time. The pain returning, I continued the cocaine application, and thus insensibly got so accustomed to the drug that I could not do without it, pain or no pain. The tooth was filled after some time, but the habit remained. . . . I used to take a gram and sometimes two grams in twelve hours. . . . I will now state the symptoms. . . . After say between five and ten grains were swallowed, I felt elated, full of life and vigor, cheerful, seeing everything in the rosiest of light; my mind would clear up and things incomprehensible to me at other times would become plain and evident. I underwent physical and mental work which under normal conditions I could not possibly have accomplished. It is the most agreeable of sensations; one feels perfectly and serenely happy. . . ."

The description of reaction is as follows:—

“ I felt haunted, restless, morose, quarrelsome ; had hallucinations of being persecuted and of impending evil ; my heart would be pounding at a fearful rate, so that I could actually hear it throbbing ; the eyes got glassy with a fixed, starting look ; the tongue was heavy and unable to move at will ; a terrible and incessant hacking cough shook my frame, my mind was obfuscated ; there was inability to eat, with no feeling of hunger, and there was insomnia and an insatiable craving for alcoholic stimulants. . . . Under ordinary circumstances I can stand no strong drinks, and yet under the cocaine influence I drank daily a bottle of brandy. . . . When no other drinks were on hand, I often actually drank pure alcohol, such was my craving for it.

“ I was a slave to this habit for five years ; . . . being a druggist I had the drug always within reach and used it without being suspected as a cocaine fiend by anybody, including the medical men called in by my family to attend me. One day I awoke to consciousness ; . . . a pamphlet on morphinism, which fell into my hands by chance, opened my eyes to the danger I was incurring, and I determined to shake off the lethargy which was overpowering me, and to be a man and act like one. It was a hard task ; days, weeks, and months of misery and inward struggle followed. My whole system was in arms opposing my energy and will. . . . I am proud to say I triumphed, and when I now look back to that time of untold misery and shame, I rejoice to be able to look in the eyes of my fellow creatures without shame or fear, a self-saved man.”

The experience of the apothecary is remarkable, not in the course of his narcomania, but that he recovered. Druggists reluctantly admit that the sale of cocaine is increasing in the United States at an

alarming rate. The progress of the mania is rapid, its effects are invariably disastrous, and its sequel in ninety per cent of cases is hopeless invalidism.

TEA AND COFFEE

TEA and coffee have seemed so innocent as compared with tobacco, alcohol, and opium, that it is quite distressing to class them among the poisons.

Tea and coffee are not, however, insignificant factors in the story of human degeneracy. If it were but the flavor of tea and coffee that we crave, it can be imitated in harmless compounds. The imitation coffee made of parched grains and caramel (burned sugar) is already sold by nearly all grocers. I experimented diligently to find a method for preparing it, with the idea of mitigating to a slight extent the unwelcome of this chapter.¹

¹ My several experiments made to imitate coffee flavor by various mixtures of parched grains, nuts, figs, the ordinary sugar, and maple-sugar did not meet with success. I was surprised to find, through Miss Bucknum, how very simple and successful is the following formula: two cups of bran, one-half cup of corn meal, one-quarter cup of New Orleans molasses, one-quarter cup of boiling water. The hot water and molasses are mixed together and then stirred into the bran and corn meal previously mixed. The whole is carefully parched in the oven to an even brown color without burning. In making the Bucknum coffee, three even tablespoonfuls of the cereal coffee are added to each cupful of boiling water (used at the time of the first ebullition). The mixture should come again to the boiling point, after which it is placed at the side of the fire to settle and steep for four or five minutes. It is served in hot cups with either cream or boiling milk and sugar.

But it is neither the delicious flavor nor the temperature alone that the tea and coffee drinker seeks. Most unfortunately it is the poison, the theine of the tea and the caffeine of the coffee. Both of these drugs (which are chemically similar) belong to a class of alkaloids which are given various names according to their origin, namely, theine from the tea leaf, caffeine from the coffee berry, strychnia from the seeds of *nux vomica*, aconite from monk's-hood, atrophine from belladonna, morphine from the poppy, etc., — all acting on the system after the general manner of all poisons.

Dr. Haig has given us the most positive and important information about the tea and coffee poisons, which he calls "zanthins," and which become identical with uric acid when taken in the system.¹

We have in tea and coffee, the same old story of the ups and downs of all poisons, the same old desire for artificial felicity, the same old principle of irritation, the same old call on the reserve forces of life, the same old contribution towards general degeneracy.

"It gives me a feeling of rest when I am tired," says the tea or coffee drinker — that same old story of all inebriates. One of the first and most important principles for the physical culturist to learn is, that one should not *feel* rested unless one *is* rested, and

¹ Uric acid consists of four chemical elements in the following proportions: $C_5 H_4 N_4 O_3$. The chemical elements of the tea and coffee poisons are, $C_5 H_4 N_4 O_2$, having but one atom (oxygen) of difference. When tea or coffee is taken into the system the zanthins take up enough oxygen from the blood to complete the formula of uric acid.

that borrowing from one's future store of energy creates the hardest of all debts to pay.

There has already been a decided revolution against the use of both tea and coffee, and comparative freedom from nervous diseases, insomnia, irritability, headaches, dyspepsia, heart weakness, blood-poisoning, etc., which every tea and coffee tippler contracts more or less, will be the reward.

To understand best the slavish effects of these drugs, one has but suddenly to abandon their use, remembering at the same time that wholesome food never enslaves. We are told, indeed, that there is more intoxication in a cup of strong tea than in a glass of ordinary beer; and Dr. Haig proves experimentally the exact uric acid effects of both tea and coffee. He frequently mentions in his publications the evil effect the great consumption of tea is having upon the people of England.

Coleridge's "cup that cheers but not inebriates" is a delusion and a snare. Tea, like coffee, does inebriate and leads to more or less the gloom of all poisons.

I will quote from two articles on the subject, the first of which was published in *Knowledge*, by that most able scientist, M. Mattieu Williams. The article followed one written by Count Rumford, in which he described a beverage made of parched grains which certain peasants of Bavaria drink as a substitute for tea and coffee, adding that —

"it is infinitely preferable in all respects to that most pernicious wash, tea, with which the lower classes of Great Britain drench their stomachs and ruin their constitutions.

"This may appear to many," says Mr. Williams, "a very strong condemnation of their favorite beverage ; nevertheless . . . it is perfectly sound. . . .

"The experience of every confirmed tea-drinker, when soundly interpreted, supplies condemnation of the beverage. 'It is so refreshing.' 'I am fit for nothing when tea-time comes until I have had my tea, and then I am fit for anything.' The 'fit-for-nothing' state comes on when the drug is taken at the usual time. . . . With blindness still more profound some will plead for tea, by telling that by its aid one can sit up all night long at brain-work without feeling sleepy, provided ample supplies of the infusion are taken from time to time.

"It is unquestionably true that such may be done ; that the tea-drinker is languid and weary at tea-time, whatever be the hour, and that the refreshment produced by 'the cup that cheers,' and is said not to inebriate, is almost instantaneous.

"What is the true significance of these facts ?

"The refreshment is certainly not due to nutrition, not to the rebuilding of any worn-out or exhausted organic tissue. The total quantity of material conveyed from the tea leaves into the water is ridiculously too small for the performance of any such nutritive function ; and, besides this, the action is far too rapid, there is not sufficient time for the conversion of even that minute quantity into organized working tissue. The action cannot be that of a food, but is purely and simply that of a stimulating or irritant drug, acting directly and abnormally on the nervous system.

"The five-o'clock lassitude and craving are neither more nor less than the reaction induced by the habitual abnormal stimulation ; or otherwise, and quite fairly, stated, it is the outward symptom of a diseased condition of brain,

produced by the action of a drug ; it may be but a mild form of disease, but it is truly a disease nevertheless.

“The active principle which produces this result is the crystalline alkaloid, the theine, a compound belonging to the same class as strychnine and a number of similar vegetable poisons. These when diluted act medicinally, — that is, produce disturbance of normal functions as the tea does, and, like theine, most of them act specially on the nervous system ; when concentrated they are dreadful poisons, very small doses producing death.

“The non-tea-drinker does not suffer any of these five-o'clock symptoms, and, if otherwise in sound health, remains in steady working condition until his day's work is ended and the time for sleep and rest arrives. But the habitual victim of any kind of drug or disturber of normal functions acquires a diseased condition, displayed by the loss of vitality or other deviation from normal condition, which is temporarily relieved by the usual dose of the drug, but only in such wise as to generate a renewed craving. I include in this general statement all the vice-drugs (to coin a general name), such as alcohol, opium, tobacco, arsenic, hashish, betel-nut, cocoa-leaf, thorn-apple, Siberian fungus, maté, etc., the use of which may be, and has been, defended by the same arguments as those used by the advocates of habitual tea-drinking.

“The practice of taking tea or coffee by students, in order to work at night, is downright madness, especially when preparing for an examination. More than half of the cases of breaking down, loss of memory, fainting, etc., which occur during severe examinations, and far more frequently than is commonly known, are due to this.

“I frequently hear of promising students who have thus failed, and on inquiry have learned — in almost every instance — that the victim has previously drugged himself

with tea or coffee. Sleep is the rest of the brain; to rob the hard-worked brain of its necessary rest is cerebral suicide.

"I need scarcely add that all I have said above applies to coffee as to tea. The active alkaloid is the same in both.

"All the popular stimulants and refreshing drugs have two distinct and opposite actions; an immediate exaltation, which lasts for a certain period, varying with the drug and the constitution of its victim, and a subsequent depression proportionate to the primary exaltation, but, as I believe, always exceeding it either in duration or intensity or both, thus giving as a net or mean result, a loss of vitality."

In an article on the chemistry of coffee and tea by Professor Prescott (Professor of Organic and Applied Chemistry in the University of Michigan) in which a learned analysis is made, he concludes as follows:—

"Notwithstanding the adoption of theine-containing beverages by mankind at large, we cannot hesitate to commend that robust habit which discards all dependence on adventitious food . . . and preserves throughout life the fresh integrity of full nervous susceptibility; and probably there was never a time when there were so many persons as now, who are disposed by conviction and by a desire for a stalwart physical independence, to refuse to fix or encourage any habit that holds the nervous system."

From statistics published in 1901 the total amount of coffee consumed in the United States during 1900, was 748,801,000 pounds; Germany, 352,525,000 pounds; United Kingdom, 29,168,000 pounds; France, 179,629,000 pounds. Of the countries mentioned, the people of the United Kingdom are the greatest tea-drinkers, those of Russia being second and the United States third.

THE WESTWARD MARCH OF ALCOHOL
TOBACCO, AND OPIUM

THESE arrogant invaders have had their early struggles for admittance to popular and governmental favor. In the days when Greece and Italy ruled the whole civilized world, and provided for history its brightest pages of political, intellectual, and moral record, when the diet of the people was regulated by law, and the highest physical development was the subject of most serious study and universal worship, distillation, tobacco, and opium were unknown. Almost one hundred and fifty years after the foundation of Rome (500 B. C.) wine was comparatively unknown. It gave time for generations to develop great health, strength, and beauty, which as caught by the artists of the time will charm the world forever. Wine crept into their civilization very slowly. It was not until the time of the Cæsars or the beginning of the Christian era that wine began to be made in Italy, and that the drinking of it became general. At first the greatest efforts were made to stamp out the poison.

Notwithstanding all the efforts and warnings of the wise men of Greece and Rome, the time came when their governments yielded to the seduction of wine. During the reign of Augustus and his immediate successors, wine became a passion, and physical degeneracy, loose morals, corruption and crime in-

creased among the Romans in a corresponding ratio to the increase of the poison habit.

The history of the decadence of Greece and Rome is but a history of the conquest of King Alcohol. The great conqueror came from Asia where the work of destruction had been already accomplished, — the nations of antiquity having one after the other bowed beneath the curse of wine-drinking.

“The four great Asiatic monarchies — Assyria, Babylon, Media, and Persia, were not conquered by the sword until their earlier characteristics of manliness, patriotism, and morality had been sapped by drunkenness and debauchery.”

It is told how the young twelve-year-old Cyrus when visiting his grandfather, the King of Media, whom he later overthrew, was astonished and disgusted at the drunkenness of the Median Court.

“You seemed,” exclaimed he to his grandfather, referring to a recent banquet, “you seemed to have forgotten yourself, and not to know that you were King. My father drinks merely to quench his thirst.”

The vast Assyrian power under King Alcohol was overthrown by its sober rebel provinces. Persia in turn succumbed to His Alcoholic Majesty and passed under the conquering hand of Alexander the Great, who later himself surrendered to the greater conqueror. Seneca wrote of his death: —

“Here is this hero, invincible by all the toils of prodigious marches, by all the dangers of sieges and combats, by the most violent extremes of heat and cold, here he lies conquered by his intemperance and struck to earth by the fatal cup of Hercules.”

The cruelties and barbarities of the monarchs of that time under the crazy sceptre of poison rule, add brilliant triumphs to the demon of demoralization. In the cause of health culture, a new tragedy for the stage might be written with Sardanapalus, that prince of voluptuaries and last independent ruler of Assyria, as the hero. When, as the result of alcoholic influence, he saw that his empire was lost, that vast empire which included Babylon, Egypt, Asia Minor, etc., and whose foundations reached beyond historic record, he took himself to the funeral pyre, besottedly exclaiming what has since become King Alcohol's favorite motto: "Get drunk and know that thou art mortal."

Wine culture passed from Persia and Syria to Greece and later to Rome and later still to Spain, France, Germany, England, and America.

King Tobacco and King Opium joined the royal march in about the sixteenth century — both under the guise of medicine. In the first advent of tobacco it was called "the most sovereign and precious weed that ever the earth tendered to the use of man." It was seldom mentioned without some reverential epithet! "*Herbe sainte, herbe sacrée, herbe propre à tous maux,*" said the French; "*Herba santo croce,*" said the Italians; "*Heilig wundkraut,*" exclaimed the Germans, while botanists classed it as *herba panacea* and *herba sancta*. It was cultivated in France for half a century before it was used as a luxury and credited with curing as many diseases as it produces. The enthusiasm which first welcomed it as a cure glowed anew when the drug was embraced as a luxury. The trials of this embryo conqueror began

in the seventeenth century, when all Europe took up arms against it, and we now see which has won. In 1624 Pope Urban VIII. excommunicated all who should use it — a ban renewed by Pope Innocent in 1690. Queen Elizabeth published an imperative edict against its use. Her successor, King James, issued the famous "counterblast to tobacco," in which his royal disgust was thus expressed:—

"Moreover, which is a great iniquity, and against all humanity. . . . Have you not reason then to be ashamed and to forbear this filthy novelty so basely grounded, so foolishly received; . . . a custom loathsome to the eye, hateful to the nose, dangerous to the lungs, and in the black stinking fume thereof, nearest resembling the stygian smoke of a pit that is bottomless?"

In Switzerland all transgressors were cited before the council and punished. Any Turk caught smoking was conducted through the streets with a pipe stem transfixed through his nose, and later the Sultan made the act a capital offence. In Russia the first offence was punished with the bastinado, the second with a loss of the nose, and the third with loss of life. In 1797 Dr. Clarke complains "of the handing about of the snuff-box in churches during worship," adding that "kneeling in prayer was prevented by the large quantity of saliva ejected in all directions."

The march of opium is a story of perfidy as well as of tragedy.

There are two Englands, one of which all the world is proud, for it leads in civilization, in physi-

cal and moral health, in energy, in law and order. The second England is drugged England, poisoned England, perverted England, brutal England, sordid England that would barter its soul for pounds and shillings, and which, if uncurbed, will eventually destroy the greatest of nationalities. Best England can never repair the misery and degradation brought upon China for the purpose of swelling the revenues of Great Britain.

China had practically wiped out the curse of alcohol which, with the usual effects, had partially entrenched itself in the land through several dynasties. In the most distant ages, before Solomon wrote the Book of Proverbs, Chinese literature abounded in warnings against the drinking of wine, and imperial decrees of a restrictive and prohibitory nature were repeatedly issued. Several potentates had yielded to the fascinating destroyer. The dissolute royal example of Chow Sin had had its usual effect of leading the people, both high and low, to "a sad state of morals;" and when Wu Wang, who overthrew him, appointed his brother to rule over the present province of Hunan, he addressed to him the "Announcement" about alcohol in Book X of the "Shu King." This remarkable "announcement" is the oldest temperance document on record. To quote a little from it: —

"When Heaven has sent down its terrors, and our people have been thereby greatly disorganized and lost their sense of virtue, this, too, can be ascribed to nothing else than their unlimited use of spirits; yea, further, the ruin of the feudal states, small and great, may be traced to

this one sin, the free use of spirits. . . . If you are told that there are companies who drink together, do not fail to apprehend them all and send them to Chow, where I may put them to death. As to the ministers and officers who have been led to it and been addicted to drink, let them be taught for a time. If they keep my lessons, I will give them bright distinction. If you disregard my lessons, then I, the one man, will show you no pity. As you cannot cleanse your way, you shall be classed with those who are to be put to death."

Severe measures have been taken against alcohol up to the present time; schemes of punishment involving beheadment, slavery, etc., being adopted, all most interestingly told in Dr. Faber's work, "*Civilization, Chinese and Christian.*"

A popular Chinese saying must be repeated: —

"First the man takes a dram,
Then the dram takes a dram,
Then the dram takes the man."

A change for the worse concerning alcohol is now gradually coming about in China, due to the influence of *Christian* nations; and foreign liquors are being introduced in rapidly increasing quantities, threatening to grow to vast proportions. But the devastation of King Alcohol in China is now overshadowed by King Opium.

ENGLAND'S OPIUM TRADE IN CHINA AND INDIA

The most stupendous crime ever recorded in history was the forcing of opium upon China by the England

that is drugged. It was accomplished by means of two wars and for the sordid purpose of money.

Americans cannot say as much about it as formerly, since, for the same reason, drugged America lent itself to a similar kind of infamous business in the Philippines. I am not intending to describe how in a year we opened four hundred dram-shops in Manila, and supplied them from a continuous and steady line of railway trains and ocean vessels, which have transported millions of bottles of poison to those hitherto comparatively sober people of the tropics; or how the ships and trains brought back the wrecked remains of our soldier boys, who succumbed in greater numbers to the fire of poison than to that of bullets. History will take care of that.

As for that, what may one say concerning the upholding of the dram-shop across the street, to debauch the sons of our neighbors, for still the same sordid reason? Every voter for a license to sell what debauches the people, or what promotes it in any way, becomes of necessity a partner in the traffic. The great current which drags the human race downward can never be stemmed until its tributary rivulets are arrested. Where shall the blame begin?

To return to the story of opium in China: We may say briefly that India is a large producer of opium, and the population of China have been forced to become its chief consumers.

The British East India Company took charge of the opium trade in 1781, when, chiefly in the name of medicine, about a thousand chests were annually exported. The Chinese government became greatly

alarmed about its use, and in 1800 issued an edict forbidding the importation of opium for any purpose whatever, prescribing at the same time the severest penalties. Profits were enormous, however, and by means of smuggling, trade continued as brisk as ever. The British government of India without compunction encouraged the illicit business, and Chinese alarm kept alive to the dangers of the drug. In 1831 and 1834 British men-of-war were sent to Canton to protect the trade.

The Chinese government, now appreciating that opium was becoming a national menace, took more stringent measures to stop the trade. The most rigorous laws were enacted. Opium smugglers and Chinese dealers were put to death. The Imperial Commissioners wrote to the English government, imploring it to put an end to the infamous traffic, but it was blind to all appeal. A crisis came in 1839, when the Chinese consigned 20,283 chests of British opium to the flames, under the impression that it was better to burn the opium than to let opium consume the life of their people. For this act England instituted the first opium war, shelling Canton, and in the end obliging the Chinese government to pay them \$21,000,000 of damages.

The world expected better of England. It expects better of all Christian countries. There were other so-called excuses for war, if the forcing of China to open her gates to the Christian world constituted them. To open her gates for what?

With all this trouble forced upon her, China even then could not be induced to legalize what she knew

to be a hideous traffic. The Emperor, who was himself a reformed opium smoker, and had lost three sons by the vice, said: "True, I cannot prevent the introduction of the poison, but nothing will induce me to raise a revenue from the vice and misery of my people."

The "open door" and establishment of an English colony at Hong Kong did not tend to discourage illicit smuggling. While Sir H. Pottinger issued a proclamation declaring the importation of opium illegal, and an order forbidding all English vessels to enter any but certain treaty ports under \$500 penalty for each offence, no effort was made to enforce the rules; on the contrary, officers who attempted to execute the order were given to understand that their services were no longer needed. In 1857 an opium smuggler flying the British flag was fired upon, and this was made a pretext for the second opium war. Canton was bombarded, and England and France co-operated in a demonstration of strength which compelled the Emperor to sign the treaty of 1860, whereby the importation of opium was legalized; and China paid an indemnity of \$10,800,000 to England and \$6,000,000 to France.

One can scarcely appreciate what a cataract of misery and destruction has overwhelmed China since the opium flood gates have been opened wide by British greed and tyranny. I take from the "Cyclopedia of Temperance" (Funk & Wagnalls) the following figures, the development of the import traffic of opium:—

"In 1790, 4,054 chests; in 1789, 5,000; in 1826, 9,969; in 1830, 16,800. In 1834 the trade passed from

the East India Company to British officials, and in 1836 the number of chests had increased to 34,000. After that, quantities were indicated by piculs ($133\frac{1}{3}$ lbs.), and in 1850 the number crept up 52,925 piculs ; in 1880, 75,308, and in 1887, 96,746 piculs. And then as poor China was obliged to admit foreign opium, there was no reason to oppose its culture at home, which added 300,000 piculs to the amount used from outside in 1887.

“Estimating the native production at 300,000 piculs annually, and the foreign importation at 100,000 piculs, allowing each smoker three mace per day, we reach the conclusion that there are about 5,845,333 smokers in China. This, however, represents but a small proportion of those who suffer from the habit.”

Miss Ackerman, a worker for the Temperance Foreign Missions, tells us in her book (“The World Through a Woman’s Eyes”):—

“One of the sights of Shanghai is the great opium palace¹ where the Chinese are debauched by thousands. We made the round of several ‘joints’ — the opium dens of this one city alone numbering two thousand. The first place we visited was a large structure, the whole of which was given up to opium smoking, and where as many as two thousand indulge every night. We reached the ‘palace’ about midnight when the greatest number were coming and going. . . . The crowds passed us up and down, pushing us to the right and left, making it anything but an

¹ “This palace contains about an acre of floor space in its three stories, and its interior is furnished in the most extravagant fashion. . . . The receipts of this largest opium den in the world is about a thousand dollars a day from one year’s end to the other.” — FRANK G. CARPENTER.

easy task to reach the upper part of the building. The first floor was one large room divided into stalls, in each of which was room for eight smokers. . . . Here we saw men in all degrees of intoxication. Some were taking their first pipe, paying special attention to the business in hand; others had taken enough to make them happy or silly. One would look up with an idiotic grin, muttering something in an undertone and puffing away at his pipe; another would lie in a stupor, wholly unconscious of what was going on, from which he would awake after a time and call for more opium. The air was black and heavy with smoke and fumes of the drug. As we went from stall to stall we were obliged to fan away the clouds of smoke before we could see what was going on. Some of the poor wretches seemed to be on the verge of the grave, so wasted were they in form. Their skin was drawn over their bones, and their sunken eyes and strange color told only too plainly of the grim monster that was in their track. In several stalls (though I was told it was not a common sight) I saw mothers smoking, with their babies propped up at their sides, and I have seen children not more than three and four years old quite stupid from the effects of the drug. The habit fastens itself upon the helpless victim and he is powerless under it."

The "Cyclopedia of Temperance" says:—

"A characteristic of the opium smoker is thinness, sallow color, sunken eyes, general air of weakness and dulness, and indescribable agony when attempting to stop the habit once begun. The habit consumes two or three hours a day, and soon unfits a man for any work; as a result his family is reduced to want, swelling the ranks of professional beggars and the votaries of shame. Opium deadens the moral sense also, so that the smoker becomes wholly unre-

liable. He will lie, steal, and resort to any means to fill his pipe. The opium den is also the resort of gamblers and others plying a shameless vocation.

“Besides the injury done to the victim and his family, there is the loss to the State of millions of taels annually, which might be expended for useful articles of commerce, and which is all expended in the production of the outfit.

“Practically nothing is done to suppress the vice and it pervades all classes. The government since its discouraging experience before the English wars, has made no sustained effort to regulate or suppress the evil. Were England to withdraw from the market, the Chinese might be encouraged to another effort. They have shown themselves not incapable of the most energetic measures. No Chinese, not even the smoker, will justify the habit.”

Little wonder that, having inserted that cruel cleaver into China's national integrity, the sending of missionaries (by the better England and with best intentions) to save their clouded and drugged souls would seem to the victims of England's greed little better than impudent pretence.

In a late article on the subject, Mr. F. G. Carpenter tells us that there is now annually used in China more than \$400,000,000 worth of opium; that foreign doctors in some of the districts estimate that 70 per cent of the people are addicted to its use, while in other localities the percentage falls to 20 and 30 per cent. Again he says:—

“Soochow, for instance, has not to exceed 500,000 inhabitants, and Dr. Park states that there are a thousand attempts at suicide on the average there every year. . . .

If the same average exists elsewhere, it means 800,000 attempted opium suicides annually.

"Kowshing is a walled town of 100,000 people, but it consumes opium to the value of a thousand dollars in gold every day; . . . at five to the family it would be \$18.25 annually to every family in Kowshing. Considering the fact that the poor make on the average from five to ten cents a day, this is enormous. Suppose an American laborer getting \$2.00 a day should pay fifty cents daily for drink or opium, he would not pay as great a proportion. From one-fourth to one-half of each man's daily earnings goes for opium.

"Many of the opium smokers desire to be cured, and for this purpose opium refuges have been established. An institution of this kind was recently opened in Foochow. It had applications from 500 opium smokers the first year. There are quacks in the different cities who make a specialty of treating opium cases. There are also charitable families who keep emetic powders constantly on hand for use in cases of attempted suicide.

"The doctors say that few opium smokers are ever cured. They usually increase their allowance until death. When they attempt to break off the habit, they suffer the agonies of the damned, the contrast of their condition while smoking and stopping being well expressed in the following, which was written on the walls of the opium refuge at Soochow by one of the inmates: 'While smoking opium we are transported to Paradise; while breaking the habit we are tortured in hell.'"

There are 1000 registered opium dens in Foochow alone.

DRUG TAKING IN THE UNITED STATES

A WORD about the entrance of opium into the United States. Opium is now spreading about us like water over a level surface. It has not been forced upon us from the open mouth of cannon by the hand of a sordid and arrogant foreign enemy. It has rather come and is still coming from an insidious source at home. It comes under disguised names. It deals with the credulity and superstition of the people through mysterious forms of so-called remedies, sealed in secrecy, by letters-patent. In conspicuous places everywhere we see endless advertising of meat juices, nerve tonics, liver pills, alcoholic drinks, and drugs of every sort. There is no censorship of advertisements, and the humbugging statements (to speak mildly) concerning the virtues of endless remedies constitute almost the only education the masses receive on the subject of health. In all ages the world has been cursed to some extent with quackish nostrums, but the traffic never assumed the gigantic proportions of the last half-century.

The unsound physical condition of the majority of mankind, owing principally to the almost universal use of favorite poisons as luxuries, has led to a general groping for some kind of relief. This condition, together with a blind faith in unknown drugs, has made it possible for the vendors of secret remedies to amass great fortunes. The business necessities are merely

an attractive name, a few easily procured certificates, and abundant advertising. Every little ache must have its sedative; every crying infant must have its soothing syrup; every sense of fatigue must have its tonic; and so the basis of ninety-nine hundredths of all secret patent medicines is either opium, alcohol, or cocaine. Various societies have taken it upon themselves to analyze all the well-known patent drugs, and the results are now published with pertinent remarks thrown in.¹

If a so-called remedy succeeds in drugging into insensibility the nerves which dutifully cry out what is really a friendly warning, a notification that something is out of gear that needs hygienic attention, that remedy is hailed by a credulous public with delight. People who would not "touch, taste, or handle" opium, alcohol, or other poisons properly named, take them all readily when disguised as patent medicines. In fact, all the poison vices ever known on earth have first appeared clothed in the garb of medicine. Of course the trouble causing the pain still exists, to be augmented by the extra burden of the drug, and drugging to benumb pain instead of seeking to know and to remove the cause of it is as sensible as to gag and bind a watchman who gives an alarm of burglars. One may not say that drugs have not their value in

¹ The analysis of these patent medicines may be found in the "Third Annual Report of the Board of Health of the City of Boston," "The Report of 1896 of the Mass. State Board of Health," "The Popular Health Almanac for 1876 and 1877," "The Monitor of Health," by Dr. Kellogg, Battle Creek Sanitarium, which contains an analysis of several hundred nostrums, also "Home Hand Book of Hygiene," by Dr. Kellogg.

the hands of the skilful physician, especially in surgical cases, and also for the incurable, but the general and easy habit of drug taking is only parallel with the same general and easy habit of all the favorite poisons, all of which grow alike as they are fed. The country is becoming filled with opium, alcohol, and cocaine drunkards through this channel of operations.

Dr. David Paulson, in *The Union Signal* (Aug. 15, 1891), writes as follows on the subject of "Drugs":

"If the already vast army of drug fiends should continue to increase with the rapidity with which it has increased during the last few years, it will be only a question of time when the morphine, opium, and cocaine devotees will outnumber by far the present number of drunkards. There is no one, except those who have taken the pains to study this subject carefully, who has any idea of the appalling extent to which these drugs are already being used. It has been estimated that in one of our largest American cities there are 60,000 abject slaves of the morphine habit. An eminent eastern medical authority, who has had perhaps better opportunity to study this subject than any living physician, estimates that ten per cent of physicians are themselves more or less addicted to some of these habit-forming drugs.

"The patent medicine firms, owing largely to persistent and extravagant advertising, and to a lurking, superstitious reverence for drugs put up under mysterious names, succeed in selling annually \$80,000,000 worth of these substances to the American public."

Dr. Stedman, in *Everybody's Magazine*, condemns the nerve tonics, blood purifiers, sleep producers, and

laxatives that are consumed by the ton in America and says:—

“The primary effect of any of these poisonous mixtures is seemingly good; the nervous fidgets, the ‘tired feeling,’ the insomnia, or the constipation is promptly relieved by the first few doses. Naturally, when the symptoms return, as they are bound to do, the sufferer turns again to the bottle or the pill-box. Again he gets relief, and again he is driven back to his drug, taking larger and larger doses as the habit is forming, until at last the fetters are forged and a new ‘drug fiend’ is created. It is less trouble than systematic exercise; but how many could be saved from this bondage, and how many slaves could be freed by rational physical culture, only the physician who knows the prevalence of this evil can guess. The nervous, the sleepless, and the neurasthenic are of all persons the last who should seek relief from drugs or from alcohol. Their very disease predisposes them to drug addiction, and once having experienced the lethe which drugs may bring, only the most heroic exhibition of will-power—which, alas! they have not—can save them from thralldom. And yet these shattered nerves are calling only for rich red blood, for pure air, good food, and the healthful stimulus, without reaction, of the bath. The rest-cure for some, active exercise for others will bring the reality of health which drugging can only for a brief moment simulate.”

J. P. Bean, in *Human Nature*, says:—

“Theoretically, every adult person of any intelligence wishes to be strong and healthy. Practically, a majority of them wish nothing of the sort. They would like it well enough, but are not willing to pay the price, though it really costs nothing. When a man gets out of health he

usually wants to get some one to 'patch him up' so that he can continue the foolish things which have caused his bad condition. Hence the almost universal resort to drug treatment instead of the natural means of restoring and maintaining health and strength.

"If a man is really desirous of being naturally sound and healthy he will try to study out the means of becoming so. These means are all included in the seven principles of practical hygiene, namely, exercise, rest, air, light, food, drink, and bathing. . . . They want both health and vices, but both they cannot have, so they choose their vices, and when nature begins to withdraw her support, they seek some means of temporarily stimulating the flagging vital forces in order that they may a little longer indulge in their follies."

The Bulletin of Pharmacy speaks of the ever-increasing drug habit as follows:—

"The use of cocaine by unfortunate women generally, and by negroes in certain parts of the country, is simply appalling. No idea of this can be had unless a personal investigation is made. The police officers of questionable districts tell us that the habitués are made madly wild by cocaine, which they have no difficulty at all in buying."

In quoting from correspondents (pharmacists) one reports "over 200 habitués, 2 using opium, 5 laudanum, 100 cocaine, 100 morphine, 20 trional, and 5 sulphonal."

Another pharmacist writes as follows:—

"I spent a few months in a pharmacy located in what is known as the 'tenderloin district.' From my personal observation I can say that the number of men and women

in the prime of life addicted to the laudanum, paregoric, morphine, and cocaine habits is appalling; . . . habits are formed for sulphonal, trional, and the popular headache remedies; . . . also for chloroform, ether, bromidia, and several brands of catarrh snuff. Our correspondents in considerable numbers condemn these snuffs as extremely vicious. They have no doubt that they contain cocaine, and *they believe their sale should be prohibited. . . .*

“We have consulted police officers, jail physicians, and eminent specialists in nervous and mental diseases, as well as physicians of insane asylums and sanitariums, and they all unite in declaring the abuse of narcotic drugs to be on the increase, with results indescribably bad. Much of the insanity and nervous derangements prevalent is noticeably due to drug habits, and crime is often directly traceable to their impulses.”

ENGLAND'S TREATMENT OF INDIA

ENGLAND'S moral treatment of India has been actuated by the same commercial motives displayed in China.

We read again as follows (“Cyclopedia of Temperance”):—

“Previously to the era of British dominion, the inhabitants of India were among the most abstemious of peoples. . . . The British government in India inaugurated its Excise policy in 1790, but for thirty or forty years comparatively little liquor was sold. Until 1878 all the distilleries were owned and operated by the government, under what was known as the Sudder (or District) system. The sole

object was to produce revenues, and it was thought the distilling business would be most profitable if operated by the government itself. Under this system the revenue finally reached considerable proportions—in excess of \$10,000,000 annually; but the authorities were not satisfied, and a new scheme was devised. In 1878 the new measure, or *Abkari* act, was published by the government of Bombay. . . . It is now in force over all India excepting a few small districts under native rule. . . . The right to operate distilleries in competition with the government is sold at public auctions to the highest bidders. The successful bidder in each locality may distil as much liquor as he chooses, and of any kind, free from government supervision. But the revenue from private distillers is only one element. All the sap-bearing palm-trees of India, yielding juice from which fermented liquor is made, are taxed by the government; the right to draw the sap is farmed out to the highest bidder, and nobody—not even the owner of the trees—can extract sap without a government license. Thus the excise policy of India is based on the High License principle exclusively; and like the High License legislation of the United States it is an entire success as a revenue measure. . . .

“Statistics given by W. S. Caine in the House of Commons (1888) show that in eight years (after the *Abkari* act) the increase was 135 per cent in Bengal; in the Central Province it was 100 per cent in ten years, etc. In Ceylon the revenue from drink is almost 14 per cent of the total revenue.

“The government is driving this liquor trade as hard as it can,” said Mr. Caine. “Collectors find it the easiest way to increase their consumption of liquor to the utmost. If the government continues its present policy of doubling the revenue every ten years, in thirty years India

will be one of the most drunken and degraded countries on the face of the earth.

“The government of India, however, merits commendation for making none of the virtuous pretensions that are advanced by the High License politicians of the United States. The officials frankly declare that they are interested in the revenue solely, and not in the promotion of temperance. In 1888 the Finance Minister for India used the following language in the legislative council: ‘I look hopefully to a considerable increase in the excise revenues, and believe that a great deal might be done in Northern India by the introduction of the methods which in Bombay and Madras have so powerfully contributed to the increase of revenue under this head.’

“In the vicinity of Bombay, a movement was started among the country people against the use and sale of liquor, whereupon the magistrate had eight of the leaders imprisoned. In reporting this tyrannical act of the Secretary of State in London, the government of Bombay said: —

“‘The question for decision is, shall we sit quiet and allow the temperance movement in the Colaba District to continue and to spread, and thereby forfeit a large amount of revenue, or are measures to be adopted which will bring the people to their senses?’”

It seems the English House of Commons has its seasons of repentance, for it framed, after much opposition, the following resolution (1889): —

“That, in the opinion of this House, the fiscal system of the Government of India leads to the establishment of spirit distilleries, liquor and opium shops in large numbers of places, where, till recently, they never existed, in defiance of native opinion and the protests of the inhabitants, and

that such increased facilities for drinking produce steadily increasing consumption, and spread misery and ruin among the industrial classes of India."

The missionaries freely make such statements as the following:—

Archbishop Jeffries (31 years in India): "For one really converted Christian, as the proof of missionary labor, the drinking practices of England have made a thousand drunkards."

As for opium and hashish in India: "It was India that produced the opium which England forced upon China at the cannon's mouth. But the British authorities have not until recently encouraged the consumption of opium among her own subjects. Now opium and hashish are grown and retailed under Government sanction. The consumption of these drugs is increasing at a frightful rate, and the revenue from them is already large."

The methods now undertaken to increase the opium trade in India are most atrocious. The government controls the crop. The opium is sent from the government factories to "Collectors" of the various districts who are also magistrates. These collectors are the wholesale dealers of the drug, and they sell to contractors who are forced under heavy fine to sell a certain quantity in their district. If they cannot sell as much as promised they pay a forfeit and the contract is given to others.

"Thus the trade is pushed by the government," says an Indian writer in the *Banner of Asia* (Sept. 1889), "and the damnation of the people speeds apace.

"In licensing ganja, bhang, charas, and majum, the four

noxious preparations of India hemp, the Christian government of India places itself on a much lower moral plane than the Mohammedan, Turkish, and Egyptian governments, which most stringently prohibit them."

"The whole atmosphere of India," said the Hindoo reformer, Baboo Sen (1870) in a speech at St. James Hall, "seems to abound with cries of thousands of poor helpless widows, who curse the British government for having introduced that thing."

Better England is earnest in every scheme of reform. But what is "Better England" when the State, the colleges, and even the Church of England, as organizations, practically ignore the physiological and moral effects of poisons?

The Hon. David Arnot thus speaks of the Griquas, one of England's colonies:—

"I am sorry to say that since the cession to the British government, the Griquas have become a debased people, as much as before they were respected. The first thing that the government did after the cession, was to license a liquor shop at Griqua Town, and at other places within the territory, and from that I trace the debasement of the tribe. Prior to the cession, I travelled for fourteen years through a great part of the country, and I never saw a drunken native. It was, in fact, against the laws of the country to introduce any spirituous liquors; but immediately after the licenses of drinking, the state of things changed."

In 1883 another missionary from Africa writes that—

"the West coast is ruined with rum; it is killing the Kaffir at the South; and even on the East coast at Zanzi-

bar a vile liquor is distilled . . . to the destruction of the Suaheli race."

In an English Magazine, *Meliora*, is given in delightful contrast a description of the model manufacturing town of Bessbrook, Ireland, from which we quote:—

"There sobriety, co-operation, education, and morality are displayed and developed in a manner which must be peculiarly gratifying to those who are pondering the social difficulties of the day and seeking a remedy for them. The founder of the town and chief proprietor, Mr. Richardson, allows no public houses on the spot, or on any of his lands surrounding it; and as a corollary to this, he needs no police on the place. The Irish constabulary armed *cap à pie* occupy every town in Ireland, and have barracks for half a dozen men each, along every roadside; but there are none in Bessbrook. Mr. Richardson alleges that as long as he keeps out the public house, he can do without police; but that so soon as the tap room is introduced, the constabulary will be required. There is no drunkenness in Bessbrook; no quarrelling, though the inhabitants are all Irish; no theft, no crime, no infanticide, in short, the operations are models of sobriety and good order. Of course it is not meant to be said that they have not their faults and failings like mankind everywhere, but the town is wholly free from the sad scenes which are to be met with constantly in much smaller populations."

THE POISON VICE IN ENGLAND

THE present dominant nation of the earth owes much to its climate, which is conducive always to the spirit of work. One can comfortably work in England every day of the year. There are more working hours of the day and more working days in the year in England than elsewhere. The cultivation of health by systematic exercise, which well suits their always equable climate, is the almost universal practice in England. The English also never subject themselves to overheated houses ; they do not impair digestion by the use of iced water (as in America) and they have been as a nation largely vegetarians (reputation to the contrary) until of late years. The masses of Englishmen have taken meat but once a week. The gouty rich are the principal meat eaters of the country.

The blood of Englishmen as compared with that of other Europeans has not been so long vitiated. However strong is the grasp of the poison vice at present in England, the use of strong spirits, tobacco, tea, and coffee has been on the gradual increase only within the last two hundred years.

The Court introduced wine before that time, but hard drinking did not become customary until the latter part of the seventeenth century.

De Foe, in " Poor Man's Plea " (London, 1700), says of the evil example set by the nobility : —

“Whoever gives himself the trouble to reflect on the custom of our gentlemen in their families, encouraging and promoting this vice of drunkenness among the poor, will find that drinking had its origin in the practice of the country gentlemen, and they again from the Courts.”

In 1878 Bishop Benson wrote:—

“Not only is there no safety of living in this town (London), but scarcely any in the country now, robbery and murder are grown so frequent. Our people have become what they never were before—cruel and inhuman. Those cursed spirituous liquors, which to the shame of our government are so easily to be had and are in such quantities drunk, have changed the very nature of our people.”

The history of the drink curse in England is amply recorded in tons of literature. We have its statistics of ever-increasing woe, its story of crime, of insanity, of debauchery not far behind that of France. Matthew Arnold tells us that the lower classes of England are becoming brutalized. We find from latest accounts of English degeneracy (1903) that the proportion of insane is now 1 to 293 inhabitants and also that there are now contained in the London Insane Asylum 16,000 patients.

The best English statistician on the subject of drink, is William Hoyle. Concerning his work, the *London Times* (March 21, 1881) thus speaks of his statistics:—

“Drinking baffles us, confounds us, shames us, and mocks at us at every point. It outwits alike the teacher, the man of business, the patriot, and the legislator. Every other institution flounders in hopeless difficulties; the

public house holds its triumphant course. The administrators of public and private charity are told that alms and oblations go with rates, doles, and pensions to the all-absorbing bar of the public house."

According to William Hoyle, the average drink expenditure for the ten years previous to 1881 exceeded £136,000,000, and he estimated that £138,000,000 was annually spent or lost indirectly through drink, making a total drinking expenditure of £274,000,000.

The Rev. Dr. Burns, in "Christendom and the Drink Curse," thus speaks of it:—

"The British people annually expend on intoxicating liquors a sum of above £130,000,000 sterling, the great bulk of it coming from the pockets of men and women who would be seriously affronted if any doubt were cast upon their religious sincerity. This sum is sixty millions in excess of the national income. It is one-sixth of the national debt. It is one-fifth the value of all the railway property of the United Kingdom."

This is only the drink bill, which has since been rapidly increasing. The tobacco bill, the opium bill, and the absinthe bill,—all are making alarming records.

The "Cyclopedia of Temperance" speaks of drinking in England in 1891 as follows:—

"Although the temperance reform has made great progress in the United Kingdom, and has won to total abstinence multitudes of converts, . . . the liquor traffic is still supreme as a national institution, and has not even suffered incidental disturbances of real magnitude, while the fiscal interests of the government are linked to it

by the strongest license and revenue bands. . . . The vast importance of the drink traffic as a source of revenue is shown by a glance at the receipts of the government for the year ending March, 1889. The entire revenue was £89,883,331, of which the single item was the income from domestic liquors and licenses, £23,628,858, or more than one-fourth of the whole.

“In addition to this inland revenue from liquors, the customs duties on liquors yielded more than one-fourth of the entire customs receipts from all sources. . . . Local prohibition has been established in many places by resorting to extraordinary methods, since the political power to effect removal is not vested in the people. On the other hand, the people, when given opportunities to express themselves on the question of local prohibition, have manifested a strong preference for taking the whole subject into their own hands.”

Says an English writer : —

“Why do so many of the noblest thinkers of our time, — those who have looked seriously into the problems which modern civilization presents — why do they despair of the future of the race? Why is the general turn of the mind in our age stoically pessimistic or cynically materialistic? Why, indeed, unless it is that the latter generations of men, inheritors and further developers of the insidious poison of alcohol (and tobacco, Ed.), are becoming in mind as in body, dessicated, life-sucked, so that the whole civilized race is not only crumbling physically,” etc.

The beer and the liquor trade have now taken possession of England with an iron grip. The poison curse has now become England's greatest vested in-

terest, with its untold probabilities of public peril. The brewer's monopoly not only controls cities and towns, but has penetrated country England. It is said that whoever now acquires a license for doling out poisons in England, leaves the court \$15,000, \$25,000 or even \$50,000 richer than when he entered it. For instance, at Newcastle-on-Tyne it is said that the existing licenses are valued at \$15,000,000; also that 33,000,000 barrels of beer (to say nothing of other poisons) are annually poured down the throats of the people of England and Wales.

The "poison mania" in England is rampant and steadily and rapidly increasing with the impetus of a century of unchecked license. Parliament now represents John Bull muzzled and gagged by this huge vested interest and allied question of "votes."

We are told by the "poison curse" apologists that "The drinking nations of the world are the great and successful nations. A small handful of drinking English can subdue and control the millions of India and the people of other semi-tropical countries." "Perfectly true," says an astute divine. "The powerful races do drink, but the powerful individuals do not drink. England drinks more gin, perhaps, than any other two nations. But the gin of England is drunk by England's failures. The successful of England do not know the taste of gin. The deeper you go into Whitechapel, the greater the number of gin bottles per capita."

Bishop Henry C. Potter makes the pertinent remark that the gin palaces of England are first built by the wages of the laboring classes and afterwards

supported by their vices. He sees, however, a brighter outcome for temperance England. He avers that high dignitaries of the Church and State, Englishmen of rank and leaders of society, are being aroused as never before to an intelligent appreciation of the situation; that it is largely due to writings of foreigners (Taine, etc.) who have painted for them the darker aspects of their own civilization, and that they have in many instances put themselves under voluntary restraint to more effectively influence others.

Lady Henry Somerset says :—

“England is in a frightful condition as far as the liquor traffic is concerned. If anything, England is growing more and more drunken. Our women are becoming more addicted to the drink habit. The problem confronting us is more serious than in America.”

That the English health is degenerating and degenerating rapidly is a topic freely discussed outside of England. Physical law is inexorable in England as elsewhere. A sad condition of racial decay was lately illustrated in England, when recruits for the British army during the Boer war displayed to the world the decadence of that once sturdy people. Out of 12,235, who offered their services in Manchester (during 1900), 8,205 were rejected as physically unfit. In 1901, 11,896 applied and 8,820 were rejected for the same reason. It is said that these startling developments have more than ever aroused the better England to the importance of physical culture.

An interesting lecture was lately delivered in connection with the Civic Society of Glasgow by Major General Sir J. F. Maurice, on "The National Health: A Soldier's Study," and reported in *The Standard* (London) as follows:—

"During the last seven years it had been one of his duties, about once a month, to visit the Herbert Hospital for the purpose of sanctioning the discharge from the army of men who had been brought forward by a 'medical board' as no longer fit for His Majesty's Service. According to his estimate it had been for many years true that out of every five men who wished to enlist at the end of two years' service, there were only two men remaining in the army as effective soldiers. He desired to draw attention to the importance of this fact in its bearing on the question of natural defence. . . .

"Of the immediate causes which seem to produce the greater number of cases of physical breakdown; unquestionably heart weakness, pneumatic troubles, and rheumatism with its sequelæ supplied a large number. There seemed to be with cases which made discharges necessary, the generally low anæmic condition of the whole body. To him it seemed a vital matter to inquire what was the meaning of that disastrous proportion between the five and the two. Did it mean that the class which necessarily supplied the bulk of the ranks of our army consisted in this huge proportion of men physically unfit? If so, what were the causes of this fatal condition of things, and were they remediable?"

In commenting on General Maurice's recommendation that they should call upon the councils of the colleges of Physicians and Surgeons as ex officio the

great national Boards of Health to help and guide them, another English periodical exclaims :—

“The body of men here referred to are not likely to trace the above defects to the most exciting causes. In considering heart weakness will they consider alcohol, tobacco, and coffee? In dealing with rheumatism will they give the uric acid in flesh diet the guilty character it deserves?”¹

Dr. Marty writes concerning England :—

“After running over the statistics of death from drink, published in the various countries ; after attending for some years the clinic of the great Parisian hospitals ; after consulting the registry of cases admitted to homes for strangers, one becomes perfectly convinced that alcoholic poisoning is a more murderous plague than the great epidemics which at different epochs have devastated humanity. The pest, the cholera, the yellow fever, break out suddenly and decimate a village, a province, a whole country, but their passage is transitory in essence. *Alcoholism takes no holiday.*”

W. E. Gladstone observes :—

“It has been said that greater calamities are inflicted on mankind by intemperance than by the three great historical scourges, — war, pestilence, and famine. This is true for us, and it is the measure of our discredit and disgrace.”

¹ The foregoing, of course, refers to that part of the English Army which has not joined General Roberts' temperance organization mentioned later on.

THE POISON VICE IN GERMANY

IT is sad, indeed, that the country whose great thinkers, whose science and music, whose traditions, thrill all the world with pure delight ; whose rich tongue best describes the great forces of nature, its storms, its calms, its forests and rivers, should now of all the world be one of the most poison infested. Aside from beer influence, the German American is one of America's great towers of strength. Let us drink (but not in beer) to the health of that capable, law-abiding, industrious, and honest citizen. He is a natural hygienist, and in America thinks less and less of his beer.

But we started to speak of the fatherland, the anarchy-beset fatherland. To prove again that the poison habit is always progressive, we find that in wooing the fascinating Circe, Germany is now not far behind France. From statistics we find that of the four countries, — Germany, England, France, and the United States, — the consumption of alcoholic liquors was in 1899 greatest, first in France, and second in Germany. The use of tobacco is also very general in Germany. The consumption of liquor there has been growing steadily from bad to worse, until there were in 1889 about ninety thousand distilleries, producing about eighty million gallons of alcohol, three-fourths of which was used for drinking. There were also in 1889 about ten thousand breweries which annually

furnished the German Empire with upwards of one billion one hundred million gallons of beer, entailing an annual waste of over six hundred thousand tons of grain. Wine is also drunk in enormous quantities.

One need not wonder that in that fair land, tubercular consumption has become a frightful scourge. From a recent report to our Department of State by United States Consul Covert, prepared from official reports, we find the annual number of deaths in Germany from consumption to be one hundred and seventy thousand, of which four thousand five hundred are charged to Berlin. In Hungary the number of consumptives reaches over four hundred thousand; in Buda-Pesth, in a population of 492,237, there has been an average of 3,179 deaths from consumption per annum during the last five years.

Practically almost every one in Germany drugs himself, from the University professor and student to the laboring classes. The student who goes to Germany to study philosophy, medicine, and theology, is graduated at the same time in the quart beer mug and pipe. The meetings of students' societies are held in saloons, and all pleasures and recreations centre around the foaming glass.

It is said that almost every working man carries his penny flask of poison with him. The story of immorality is the old one. In Berlin more than ten thousand fallen women are immediately connected with dram-shops, and a large percentage of children born in Germany are illegitimate. The story of insanity, crime, and domestic misery is also of the usual proportion.

A German statistician, who has collected data concerning the centenarians of Europe, tells us that of the fifty-five million beer-drinking and pork-eating Germans, there are only seventy-eight over a hundred years old. And comparison with other statistics show that *centenarians have diminished in Germany more than six hundred per cent* within the last forty years. With so much evidence of evil result from the poison habit in Germany, there is not, as in France or England or America, any concern about it. The people, men and women, high and low, church and state, are blandly apathetic on the subject of the poisons. Poor Germany!

THE POISON VICE IN FRANCE

STATISTICS show that the French, once quoted as examples of abstemiousness, are now the most blood-poisoned of earth. Statistics also show that France, which was still comparatively abstemious forty years ago, has especially taken to besotting itself since that time. As a writer says:—

“But the surprising leap in the French consumption seems to show a change in national character. Devitalization is indicated, and light wines are displaced by absinthe and decoctions sold as brandy.”

The almost universal use of tobacco within the last thirty years is a sufficient cause for the change from mild stimulants to strong ones. As stated else-

where, the benumbing and drying of the glands of the throat induced by smoking, establishes the call for strong drinks to excite them.

On this subject of alcohol in France, a most interesting report is published on the relation of alcohol to disease in hospitals, by a commission of prominent physicians, Dr. Jacquet acting as Secretary. The opening paragraph of this report reads as follows:—

“The struggle against intemperance is the first social duty of the times. For our own country, with stationary population, and to-day the most alcoholized on earth, it is a question, no long time hence, of life and death. All of us here feel this. To aid in this struggle, which must be waged in all ways in the whole of France, you have charged us with studying the means proper to make our hospitals centres of instruction and preservation.”

Dr. Jacquet goes on to urge that it is no longer time for mere individual and discreet warnings against “ethylisme.” It is time for “plain protests against the poisoning and the poisoners.”

This committee, who took it upon themselves to investigate the subject of self-poison, and who give most appalling statistics, again say:—

“These statistics show that the consumption of the drinks with ‘essences,’ the various bitters, ‘quinquinas’ and much-advertised aperients, is increasing much more rapidly than that of wine or even brandy.

“But absinthe distances them all. This poison spreads with a rapidity which the figures I have just cited show but faintly. It is becoming the special national drink. By its extension among the bourgeois class in the daily dose that

most people consider inoffensive and some silly ones hygienic, it is partly responsible for that irritability, that trembling nervousness, which forms the basis of our character. Among the people it will soon be the usual drink. 'For the workman to-day it's the absinthe that goes,' said to me one of my patients, a consumptive wine-shop waiter. Yes, the absinthe 'marches' and also crime, insanity, physical ruin, and consumption."

After giving further alarming statistics, Dr. Jacquet again exclaims: —

"These are the results one arrives at in the time of Villemain, Pasteur, and Koch, at the end of a century which has witnessed a universal revolution in hygiene. And that because the right to poison is an intangible dogma."

It is very curious that some French physicians, while vehemently denouncing the effects of alcohol, still do not decry the use of wine. If France or any other nation wishes to cultivate the health of her people, she will have to decry the use of all poisons.

Dr. Laborde of the French Academy of Medicine declares in his book: —

"Unless something is quickly done to remedy the present state of affairs within a relatively short time, the whole of the working classes will have become habitual drunkards."

Another writer says: —

"The most tragic question for France just now is the terrible progress that alcoholism is making, and truly speaking, the absence of efforts to stay the plague. Lunacy is one of the worst sides of the scourge. In 1867 the department of the Seine had 7,805 lunatics; in 1896, 21,700, — the number tripling in thirty years."

The French have made of sensuality a fine art. It is fed in her literature, drunk in her food, popularized in her public amusements, tolerated by all, and transmitted to her progeny.

To what splendid heights could France attain, were her naturally active and industrious habits, her economy, her incomparable artistic sense nourished hygienically !

The French habit is one of almost continual poison. The French breakfast is of coffee and white bread, the first a poison drug, the second a heat food deprived of its nutritive principle — gluten. The second breakfast and dinner are almost invariably washed down with a wine of several questionable ingredients, none worse, however, than the alcohol. Coffee ends each meal, and often a liqueur. The use of tobacco has become almost universal.

During the golden age of French literature up to the time of Louis XIV., the French nobles took little alcohol and almost no tobacco. The increase of the poison curse within the last fifty years speaks volumes for the fallacy of high license. Every variety of tax and every possible condition of sale swells the governmental revenue and urges on the decadence of the people. We have in France another object lesson, that in the land of cheap and abundant wine, popularity for the strongest intoxicants has naturally followed, also that the consumption of alcohol increases in direct ratio with the facilities of sale.

In the *Annuaire Statistique de la France*, the tables show a startling increase in the consumption of distilled spirits, the annual per capita of consump-

tion having advanced from 0.58 gallons in 1870 to 1.24 gallons in 1885.

Dr. Lees, in his "Text-Book of Temperance," says concerning the use of wine:—

"French journals note that years of plenty in the wine districts are years of disorder and crime for the country at large. The *Annals of Hygiene* for 1863 observes that in wine-growing countries delirium tremens and alcoholism are most frequent. The plain fact is, that though partly owing to the temperament of the people, and partly to the better arrangements of the police, outrageous and besotted drunkenness may be less frequent or less apparent, yet the serious and essential evils are as great as in any country.

"Sensuality pervades their life, crime is very prevalent, suicides are in excess, population is arrested, and extreme longevity is rarer than in almost any other land.

"In France everybody drinks, young and old, male and female, and we find one centenarian amongst three hundred and sixty thousand persons; in the United States one in every nine thousand.

"Sixteen years ago, Dr. Bell estimated the whole of the alcohol drank in France in the shape of spirit, wine, and cider, as equal to four gallons of proof spirit per head annually for all ages, men, women, and infants, and still increasing. . . . With such habits, temptations, and examples, can we wonder that every third birth in Paris is illegitimate and that there are sixty thousand criminals permanently residing in the prisons of the Seine? Mr. Dickens in 'Household Words,' while defending the beer shop at home, thus discourses on its counterpart abroad: 'The wine shops are the colleges and chapels of the poor in France. History, morals, politics, jurisprudence, and literature in iniquitous forms are all taught in these colleges

and chapels, where professors of evil continually deliver these lessons and where hymns are sung nightly to the demon of demoralization.'

"The wine shops breed — in a physical atmosphere of malaria and a moral pestilence of envy and vengeance — the men of crime and revolution."

We now find that in 1900 the number of shops in which alcoholic liquor was sold to be consumed on the spot was nearly 500,000 for all France — about one for every twenty householders; also that for all men, women, and children, $18\frac{1}{2}$ litres (a litre is a little over a quart) of alcohol (at 100 degrees) was consumed per head; $4\frac{2}{3}$ litres in form of strong liquors, $4\frac{1}{2}$ litres in beer and cider, and 9 litres in wine.¹

¹ "For the beginning of the century," says an astute writer, "among all countries civilized and uncivilized, this is the high water mark of the consumption of alcohol by a race of mankind. . . . This does not mean that France is afflicted with the violent, spurring drunkenness which lets loose in Anglo-Saxon communities temporary lunatics at the most unexpected times and places. It does mean that a certain portion of the French population is becoming drugged with the constant use of alcohol as a steady stimulant, even though it be taken in the shape of mild drinks like wine, beer, and cider. The decency of the operation on the community is scant consolation for the pity of it. It remains to be seen if there is left sufficient vitality in this admirably organized race to resist so persistent a physical strain. Frenchmen themselves are waking up to the need of quick action unless they are to become a pathological object lesson to the rest of the world. . . . Wine at 10 degrees of alcohol is doing the most to pickle French tissues and brains. . . . Doctors have sometimes to forbid alcoholized mothers to nurse their children so impregnated is their milk with the poison. The future population of France will depend upon the issue of the combat against alcohol. . . . Among the higher classes the consumption of alcohol seems to be diminishing; these classes are susceptible to the example and teaching of men like Pasteur who drank water, and to a certain fashion of abstinence."

In seeming helplessness, French writers on the decadence of the French race look about for a solution of their national problem.

"Are the Anglo-Saxons really superior to the Latin races?" says M. Routier. "Is it real? Is it based on special virtues, or does it rather belong to causes which we should study, and which are independent of the essence of the English people?"

"It is owing first to a system of excellent education."

Let us repeat that England has also her cancerous growth, which will develop in results equally dire, if her education does not include the story of poison and its relationship to national greatness.

"The Latin race," continues M. Routier, "in spite of the degeneracy of certain branches, is always a race *par excellence* the heir of great qualities, — decision, energy, bravery, opinion, of the intelligence of the Romans, who dominated the world and left everywhere the indestructible trace of their empire. These virtues are now more latent than visible. They sleep concealed, I concede it. But they exist. All Frenchmen, all Italians, all Spaniards but await a cry, a cry of grief, of rage, or of hope, a sharp call to their conscience, when they will again dazzle the world with their splendid vitality. . . . France is a nation essentially industrious. The instinctive spirit exists in France, but it has been compromised and misdirected."

M. Routier, like most other French writers on this subject of French degeneracy, discusses faults of family life, of marriage customs, of educational systems, and every other national fault but the principal one. The one point upon which they all agree, and

upon which they are absolutely sure, is the statistical tables which are elaborately and extensively given, and which show an appalling state of affairs.

The French, aside from their scientists, have done very little to stem the tide of inebriety. A plan for temperance work has lately been started, however, which is eminently novel and clever. It is temperance reform by advertisement.

Dr. Menard, in *Cosmos* (Paris), writes of it as follows:—

“In advertising, manufacturers who wish to introduce a product or keep it in the fashion know well that repetition is the most persuasive of the rhetorical figures. Those skilled in the advertising art excel in creating a veritable obsession with the name of their merchandise.

“It has been asked why this enormous effort should not be employed in driving into the heads of the masses certain useful truths. The promoters of the fight against alcohol have already thought of this. At the exposition we saw not only pamphlets with very sensational illustrations, but also placards and lantern slides showing in startling fashion the dangers of alcoholism. At Paris, in certain hospital wards, have been posted up placards announcing these dangers. Dr. Folet, of the University of Lille, has delivered an interesting lecture on the subject.”

We are told that, in his hospital service, Dr. Folet fastened on the backs of frames which hold the patient's record, brief paragraphs calling attention to the fact that the most dangerous alcoholic drinks are so-called appetizers or bitters, of which absinthe is the worst example, and the tonics containing cocoa-kola or the like. Dr. Folet suggests that when we

read on the walls that such and such an appetizer is best, we should paste below the legend, "Absinthe is a poison." Small gummed labels may be distributed to be pasted on walls, etc. Also devices of the sort may be printed on lamp-shades, children's toys, cheap handkerchiefs, etc., which may be sold for a trifle.

The method has already been employed at Lille, where anti-alcoholic manifestoes are seen in huge letters on walls or in transparencies in windows, in illuminated advertising wagons, on sandwich men, in the street cars, etc. Some of these advertisements at Lille are as follows:—

"Alcohol a poison." "Beware of Bitters." "All appetizers are poisons."

"France alone drinks as much absinthe as all the rest of the world. This is why in twenty years the number of crimes, insanities, and suicides has doubled."

"Alcohol causes many diseases, especially consumption. In hospital 100 consumptives include 71 alcoholics."

"The repetition of these truths," says Dr. Menard, "may not convert many alcoholics, but will doubtless keep many sober persons from inebriety."

In France the taxes on alcohol and tobacco licenses form the chief revenue. How does it pay?

THE FIRST COUNTRY TO FREE ITSELF
FROM THE YOKE OF ALCOHOL WILL
BE CANADA

THERE is undoubtedly a general feeling in our country that Canada will some day become a part of the United States. If the United States continues to adopt the methods of decadent countries, and Canada adopts the methods of the strong, the question is, how long will it be before the United States will become a part of Canada?

What came very near being the greatest triumph of an entire nation to free itself from the yoke of alcohol, was accomplished in Canada in an election held on September 29, 1898.

The following question was submitted to the voters of the whole of Canada, from Prince Edward Island on the Atlantic, to British Columbia on the Pacific, and composing a territory equal in extent to that of the United States:—

“Are you in favor of the passing of an act (by the Dominion Parliament) prohibiting the importation, manufacture or sale of spirit, wine, ale, beer, cider (when made intoxicating), and all other alcoholic liquors used as beverages?”

So great was the demand for this plebescite vote that the liberals, then in power, felt constrained to yield to the demand. The men of Canada declared

against the liquor traffic, root and branch, by a majority of 20,000. Had the women of the country also voted, the majority would have been still larger. When the mothers of any Anglo-Saxon country have the power of the ballot, it will not take long to remove the chief cause of physical decadence, and the chief enemy of the home. And yet, without their aid at the polls, every Canadian province was carried, excepting French Quebec, notwithstanding the fact that the liquor interest throughout the land had all the advantage of money, and, as usual, a thorough organization. It was a curious fact in connection with the vote that the French Catholic Church arrayed itself almost solidly against prohibition. The Protestant Church, on the other hand, worked enthusiastically for it. There were but two Protestant churches whose pastors wrote to the press that they could not conscientiously vote for prohibition. The *Toronto Globe* declared that "every vote for prohibition is evidence . . . of the desire that Canada should occupy a high place among the enlightened nations of the earth."

A short account of the struggles against liquor in Canada may be interesting.

The fight against alcohol began immediately after the provinces were, of their own volition, confederated with a central Dominion Government (1867). The sentiment in favor of prohibition first expressed itself in showers of petitions to the new Parliament, which continued so numerous that the government appointed a "Royal Commission" of two persons to investigate the subject in general. One commissioner was a prohibitionist, the other an anti-prohibitionist. They

visited several prohibition States, including that of Maine, and several license and local option States, with the result that the anti-prohibitionist became an enthusiastic convert to prohibition; and the "Commission" sent a report to the Dominion Parliament recommending the immediate passage of a prohibitory law. The liquor traffic has a firm hold on governments in general. The liquor interest is always thoroughly organized, rich, professional, and permanent, while the active moral sentiment of the people, without the aid of churches, is unorganized, amateur, and generally lacking in funds. The Government was astonished at the enthusiastic and unexpected report, but it simply compromised, and passed local option laws, which for a time tended to quiet the demands, without of course solving the problem of drink.

Laissez faire may serve as a motto in other localities, but not for the sturdy Northmen of Canada. They again bombarded the provincial legislature with delegations and petitions, which the legislators declared fairly blew through the key-holes. For whole days at a time the entire business of Parliament was blocked by the reading of petitions for full prohibition.

In order to get rid of the question, the conservative party in power resorted to a trick, which resulted in turning themselves out of office, after a tenure of power of eighteen years. The trick was performed by means of another Royal Commission (1891), designed to put off the liquor question for a few years longer. This Commission to investigate the liquor traffic was a body composed of four anti-prohibitionists (one the son-in-law of a brewer) and one prohibition-

ist. For a long time the commission travelled about the country at considerable expense, for the purpose of finding anti-prohibition evidence, while the prohibitionist of the Commission frantically endeavored to squeeze in a little of his abundant evidence on the other side. The method of the Commission was to subpoena all whose names were handed to them, take the testimony of anti-prohibitionists first, and then adjourn for "want of time." They met trouble at Toronto. Three hundred names were given them for witnesses. Three were examined who were known to be anti-prohibitionists, and the Commission then proceeded to adjourn as usual. The town was in an uproar of indignation, and the mayor headed a large petition signed by business men demanding the Commission to return and finish their business, which they were accordingly obliged to do. The report of the Commission is contained in seven large books. The four antis reported in favor of license; the one, for full prohibition.

It is said that the fraudulent character and purpose of this Commission is so well known in Canada that it is little quoted there, although the report is extensively used in the United States by the liquor element.

Several plebescite votes were taken in the separate provinces, the first in Manitoba (1892), resulting as follows: For prohibition, 19,637 against 7,115, — nearly three to one. This success encouraged the workers of Prince Edward Island, who next voted (1893) with the same result, nearly three to one for prohibition.

Ontario next voted (1894), resulting in 192,489 for prohibition against 110,720. Nova Scotia voted three months later, giving more than three to one against the saloon. In the meantime, the leaders of the liberal party, lead by Sir Wilfred Laurier (French Canadian), held a convention at Ottawa, and, contrary to all precedent in Canadian politics, laid down a programme of what the party intended to do in case of being returned to power. One of the promises made was to order a plebescite vote of entire Canada on the question of prohibition; and on this platform, the party, after eighteen years' retirement, was again returned to power.

The prohibitionists have again been thwarted by a refusal of Sir Wilfred Laurier to carry out the will of the people. But time will settle all that, and the first country to wave the flag of freedom from the despotism of alcohol will be Canada. The expulsion of tobacco will follow, and when that time comes, let the world respectfully bow to Canada. At various times the world has practically been ruled by some one nation. When the world is again so ruled, it will be by a nation that drinks water.

THE POISON VICE IN THE UNITED STATES

IT is, of course, easier to criticise other countries than one's own. We should not forget that foreigners accuse us of degeneracy; that they call us a pale-faced, sharp-nosed, dyspeptic, nervous race, quite

lacking in physique; that they dwell upon our trying extremes of climate, our over-heated houses, our iced water, our hot baking-powder breads, and other national delinquencies. To be just, the foreigners are right, and criticism is good for the soul. He who does not welcome honest criticism does not seek to better himself.

Lord Macaulay made a dire prophecy concerning America:—

“As for the United States,” said he, “I appeal to the twentieth century. Either some Cæsar or Napoleon will wrest the reins of government and rule with an iron hand, or your country will be as fearfully plundered and laid to waste in the twentieth century as the Roman Empire was in the fifth century, with this difference: the Huns and Vandals that ravaged Rome came from without her borders, your Huns and Vandals will be engendered within your own limits.”

If, like other countries that have fallen, the United States succumbs to Huns and Vandals either from the outside or from the inside, it will be because the flaunting and westward marching army of King Poison cannot be conquered.

The history of the wars in America between the forces of the poison traffic and temperance is told in Senator Blair's book, “The Temperance Movement.” Senator Blair records the steadily advancing inroads into our national life of alcohol, tobacco, and opium. It is a story full of interest and pathos. The curses of the poison mania have been rapidly doubling on us. Our drink bill in 1902 was near \$1,400,000,000; the

use of alcoholic beverages having nearly doubled (per capita) since 1880 (93 per cent); our tobacco bill was \$700,000,000; yet conditions were never so favorable for conquering the enemy as at present.

Before mentioning these favorable conditions, let us study the status of the prohibition movement in several States and towns.

PROHIBITION IN MAINE

Prof. Calvin E. Stowe in 1866 referred to Maine as follows:—

“In 1819 I went to Maine and found the farmers and fishermen reduced to the greatest misery in their drinking habits. There was one village inhabited almost entirely by lumbermen, and I believe there was more rum drank there in the course of the year than would be necessary to float off the whole village. In this village was a temperance society formed, the pledge of which bound every one who should get drunk to treat the rest all round. In 1825 I entered the Seminary at Andover as a theological student. When I first arrived at the Mansion House, which was kept for the exclusive benefit of the students and visitors to the seminary, the first thing I did was to step to the bar and take a glass of brandy toddy, which Squire ——, a leading supporter of the seminary, mixed with his own hands and gave me.”

Professor Stowe also mentions the deterioration of the physique of the people:—

“During the three generations, diseases arising from the use of intoxicating drinks increased a hundred-fold. If there had not been a check, I believe by this time our whole population would have become idiotic.”

The results of Prohibitory Legislation in Maine was told by the Hon. Neal Dow in the *North American Review*, March, 1882, as follows :—

“There exists to-day in the English-speaking world, a very large body of men and women who believe that intemperance and all that comes of it are not a necessary condition of society ; that it is possible to put these evils away. They believe there is intelligence, virtue, and piety enough in the world to accomplish this, if by a full presentation of the facts in the case they can be brought to co-operate in the work.

“The friends of temperance come before the public with their proposition to that end. It is to forbid by law and to suppress by a strong hand the manufacture and sale of intoxicating liquors, without which any considerable diminution of the evils of intemperance, will be impossible. There are large numbers of people involved in it, by interest, appetite, or passion, who cannot be moved or even touched by the considerations which inspire benevolent, philanthropic, patriotic men and women. . . . The liquor traffic is absolutely inconsistent with the general good. It is in deadly hostility to every interest of nation, State, and society. It wastes the wealth of the country, undermines the virtue of the people, and is the source of a very large part of the poverty, degradation, insanity, and crime that curse the nation. It sends misery into hundreds of thousands of homes, which but for it would be prosperous, peaceful, and happy. The strength of a nation is in proportion to the intelligence, virtue, industry, and thrift of the people. The influence of the liquor traffic is to make its victims ignorant and brutal, to undermine their habits of industry, and to impoverish them. As the liquor trade flourishes, every legitimate industry languishes and dies.

“Mr. Benjamin Butterworth, M. P., is one of the largest employers of labor in England. At a great public meeting in Exeter Hall, I heard him say that in one of his establishments — iron works — five thousand men were employed. On Mondays the works are not in operation, their men not having recovered from the debauch of Saturday night and Sunday. He said that every industrial establishment in the country, large and small, had a similar experience, and as a result of it the industrial products of the country were one-third less than they would be without the liquor traffic. The men spent most of their wages in the drink-shops, they and their families living in abject misery, so that they became paupers when dull trade throws them out of employment for even a week.

“Judge Hill, of Birmingham, at an assize where there was a very large criminal calendar, said to the grand jury: ‘But for the public house, gentlemen of the jury, you and I would have very little to do. Whichever way we may turn, whatever measures we propose for the amelioration of the condition of the people, intemperance starts up and blocks the way.’ It is estimated that the working classes of England spend every year 500 millions in drink, the whole expenditure being 700 millions.”

In the *New York Independent* of 8th September, 1882, Mr. Dow again says:—

“It is affirmed by the collectors of statistics in regard to intemperance that in the year 1879 there was paid out for intoxicating drinks by the people of Germany, \$650,000,000; of France, \$580,000,000; of Great Britain, \$750,000,000; of the United States, \$720,000,000, making \$2,700,000,000. To this must be added the loss of time thus occasioned, the expense of ill health, the cost of

punishing the crimes committed by drunkards (and supporting the poor, the paupers, and the insane), and numerous other items. . . . And also for the fact that there are no profits that can compensate (even in part) for this enormous cost. Can there be any doubt as a matter of sound political economy, to say nothing about good morals, that society should arm itself to the teeth for the suppression of this expensive vice? Why tamper with such an evil? Why not cut it up, root and branch?

“The people of Maine resolved that for their State it should be destroyed. They determined to try to put away the evil of intemperance by forbidding and suppressing its cause, to wit, the liquor traffic.

“The people of Maine consumed their full share of intoxicating liquors, and more, according to their numbers. They spent in strong drink the entire valuation of all their property of every kind in every term of less than twenty years. Maine was the poorest State in the Union. Its great industry was the lumber trade, — converting its vast forests of pine into lumber, transporting it to the West Indies, and receiving in return for it West Indian rum and molasses to be converted by its many distilleries into New England rum. Literally our boundless forests of invaluable pine went down the throats of our people in the form of rum. The wages of the people were spent that way, except a small part devoted to a miserable support of their families. Evidences of poverty were everywhere seen in dilapidated houses, etc. Old hats and rags were in the windows, and doors were hanging by one hinge. The miserable cattle, shaggy and hide-bound with neglect and famine, were shivering under the lee of shabby barns, while their equally miserable owners were spending their days and nights around the stove of the country grocery, the larger part of whose sales was of rum consumed by these

people. Maine was never a dollar the richer, but the poorer for all this vast industry.

"The people of the State resolved in 1857 to change all this. They said, by the law, emphatically, 'The manufacture and sale of intoxicating liquors are forbidden,' and pains and penalties of fine and imprisonment were provided. This extraordinary law of prohibition and suppression of a great trade passed through all its stages in both houses of the legislature in one day, by a vote of 86 to 40 in the House, and 18 to 10 in the Senate. This was Saturday, the 31st of May, and on the morning of Monday, the 2d of June, the Governor approved the Bill and it became law and is so to this day.

"The wires flashed throughout the country and all over the world the startling intelligence that in Maine the liquor traffic had been put under the ban of the law; that it was no longer to be tolerated, being condemned to die, as inconsistent with the general good. Good men everywhere rejoiced. At a great religious meeting in Boston, Lyman Beecher read the telegram announcing to him the wonderful event, and said, 'Brethren, let us thank the Lord devoutly; this law hits the devil a stunning blow right between the eyes.' The *London Times* said of it: 'If this law shall remain on the statute books of Maine, it will show, better than any other thing can, that the people are capable of self-government.' It does stand, and will stand, thoroughly approved as it is by an overwhelming public opinion."

After telling us of the days when Maine was the poorest State in the Union when infested with rum-shops, General Dow gives us in the *Forum* of March, 1887, the results of the Maine prohibitory law:—

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“The wholesale liquor trade was at once abandoned because it could not be carried on clandestinely. Wholesale dealers in liquors sent their stock out of the State. . . . Within the first year of the operation of this law this traffic was reduced to small proportions. The jails in the counties of Penobscot, Kennebec, Franklin, and York were empty. The jail of Cumberland, the most populous county in the State, had been badly overcrowded, so as to have become a matter of newspaper comment. Within six months there were but five prisoners in it, three of whom were rumsellers imprisoned for violation of the law.

“The provisions of the Maine law were sharp and stringent. . . . Cases arising under the act had precedence in the courts of all others . . . and courts were expressly forbidden to diminish or modify any penalties either of fine or imprisonment. The purpose of the law was to put down the grog-shops, and to do it with a strong hand.

“Within the first year of the law, liquor-shops were occupied for legitimate industries. . . . Innumerable were the schemes used for hiding the contraband liquors and eluding the vigilance of the officers of the law. . . . In some instances the dealer would carry his stock in flat pint-bottles in his coat-pocket, or in a flat tin vessel fitted to the person and worn under the vest. Sometimes, in the case of women, a flat bottle would be suspended to the waist and worn under the skirt. Sometimes a bottle or two would be suspended by a string and sunk in a well in the cellar; or a jug would be hidden under the floor, the trap-door being covered by a carpet or bed; or sometimes buried in the ash pit, etc. Now contrast this with the conditions of Maine before the law. Grog-shops everywhere, wholesale and retail, with obtrusive signs over the doors and window-shutters, advertising all sorts of liquors; cargoes of West India rum spread out upon the wharves,

busy customs officers among the puncheons ; long lines of these casks upon the sidewalks ; smoke from distillery chimneys darkening the sky — seven of them at Portland ; now no puncheon of rum, no distillery, nor brewery in all the State, nor any sign anywhere of liquor on sale. Who can determine exactly the point to which the volume of the liquor traffic in Maine is now reduced ? There can be no statistics in the case, because the trade, being unlawful and infamous, is hidden away from the public eye, and its statistics are like that of the gambling hell and the ‘fence’ shop where stolen goods are received, concealed, and sold.

“Notwithstanding the wonderful success of the law from the day of its enactment, there are found, then as now, many persons who affirm that it is a failure. . . . Dr. Bacon thus writes on the subject in the *Forum*: ‘Their law (prohibition), instead of being an ideally excellent law, . . . is an intrinsically vicious and mischievous law, founded on false moral conceptions, advocated with false pretences, with systematic misstatement of facts and principles. . . . It will be well worth the cost of a general reagitation of the subject . . . to get this arrant legislative quackery cleared away.’ ”

Neal Dow says again : —

“In a few cities of Maine, the law is now not well enforced. This arises from the fact that political bosses imagine that the party will be strengthened by ‘letting up’ on the liquor sellers ; but notwithstanding this, the law has practically driven the liquor traffic out of far more than three-fourths of our territory, containing far more than three-fourths of our people, and has conferred such great and permanent benefits upon the State in all its interests that it stands now in public opinion stronger than ever before.”

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Governor Long, of Massachusetts, in his message of January, 1881, says :—

“There is a growing demand shared by all shades of theoretical opinion . . . that just as far and as fast as possible the dram-shop should be rooted out, in the interest alike of good morals and of the material welfare of capital and labor. The bureau of statistics has during the year added to its admirable work by conducting an original inquiry into the causes of crime. It has made personal investigation in every case in the nine criminal courts of Suffolk County which were selected as a sample, and the result constitutes the strongest indictment against the use of intoxicating liquors that has been drawn. Of the 16,897 cases more than 72 per cent were for various grades of drunkenness ; in addition to these more than 12 per cent were offences committed by persons under the influence of liquor, leaving only some 15 per cent of crime to represent what would be the total amount but for the use of intoxicating liquors. These statistics are important, as presenting this subject in the economical light of its relation to the industrial interests of the commonwealth, and of an appeal to those who depend upon them, whether as employed or employers. They cannot fail to impress not only the moralist, but in view of the enormous waste they suggest, the economist, the manufacturer, and the working man also.”

General Chamberlain, President of Bowdoin College and ex-Governor of Maine, said :—

“The declaration made by many persons that the Maine law is inoperative and that liquors are sold freely and in large quantities in the State is not true. The liquor traffic has been greatly diminished throughout the

State, and in many places has been entirely swept away. The law is as well executed generally in the State as other criminal laws are. . . . Where liquors are sold at all, it is in very small quantities compared with the old times, and in a secret way, as other unlawful things are done. ”

Ex-Governor Dingley says in a published article : —

“ Prohibition has effectually stopped the manufacture of distilled and fermented liquors in Maine. . . . To-day there is not a distillery or brewery in Maine. . . . In reply to the assertion that tobacco and opium are taking the place of liquor drinking in Maine, I may mention that the tobacco tax paid by Maine is only 17 cents per inhabitant, while the average for the country is one dollar per inhabitant ; and opium eating is far less prevalent here than in other Eastern States. ”

Mr. Blaine said in a public address, “ There is no State in this Union that has prospered so much as Maine during the last twenty years. ”

PROHIBITION IN IOWA

Governor Sherman, of Iowa, thus speaks of Prohibition in his State (*North American Review*, December, 1882) : —

“ The campaign took on the features of a direct crusade against the saloons. Great influence was exerted against the hereditary foe by the organized forces of the church and temperance societies, and especially those in which the influence of women was prominent.

“ The early settlers of Iowa brought with them frugality, industry, and temperance. Years of self-denying effort made up the price which the early settlers paid for home-

stead farms, where they now dwell in comfort and plenty. Habits of thrift and temperance were thus introduced at the outset, and soon became in good measure 'native of the soil.' The waste and idleness of intemperance were held by them in great disrepute. The first Governor of Iowa, in his inaugural address at the opening of the first Territorial Assembly, urged the necessity of strong laws against intemperance. An influence had gathered about the trading posts in irrepressible conflict with the homestead farmers of the prairies. The first evil developed was in the sale of liquor to the Indians, who soon acquired an insatiable appetite for strong drink. Wherever these grog-shops were established, the Indians were reduced to great degradation and poverty. Concerning this Governor Chambers said in 1841: 'Humanity shudders and religion weeps over the cruel and unrelenting destruction of a people so interesting, by means so dastardly and brutal, that the use of the rifle and sword, even in a time of profound peace with them, would be comparatively merciful.'

"Laws were passed forbidding the sale of liquors to Indians. The question was then asked with increasing emphasis, when the prohibition of sale to one class was found to work for its benefit and the good of the State, why would it not prove an equal blessing to others? . . . The fruit of entire prohibition was reached ere long. In 1851, several years before the Maine law, and when there were not over thirty saloons in Iowa, a law was enacted which declared every dram-shop a public nuisance and prohibited the sale of liquors at retail under heavy penalties. In 1855 this was replaced by an act of sweeping prohibition, with penalties better arranged for its enactment and forbidding all sales of liquors, except for necessary purposes and then only under stringent regulations.

"There came a change a few years later. The State

rapidly filled with new people bringing with them the habits and customs of other countries. They contended that the sale of beer and wine was unobjectionable and believed that the deprivation of these so-called luxuries was a puritanical intolerance.

“About this time the effect of a heavy immigration from other States and foreign countries was felt, and as a result of all these influences the prohibition law was modified in 1858 so as to permit the sale of beer and wine in cities and towns favorable to such license, with ‘local option.’ This law remained until 1858, until the adoption of the Constitutional Amendment. It was believed this modified ‘local option’ law was the measure best adapted to a rapidly growing State where extremes met. In some instances whole townships were taken up by immigrants from foreign countries, who thus sought to preserve the social life of their fathers, secure from puritanical intolerance. This was offset in certain villages of New England settlement, where the deed to every town lot provided for a reversion of title in case intoxicating liquors were ever sold on the premises described. It was between such extremes that the Act of 1858 sought to draw the line of golden mean. It was argued that entire prohibition could not be enforced in some localities and that the constant violation of the statute created a disrespect for all law. It was asserted that the use of such mild beverages as beer and wine would tend to drive out the stronger beverages and introduce an era of Arcadian simplicity, wherein the people would use the mild liquors in the temperate and praiseworthy manner said to prevail in some countries of Europe. It was represented that the brewers and winemakers were the mortal enemies of the distillers, and the wine-drinking countries of Europe were adduced as examples of the blessed results soon to be reached in Iowa. Strongest provisions were made against

selling even beer and wine to minors, intoxicated persons, or persons in the habit of becoming intoxicated. Under this law the saloon keeper was required to keep a quiet, orderly place, selling nothing but beer and wine. The argument in support of this law was plausible and seemed to have a good foundation in the experience of other countries, and it was finally adopted in the firm belief that it would prove a panacea for many of the evils of intemperance. Municipalities could still prohibit the sale of all liquor; the temperance societies were to continue reforming inebriates and pledging individuals to total abstinence and no means of 'moral suasion' was to be left unemployed.

"Many of the original prohibitionists had no faith in this law. They contended it would prove but a cloak for the evils it aimed to prevent, and that nothing but prohibition could reach the end desired. Almost from the outset they could point to the confirmation of their fears. . . . The great body of the people held, however, that it would take time to effect the change, and steadily resisted the frequent attempt to repeal the law and return to extreme prohibition.

"After twenty-four years of trial, however, they were brought to face the complete failure of the experiment. It was found that saloon keepers engaged in their business for the sole purpose of gain, and that avarice never permitted the restrictions of the law to stand in its way. At least four-fifths of the saloons systematically defied every regulation. Liquor of every kind was sold — and sold to any one. The use of beer and wine seemed but to create an appetite for the stronger drinks. . . . The violation of the law was systematic and notorious. The courts were burdened with liquor prosecutions and the costs in many of the counties became enormous. The most energetic attempts to enforce the law led to but partial success. . . .

The liquor traffic led more or less directly to crime . . . throwing open the doors of jails and almshouses, bringing poverty to many a family and a dishonored death to many a victim. The law was violated in the tippling shop and evaded in the court room.

“The saloon re-wrote the definition of perjury and taught its customers, when on the witness stand, to aid in the evasion of the law. The forbidden liquors were sold under the name of those permitted, and witnesses would declare they were unable to tell which they bought. Jurors were found to sympathize with the witness who was not an expert in chemistry. The partial license law, which had been adopted with such high hopes, was torn and dishonored in every part, and men usually truthful were taught a new code of morals. The saloons were sheltered behind the presumption of legality; the privilege of selling beer and wine was the cloak under which all the manifold evils of the liquor traffic were secreted and protected.

“Not content with blocking the courts and defying the law, the saloon system aspired to become an organized force in the politics of the State. It had greatly extended its power during the long experiment of the wine and beer law. It had long been confined to the cities and large towns, but the rapid extension of the railroad system furnished quick transportation, and the saloons thus began to thrust their malign influence into the rural communities. The managers of the liquor traffic no doubt realized the alarm which the extension of the saloon system was creating, for they made every effort to band themselves into a strong political force. Their vote was to be solid against any man who demanded the enforcement of the law. Witnesses, prosecutors, and all who sought to uphold the law of the State were proscribed. It was in this state of affairs that the great mass of moderate-minded people were converted to the support

of rigid prohibition. They found they must control the saloons, or the saloon would control them.

"The managers of the liquor traffic took the broad way leading to destruction. They not only determined to punish every citizen who demanded the enforcement of the law, but with threats and defiance opposed even the submission of the question to the vote of the people. . . . When the liquor traffic made its defiance, open and absolute, the people determined not to endure it. . . . They might not be able to enforce prohibition against the sale of liquor any more than they had been able to put an end to burglary and murder; but they could at least place the denial of the right of the majority to rule where it belonged, as an offence against the fundamental principle of the State.

"Would prohibition prove impossible of enforcement? Such had been most emphatically true of the partial license law. Would its violation tend to disrespect for all law? Surely its effect could be no worse than the license law in every day of its history through twenty-four long years. The people found the argument that prohibition would be violated and create disrespect for all law completely answered by experience; . . . it was found that four-fifths of them violated the law constantly and systematically.

"The evidence was complete. The liquor traffic had defied all control, and the people passed on it judgment of death. . . .

"Election returns demonstrated very clearly that foreign-born voters are not so bound by traditions or old country customs as has been supposed. They come here with the same purpose as the immigrant from the Eastern States, to found homes as well as fortunes, and to become members of a thriving, temperate, orderly community. . . .

"Comfort and thrift are now general in Iowa. Independence and comparative equality have developed a high degree

of public spirit. The people of Iowa find time to exercise a watchful and exacting care over public concerns.

"Iowa has grown from a frontier State into a young empire, its farms harvesting an annual produce greater in value than the yield of the gold and silver mines of the West, and its government directing the public affairs of a people numbering two-thirds of the population of the Republic over which George Washington presided. It has perfected one of the finest school systems of the country; has reduced the ratio of illiteracy in its native population to the lowest found anywhere; has made splendid public improvements and developed a noble system of charities; while the public ledger shows the State wholly free from debt. . . .

"In recent years the liquor traffic cost the people of Iowa \$10,000,000 per annum in money, and in other respects much more. It blocked the courts, terrorized officials, and thrust itself boldly into politics. It was against the genius of the people of Iowa to endure any longer the outlawry of the liquor traffic. A State of thriving, prosperous people set free from intemperance and the evils following, has been the dream of ages, and no citizen of Iowa can hold a better aspiration than that such a result may be reached here."

It need scarcely be said that Maine and Iowa show the effects of race culture in the stalwart and level-headed men and women of these States. Their representatives in Congress are an exceptionally strong body of men. It was rather remarkable that at one time the chief of almost every important department at Washington came from Maine. The Speaker of the House (Mr. Reed), the Speaker (*pro tem.*) of the Senate (Senator Frye), the Chief Justice of the United

States (Chief Justice Fuller), the Chairmanship of the most important Committee of the House (Ways and Means, Mr. Dingley), etc.

PROHIBITION IN VERMONT

The elimination of blood-poisoning habits in Vermont has also told magnificently on race culture. Indeed average "respectability" and financial independence is higher in Vermont than in any other State of the Union. According to the auditor's annual reports, showing exact deposits in the banks of each county, along with the amount of population, we find that, counting men, women, and children, twenty out of every one hundred inhabitants of Vermont have accounts in savings banks, averaging more than one in every family.

Said a Vermonter in *The New Voice* : —

"For forty-seven years Vermont has prohibited the manufacture and sale of intoxicating liquors for beverage purposes.

"There is probably no civilized commonwealth on earth that has less law and less need of law than Vermont. There are only about thirty-five police officers in the entire State. In all Vermont there is not a known gambling house.

"In a license State, the sheriff of a good-sized county expects to make five or ten thousand dollars each year in caring for the prisoners. For the entire State of Vermont, the total expense of all jails for 1898 was less than \$11,600.

"In a license State, ordinary counties expect to pay something like a hundred thousand dollars in court ex-

penses, criminal prosecutions, etc. For the year 1898, the whole State of Vermont had to pay less than \$120,000 for all court expenses, including jails, sheriffs, criminal prosecutions, clerks, attorneys, judges, etc. . . .

"There is about as much likelihood of the legislature repealing that prohibition law as there is of their passing a law to hang themselves," said Deputy Secretary of State Phinney to me the other day. For forty years Mr. Phinney has been sergeant-at-arms of the legislature."

The late triumph of the liquor organization over the political forces of Vermont and New Hampshire has astonished the entire country. By a constitutional vote, the fathers of Vermont and New Hampshire have opened the floodgates of the liquor traffic to their sons. What a pity that the votes of the mothers from those granite hills could not have been counted!

A LITTLE STORY ABOUT THE TOWN OF DRESDEN, TENN.

A little story is told of the town of Dresden, Tenn., which was once in the clutches of the dram-shop element, and which, during ten years of that régime, had but four new houses. Prohibition was agitated. The dram-shop element swore that to remove the saloons, along with their business advantages, and also to ignore their contributions to the town treasury in the way of tax licenses, would simply kill the town. The mothers of Dresden declared that they had as soon the town would be killed as their sons, and with great effort the poison traffic was cleared out.

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In the following ten years, according to the mayor's report, eighty new houses were built, two of them being churches — presumably, as a wag said: "For holding the funeral of the dead town."

THE TOWN OF GUILFORD, CONN.

Guilford, Conn., is a happy town in which no taxes had to be raised in the year 1900. The voters decided that they had more money than needed, and it would be extravagant to hire a tax collector and assessor to gather tax money, which would have to lie idle in the bank for months if collected.

"Since the memorable vote was passed," said the account, "letters have poured in upon the town officials asking information of the town's resources, its past municipal history, and its reasons for omitting the tax levy. Professors in political economy in colleges were also especially interested, as indicated by their letters of inquiry.

"For five years the tax rate had been only ten mills on a thousand, and build as many bridges, highways, and schoolhouses as they might, and reduce the tax rate as low as they dared, the revenue was more than enough for this prosperous shore town of New England.

"One of the problems in political economy which old Guilford thinks it has worked out is the liquor question. The selectmen claim that, instead of revenue from liquor licenses proving lucrative, they are more than swallowed up by the added expense of maintaining almshouses, jails, and police.

"Guilford has for years been a no-license town, and its police force has been reduced until it consists of a few special constables.

"The need of an almshouse and jail has steadily decreased since saloons were abolished, and law-suits have become almost unknown. The difference between Guilford and Glasgow seems to be that the Scotch city pays all its expenses by revenue from its municipal franchises, while the Connecticut town owns no valuable franchises, but finds a ten-mill tax rate so much in excess of its financial needs that it can afford now and then to take a year off from assessing taxes.

"The Guilford voters are proud of their boast that they are the first town in New England, if not in America, to be able to go a year without a tax since the Pilgrims landed. The population of the town is 6,000. It is about ten miles long and six wide."

THE FAVORITE POISONS AND HEREDITY

"Every child born into the world has an inalienable right to health and happiness."

DEFINITION of heredity: "The sum of all ancestral forces plus life."

We live in a world of beauty. Would that we had a thousand eyes to see it, a thousand brains to comprehend it, and a thousand lives in which to enjoy it. In the midst of nature's splendors we have but two eyes and a single brain, and life at furthest is but a few short years,—far too short. Having so little, it is a pity to be born a victim of inherited defects, and little consolation to be told that fatigue should be treated a hundred years before birth.

It seems hardly fair that innocent applicants for blessings and honors at the threshold of life should be weighted down with mortgages, — called upon to suffer for ancestral disregard for hygienic laws; and yet, how can one expect a good harvest from a poor seed? Something cannot be made from nothing. The outcome of a turbid stream is pollution. It is the saddest truth in the great scheme of life.

We need not waste space to quote authorities to prove the hereditary tendencies of certain diseases, — consumption, insanity, scrofula, etc. What is less known are the disqualifications transmitted by unhygienic conditions of any kind.

The physiological reason of inherited tendencies is simple. The body in all its parts is composed of cells, good in health and bad or indifferent in disease, and like reproduces like. These cells are developed and strengthened by hygienic influences, and the whole organism, by a gradual change of structure, becomes adapted to more varied, more complex, and better conditions of life. On the other hand, these cells become fatigued and degraded by unfavorable influences, and a gradual change of structure again renders the whole organism adapted to less varied and less complex conditions of life.

One need have no hesitation in saying that there is no destructive force in nature so largely responsible for cell degradation as the introduction in the body of poisons of any kind. Every cell of the body is more or less fatigued by a fight with poison; and the moment a poison is introduced, there is always a fight, unless the drug be so virulent as to produce

partial or entire paralysis, a condition which is more than ever destructive to cell power. The inebriate, whatever may be his poison vice, mortgages the resisting power of his offspring by transmitting to him his own fatigued and defective cell power. In transmitting germ life we transmit our kind, our tendencies, our example. A father dies of heart disease, and the son repeats the story simply because the foundation of the disease was communicated in an organ defectively constructed. The tobacco smoker degrades his tender and marvellously delicate lung tissue, and his child inherits a tendency to consumption, a malady which has increased along with the general smoking habit. Every tobacco smoker sows seeds in his own lungs for incipient lung disease of some kind in his progeny. The inebriate of any kind also sows seeds for a perpetual catarrhal condition of the mucous membranes of the entire internal passageway. In fact, anything and everything that is a poison affects more or less every cell of the body. If one desires to propitiate health culture, it is just as well to understand that every glass of wine, every whiff of tobacco, every cup of coffee has its deleterious influence in promoting degeneration of cell and nerve tissue. We are but made up of addition, subtraction, and multiplication-tables, and statistics. One scarcely realizes to what that little seed called a tendency may lead, or how simple disturbances of the nutritive functions may count in the establishment of degeneracy. The evil is insidious, the cell fatigue is easy, and the simple desire for the poison whip indicates that the story of degeneracy has

begun. It is an organic revelation very impressive, for it may possibly control not only the future of self, but of generations to come.

From a purely racial point of view, unsound seeds of heredity should never be sown. As Gustafson says:—

“To the startling words of Flourens: ‘Man no longer dies, he kills himself,’ we may add, man not only kills himself, he kills his offspring in the womb, and degrades that heaven-ordained crucible of life into a machine for creating mental, moral, and physical monstrosities—for the spurious replenishment of the earth.”

Dr. Mandsley remarks, concerning the offspring of victims to poison:—

“Such children come into the world without having either the will or the strength to struggle against their fate; they are step-children of nature, suffering under the heel of tyranny—the tyranny of poor constitutions.”

Dr. Gendron, in “Hereditary Alcoholism,” says:—

“The drinker is often incapable of having living children. If he does have them, they are driven to drinking (or smoking, Ed.) like himself; and being less robust, because degenerated, they cannot withstand the effects, but fall victims to all the incidents of alcoholism united to those they have inherited. These are, in tender years, convulsions on the least occasion; later, nervousness, with all its train of symptoms; limited intelligence, gross tastes, and a spirit incapable of anything serious or coherent. The heir to alcoholism is querulous, evil-minded, possessed with a desire to destroy, incapable of good education, and his faults increase with his years.”

Dr. Gendron adds further on: "If the poor son has been carried to the prisoner's dock for some crime, he bears little real responsibility."

Let us have pity for children born tired, and for the unsuccessful in life as well as the criminal.

Dr. Oswald says:—

"Statistics show that about two-thirds of our people inherit a tendency to some disease—a defective vitality in some organ of the body. Some 70,000 (over 100,000 now, Ed.) in our country are swept away each year by pulmonary consumption; add to this the heritage to rheumatism, gout, insanity, cancer—a new group of heritages are now being added—imperfect digestion, organic and nervous diseases, loss of hearing and sight during the prime of life. . . . In an age of progress and philanthropy that such a gigantic evil has received scarcely any attention is worthy of remark. . . .

"As a rule, physicians are far more intent in discovering the best means of curing than averting disease, well knowing that the latter is a thankless and little honored pursuit, while the former brings large returns of gratitude and reward. If two-thirds of our population inherit some constitutional defect, the question is of deep and wide interest whether such imperfection can be erased, and if so, by what means? The genius of our civilization, in its physiological aspect, is to make us spendthrifts of our vital riches. It includes no such aim as race improvement. True, some youth may look to winning in competitive struggles or to immediate success in some undertaking, but not to remote objects of lasting improvement. Physical degeneration is the rule. In prolonging the life of defective blood there is displayed a skill and care never before equalled. Now all defective blood is skilfully nursed up to the fertile period

to the multiplication and perpetuation of its kind. The profound study, the active sympathy and systematic charity bestowed upon the wrecks of our race for their cure and preservation, when compared with the prevailing indifference as to the means of preventing the steady increase of such helpless unfortunates, is far from flattering to our foresight in economy and beneficent work."

Vital statistics show a gradual decline in birth rate among Americans, and that we are continually developing new diseases. Fortunately, by unwavering hygienic observances, blood can be renovated, although to accomplish this a knowledge of the principles of hygiene becomes necessary.

The student of heredity is impressed by several phenomena induced by the poison habit, viz., the inebriate generally transmits to his child propensities for the same kind of poison that was used by himself; the progeny of degenerates presents always a progressive degradation, and the weaker cells of the second and third generation call all the more loudly for relief through a stronger poison. It is quite serious enough for one parent to indulge a poison mania. When both parents are possessed by it, a poor chance in life is left to the offspring. If they do not develop into consumptives, or inebriates, or display vicious mental traits, they at least possess feeble tendencies for intellectual and moral life. Their perceptive faculties are usually more or less clouded. A disinclination for continued work, instincts for destructiveness, a taste for killing living creatures, and other abnormalities appear in early childhood.

Endless cases are cited in different works on heredity to illustrate the baneful influence of the poison habit upon progeny. Among the many experiments on animals that are reported, we may mention those made by the French investigators, Mairet and Combemale. They demonstrated that the same results which the human inebriate transmits to his offspring through his selfish indulgences, can be produced at will in the offspring of the lower animals by compulsory induction of the same vice in them.

“A pup had puppies by a drunken partner. Of six pups born three only were living, and those were all dull and stupid. One of them, when grown, was mated with a healthy partner. Of the three pups then born, one had congenital disease of the spinal cord, one had heart deficiency, and the third had generally arrested development. This experiment was duplicated, confirming the general result. . . .

“An analysis of the alcoholic habit in the department of Finisterre, where alcoholism is the curse of both sexes, showed that it produced weakmindedness, epilepsy, and criminality to an almost incredible extent. The French physician Goyard tells us that nurses in children's hospitals recognize at once the children of poison parentage by their emaciated shrunken appearance, their continual crying, and their easy victimage to epidemic disease.”

We see often quoted the story of the famous Jukes family. The ancestry of this family is traced to Max, a hard drinker who became blind. Many of his descendants for two generations were also blind, and many of them inherited his intemperance. One of the most notorious of his offspring was a woman

named Margaret, of whose progeny R. L. Dugdale writes:—

“In tracing the genealogies of 540 persons who descended in seven generations from this degraded woman, 280 were adult paupers, 140 were criminals and offenders of the worst sort — guilty of seven murders, theft, highway robbery, and nearly every other offence known in the calendar of crime. In the 30th annual report of the Ex-Commissioners of the Prison Association of New York, are the detailed premises of an estimate that the total loss to society by the crime and shiftlessness of that family amounted in 75 years to nearly a million dollars.”

General Eaton, United States Commissioner of Education, says: “Ninety-five per cent of the depraved youth of the country are the children of drunken parents.”

Sir Benjamin Ward Richardson appeals to patriotic Englishmen in the interest of national health as follows:—

“On the ground of functional disturbance alone . . . an argument may be used which goes very deeply. . . . Put down the smokers of Great Britain at a million in number — there are more than that, but let it pass. Why should there exist perpetually a million of Englishmen, not one of whom can at any moment be writ down as in perfect health from day to day? Why should a million men be living with stomachs that only partly digest, hearts that labor unnaturally, and blood that is not fully oxygenized. In a purely philosophical point of view, the question admits of but one answer, viz., that the existence of such a million of imperfectly working living organisms is a national absurdity, a picture which, to one observing the whole truth

and grasping it, would suggest a mania foolish, ridiculous, and incomprehensible.

“What smoking or drinking effects on a man, it inflicts on any national representation of the same man. If the luxury is not directly fatal to life, it clearly tends to physical degradation. I do not hesitate to say that if a community of youths of both sexes, whose progenitors were finely formed and powerful, were to be trained in the early practice of smoking, and if marriage were to be confined to the smoker, an apparently new and physically inferior race of men and women would be bred up. . . . Many of our fathers do not smoke and scarcely any of our mothers, and thus to the credit of our women chiefly be it said the integrity of our race is fairly preserved. With increasing knowledge we may hope that the same integrity will be further sustained.”

Depierris' appeal to France against the ravages of tobacco is pathetic. He says : —

“Nicotine gives birth to persons who have all the defective and sickly qualities of the parent. Descendants are tainted with the original vice or original defect the same as if cursed with the tendency to consumption, scrofula, etc., and all these beings on the road to cretinism are either struck with sterility themselves or it falls upon near descendants.

“Whence comes the curse which has so profoundly attracted the attention of philanthropists, of physicians, and of legislators these last years, showing that the population of France is diminishing, that there is a steady and enormous increase of defective children, a general physical degeneracy, and a scarcity of old people? Of course, tobacco has in its train endless diseases, attributed to any and all causes. In weakening the general system, one is liable to any and all diseases, and yet one cannot say that

tobacco kills all alike more than the most murderous of the epidemic disease scourges kill all, but at least it leaves those who exist with its traces more or less profound, and the most privileged of all must submit to a premature death, to a defective old age of impaired energies, like a tropical climate to people of the North, which may not kill suddenly, yet impairs life, ages and fades it, when under proper conditions it should still be young and vigorous.

"Our administrators, our philanthropists, seek from all sides the means of regenerating France. They demand that children shall be better cared for. They even blame mothers. . . . It is not just. . . . If our children die so readily, it is because they are born incapable of life. . . . Ah! if we could only engender a new robust generation capable of rehabilitating the nation in its old splendor. . . . But our children will be strong only when our men have recovered their primitive vigor. . . .

"Let the mothers without ceasing tell their suffering offspring that if their lives have been struggles to maintain, if their constitutions are feeble, their existence threatened to be short and sown with faults and illness, which rob them of a great part of the beauty and happiness of life, it is the fault of their fathers, whom they must not imitate; for they have destroyed by the most fatal of errors, by the subtlety of a poison, what was the most perfect and purest in their organism. They should tell them also, that they are infected with inherited vice which cannot be corrected nor stopped in their descendants, except by practices which develop and fortify the body and enlarge the understanding. And if our beautiful country of France, whose institutions, whose climate, and whose culture are so favorable to human perfection, could but understand and could but rid itself of the poison vices, a regenerated nation would again enjoy all its ancient grand-

eur, and would again take the strong position which Providence intended for it without fear of new setbacks."

The scientific reasons for the reproduction of unsound children, or the non-production of children occasioned by the use of tobacco, is very fully explained in Dr. Depierris' book. He tells us of the stupefying action of tobacco on all nervous centres, and of its action in either killing outright or degrading human germ cells, — the foundation of life. He says that tobacco is destroying the French race in the cradle; that the human embryo is denaturalized and its primitive vigor depraved; that the mortality of children in the last twenty-five years (in which time tobacco has come into general use) is the chief cause of depopulation in France; that statistics show that half of French children die in their first year; while only before 1830 half of the race died before twenty years of age; that in the larger cities, Paris, Lyons, and Marseilles, where the use of tobacco is greater than in the country, seventy per cent of children die in the first year; that the true cause of this great mortality of children is that their vigor is withered in the sources of life by the errors of their fathers in the use of tobacco.

"There are two classes," said Andrew Carnegie in an admirable speech; "those of whom it is said after death, 'the evil that men do lives after them,' and those of whom we say with fervor, 'the good that men do lives after them.'" And this is as true of physical health as of good deeds.

A CHAPTER OF STATISTICS

THE primary causes of human degeneracy and the evils which follow, and the need for strenuous and world-wide work to stem the devastating tide, are eloquently explained when glancing over the appalling statistics of the favorite poisons. The fact that the use of intoxicants is not only enormous in most civilized countries but steadily on the increase, is very impressive, and still more so when we know that to test the pulse of a sick and decadent nation one has but to examine the statistics of her poison habits.

We find that since 1880 the use of alcoholic beverages in the United States has nearly doubled, having increased from 10.09 gallons per capita to 19.48 gallons per capita in 1902. It is estimated that a fourth of the total population (79,003,000) now stimulate with alcohol, and that the wealthiest classes drink less, and the laboring classes drink more, than formerly.

Statistics have been recently published by the Board of Trade of Great Britain and Ireland showing the consumption of alcoholic liquors during the past year in the United Kingdom, France, Germany, and the United States.

From these we find that in England the per capita consumption of beer and cigarettes has increased in the last twelve years fifty per cent, and, contrary to

the general impression, England now consumes four per cent more beer than Germany. Also, contrary to the popular idea, Germany now takes the lead of England and America in the consumption of strong drinks, again proving that the poison habit is always progressive, and that the milder intoxicants but pave the way for the stronger ones.

United States statistics are reported every ten years by the United States Census Bureau, the last census having been taken in 1900. The public document itself is so full of detail that it is difficult to decipher just what one wants in generalities, and it was a great relief to find this work done in regard to alcohol, as published in the "American Prohibition Year Book" (Chicago, 1901), compiled by Alonzo E. Wilson. In this little work we get the figures of our national drink bill; the special drink bill of fifty American cities; the status of the liquor problem in each State of the Union; statistics concerning the relationship of alcoholic drink to crime; the comparative wealth of no license and license towns; the march of the brewer into the Philippines, Cuba, and Porto Rico, and how our soldier boys are caught in the meshes of the lucrative trade in poisons down to the dollars and cents.

The rapidly advancing brewing interests in America claim due attention. The conquest of England by King Beer is well known, and how that Portly Potentate already owns the English Parliament and practically the English nation; how the most popular English investment (an enormous per cent) is in the brewery; how the English brewers, largely composed

of Englishmen of high social rank, now own and conduct practically all the dram-shops of England, each owner supplying his own brand of beer along with its usual accompaniments — tobacco, spirits, etc. The English throat would now seem to be a huge channel through which flows annually a veritable river of beer.

The saddest of all things is the disintegration of any great people and especially a people whose natural instincts lead to higher civilization, and whose instincts, brutalized and perverted, debauch the entire world. Through the demoralizing influences of the favorite poisons the great blessings of "trade" become a sordid commercialism, an unholy greed, a universal curse.

Our statistics further show the significant fact that English syndicates now own in the United States \$80,000,000 worth of breweries, and that the English brewery ownership of dram-shops is now full fledged in the United States. The bottle is a greater conqueror than the sword.

The capital invested in English breweries, according to official figures of Great Britain and Ireland, amounts to \$1,050,000,000. There was consumed in the United States in 1899, 36,579,044 barrels of beer, 85,125,532 gallons of proof spirits, and 25,876,228 gallons of wine. A barrel of beer (31 gals.) at 5 cents a glass, and two glasses to the pint, brings the retailer \$25.80. From sixty to seventy drinks are dealt out from a gallon of spirits or wine, which retails from five to fifteen cents, making from \$3 to \$10.50 per gallon.

Figuring the beer at only \$20 per barrel, and the

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wine and spirits at an average of \$6 per gallon, our national drink bill for 1899 was:—

Beer	at \$20 per bbl.	\$731,580,880
Spirits	“ 6 “ gal.	510,753,192
Wine	“ 6 “ “	155,257,440
<hr/>			
			\$1,397,591,512

Dr. Wright, United States Commissioner of Labor, estimates the liquors used in manufacture at \$75,000,000, leaving, for poisoned beverages to be poured down the American throat, \$1,322,591,440.

Another statistician, William Parsons, asserts that beer costs the consumer about \$25 per barrel, and adding other expenses, — bottling, etc., — shows the drink bill to be over \$1,500,000,000. We may also add that a certain percentage of illicit liquor manufactured is not reported to the revenue officers.

Appalling as is the drink bill, it is small as compared with the indirect cost of alcoholic drink.

I copy from an estimate by James B. Dunn, N. Y. (quoted in the “Prohibition Year Book”):—

“To give the exact total money cost of the drink traffic to the nation is a very difficult if not an impossible thing, so many are the elements which enter into its consideration. All that we can do is to enumerate some of the most important of these. The indirect cost is appalling.

“JAILS, ASYLUMS, ALMSHOUSES.—The following are the expenditures, State and local, largely due to the drink traffic (1890): Judiciary, \$18,721,383; penal and reformatory, \$9,226,905; police, \$23,934,376; charitable, \$39,958,816. Total \$91,841,480.

“Of this amount it is safe to say that at least 75 per cent is due to drink, making a loss from this source of \$68,881,110. But this is only the cost of the State or local governments for the courts, of police, jails, poor-houses, and other methods of caring for the criminals and paupers, and does not include the private losses due to these causes. These may be safely estimated at as much more, another \$68,881,110 making the cost for poverty and crime \$137,762,220.

“LOSS OF LABOR. — The nation loses a great deal because of the prevention of the production of wealth on account of persons being in jails, hospitals, asylums, or in any way idle through intemperance as hard drinkers. It is estimated that this number is over 5,000,000, and as the average yearly wages are \$354, this would show a loss of \$1,770,000,000, but we are safe in placing the figures at one-half this sum, \$885,000,000.

“Then there is the loss of others' labors occasioned by these hard drinkers; as not infrequently the working of a gang of men in a factory is interfered with by the absence of one or more through drink. We put this at one-fourth, \$221,250,000, making a total of \$1,106,250,000.

“SHORTENED LIVES. — It is estimated that 100,000 die every year the victims of strong drink. But put the number at 60,000. Each such death robs the nation of at least an average of seven years' labor, some English Parliamentary reports say ten. Put the number at seven. This would make a loss of \$147,000,000.

“MISDIRECTED WORK. — There is the loss which the nation suffers by having about 1,000,000 men engaged in making and selling intoxicating liquors, not actually adding anything to the wealth of the country, but creating conditions which increase public burdens. If rightly employed these men would add to the country's wealth \$354,000,000.

"A SUMMARY. — We do not overlook in this connection that a proportion of the national, State, and municipal revenues is derived from the liquor traffic. This is what the liquor traffic pays for the privileges granted it. It is right that this amount (which will be found below) should be set over against the items of loss and the various expenditures caused by the traffic.

Direct and indirect cost of the liquor traffic : —

Amount paid for liquors by consumers	\$1,000,000,000
Value of grain, etc., destroyed	33,497,644
Cost of crime, insanity, pauperism, etc., chargeable to liquor traffic	137,762,220
Loss of productive labor	1,106,250,000
Shortened lives	147,000,000
Misdirected work	354,000,000
Total	<u>\$2,768,504,864</u>

Revenue from liquor traffic (1890) : —

Internal revenue	\$107,695,910
Customs	8,518,081
State and local revenues	<u>24,786,496</u>
	141,000,487
Net loss	<u>\$2,537,504,377</u>

In the foregoing tables the items charged to the liquor traffic, except the official figures, are moderate estimates, and many things which might properly be included are omitted because of the difficulty of expressing them in dollars and cents. One can scarcely grasp the awful significance of the above figures !

In this "Year Book" figures are given, taken from the Government report, for the number of saloons, arrests for drunkenness, and disturbance of the peace in fifty cities, seven of which are here repeated : —

Population, 1900.	No. saloons.	Arrests for		Total arrests.
		Drunken- ness.	Disturbing peace.	
New York . . . 3,437,202	10,832	44,013	30,855	137,875
Chicago . . . 1,698,575	6,460	40,270		71,914
Philadelphia . . 1,293,697	1,709	28,698	8,154	62,185
St. Louis . . . 575,238	2,060	3,974	7,113	24,420
Boston . . . 560,892	709	23,896	170	39,760
Washington . . 278,718	513	3,136	5,956	25,923
San Francisco . 342,782	3,007	12,827	1,998	27,769

In this "Year Book," Edward P. Gaston tells us more about the grip of King Alcohol on poor Chicago, which, it seems, is worse than elsewhere.

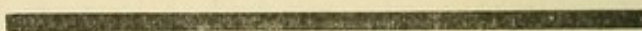







"There are," says Mr. Gaston, "more than 31 miles of saloons in Chicago and less than 8 miles of churches. The more than 55,000 arrests for drunkenness would make a procession in close lockstep marching order of more than 20 miles in length. If the 6,373 saloons of the city (a previous year) were planted solidly together they would much more than fill the entire central business district, requiring over two square miles of space.

"Leading liquor wholesalers tell me that Chicago is the greatest drinking city in the country. . . . It is hard for even the liquor sellers or the revenue department to compute the amount of intoxicants consumed in a year; but after obtaining all the most reliable data possible, I have figured out that Chicago last year consumed 153,477,900 gallons of drink, costing \$125,739,188. If equally divided, this would mean 88 gallons of sadly mixed liquor for every man, woman, and child among the 1,750,000 of Chicago's population, and a per capita expense of \$72.

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Were all this mighty flood dammed up and then allowed to flow off at the rate of a gallon a minute through a single faucet, eighty-one years would not suffice for what trickled over the Chicago palate in the 365 days of last year. During the hot weather of last summer over 35,000 barrels of beer alone were daily consumed, and it is expected that this year's consumption of liquors of all kinds will eclipse that of last year."

CERTAIN ANNUAL EXPENDITURES IN THE UNITED STATES ARE AS FOLLOWS :

Liquors - - - -		\$1,000,000,000 (a low estimate).
Meat - - - -		\$915,000,000.
Iron and Steel - -		\$600,000,000.
Sawed Lumber - -		\$530,000,000.
Tobacco - - - -		\$525,000,000.
Flour - - - -		\$370,000,000.
Public Education -		\$175,000,000.
All Church Expenses -		\$150,000,000.

The above figures are from Government reports and the census bulletin.

Could these enormous sums of money spent for the favorite poisons be expended for wholesome food, wholesome education, wholesome manufactures, wholesome trade in every direction, what, indeed, would be the health, prosperity, and happiness of our people!

Concerning our new possessions, let us again quote from the "Year Book":—

"AMERICAN SALOONS AT MANILA

"Almost as soon as the American soldiers had stacked arms in Manila, 'a score of American rum-shops were opened, and ere long there was not a thoroughfare of any length in Manila that had not its long line of saloons, while street cars carried flaunting advertisements of this and that brand of American whiskey, gin, brandy, and beer.'

"Indignant protests came from all over the land. . . . General Shafter wrote from Santiago: 'I have absolutely prohibited the sale of liquor or the opening of saloons in the city of Santiago, and have refused permission for cargoes of beer to come from the States here.'"

That the same policy was not carried out by a simple military stroke of the pen at Manila shows the grip of the brewer and the distiller on the American body politic.

The Philippine Commission now reports that 1,990 alcoholic shops were licensed in Manila during the year 1902, and that the number of arrests for ill conduct was 19,398. Out of every thousand Americans on the island, 212 were arrested, a little less than a fourth of the American population on the island being lawbreakers.

GROWTH OF THE DRINK EVIL

TABLE SHOWING ANNUAL CONSUMPTION OF LIQUORS BY THE PEOPLE OF THE UNITED STATES.
FIGURES ARE TAKEN FROM GOVERNMENT REPORTS

Year ending June 30.	Distilled spirits.	Wines.	Malt liquors.	Total con- sumption of wines and liquors.	Total consumption per capita.			
					Of distilled spirits.	Of wines.	Of malt liquors.	Of all liquors and wines.
	Proof galls.	Gallons.	Gallons.	Gallons.	P. Galls.	Galls.	Gallons.	Gallons.
1877 . . .	59,420,118	21,876,330	304,927,667	386,223,115	1.28	.47	6.58	8.33
1878 . . .	51,931,941	24,263,919	317,969,352	392,165,242	1.09	.47	6.68	8.24
1879 . . .	54,278,475	24,377,130	344,605,485	423,261,090	1.11	.50	7.05	8.66
1880 . . .	63,526,692	28,329,541	414,220,165	506,076,400	1.27	.56	8.26	10.09
1881 . . .	70,607,081	24,162,925	444,112,169	538,882,175	1.38	.47	8.65	10.50
1882 . . .	73,556,976	25,502,927	526,379,980	625,499,783	1.40	.49	10.03	11.92
1883 . . .	78,452,687	25,778,180	551,497,340	655,728,207	1.46	.48	10.27	12.21
1884 . . .	81,128,581	20,508,345	590,016,517	691,653,443	1.48	.37	10.74	12.60
1885 . . .	70,600,092	21,900,457	596,131,866	688,632,415	1.26	.39	10.62	12.26
1886 . . .	72,261,614	25,567,220	642,267,720	740,796,554	1.26	.45	11.20	12.90
1887 . . .	71,064,733	32,325,061	717,748,854	821,138,648	1.21	.55	12.23	13.99
1888 . . .	75,845,352	36,335,068	767,587,056	879,767,476	1.26	.61	12.80	14.67
1889 . . .	80,613,158	34,144,477	779,897,426	894,655,061	1.32	.56	12.72	14.60
1890 . . .	87,829,562	28,956,981	855,792,335	972,578,878	1.40	.46	13.67	15.53
1891 . . .	91,157,565	29,033,792	977,479,761	1,097,671,118	1.42	.45	15.28	17.16
1892 . . .	98,328,118	28,467,868	987,496,223	1,114,292,201	1.50	.44	15.10	17.04
1893 . . .	101,197,753	31,987,819	1,074,546,336	1,277,731,908	1.51	.48	16.08	18.07
1894 . . .	90,541,209	21,293,124	1,036,319,222	1,148,153,555	1.33	.31	15.18	16.82
1895 . . .	77,828,561	19,644,049	1,043,292,106	1,140,764,716	1.12	.28	14.95	16.35
1896 . . .	71,051,877	18,701,406	1,080,626,165	1,170,379,448	1.00	.26	15.16	16.42
1897 . . .	73,166,833	38,588,307	1,069,310,262	1,181,065,402	1.01	.53	14.69	16.22
1898 . . .	81,487,587	20,567,317	1,164,749,834	1,266,804,738	1.10	.28	15.64	17.03
1899 . . .	87,310,228	26,360,696	1,135,520,629	1,249,191,553	1.15	.35	14.94	16.43
1900 . . .	97,248,382	30,427,491	1,221,500,160	1,349,176,033	1.27	.40	16.01	17.68

The amount of the drink bill (at low estimate) alone, if spent for the necessities of life, would give work in shop, factory, and field to 1,649,586 men. It gave work in producing raw material and in manufacturing drink to 300,901 men. If the money that is spent by working-men for drink and tobacco were invested in railroad stocks, the working men would soon own all the railroads in the country. A United States Senator has calculated the expense of saloons to the nation, at \$15 per capita, and the revenue from them at \$1.69 — more than \$13 clear loss.

Dr. John Madden thus speaks of it:—

“Statistics show that 90,000,000, gallons of absolute alcohol were consumed in the beverages drunk by the inhabitants of the United States during that year (1896). Also the average per capita consumption of alcohol during the decade preceding 1896 was 70 per cent greater than for the decade of 1875–86. This increase has been attended by increase of crimes, deeds of violence, murder, suicide, manslaughter, and arrest, while the insane to each 1,000 inhabitants show a like increase. Ninety million gallons of alcohol can destroy an enormous amount of healthy brain tissue.”

The “New York World Almanac” says:—

“The average savings bank deposit for each citizen of Illinois is \$6.14, Ohio, \$9.42, and Maine, \$85.70. Ohio has five times the population of Maine. The savings bank deposits are as follows: Maine, \$53,397,590; Ohio, \$34,606,215, a difference in favor of Maine of \$18,791,377.”

From “The Tobacco Problem” (1885), by Meta Lander, the following is taken:—

"Some years since the annual production of tobacco throughout the world was estimated at four billions of pounds. This mass, if transformed into roll-tobacco two inches in diameter, would coil around the world sixty times. . . . In marketable shape, the annual cost reaches one thousand millions of dollars. . . . In Great Britain alone are not far from 300,000 tobacco-shops. In the city of New York seventy-five millions of cigars are annually consumed, costing over nine million dollars."

One insurance agent goes so far as to say that a third of all fires are occasioned through smoking, (careless use of matches, etc.).

It is encouraging to find in our last Government report (1898-99) that the previous steady rise in the figures indicating the use of alcohol, tobacco, and opium has met a halt in case of cigarettes, owing, it is said, to anti-cigarette agitation in different parts of the country. For the previous ten years this product steadily grew, increasing from 2,151,515,360 in 1889 to 4,063,169,093 in 1897. In 1898 the figures fell to 3,735,698,906.

The annual tobacco bill in the United States runs from five to seven hundred millions.

Dr. Marmon, in the *New York Medical Journal*, December, 1870, approximately computed national losses from alcohol as follows:—

"Alcohol cost the United States in ten years, directly, \$600,000,000, indirectly, \$600,000,000 more; destroyed 300,000 lives, sent 150,000 people to prisons and work-houses, 100,000 children to the poor-house, drove 1,000 to insanity, produced 3,000 suicides, caused loss by fire or

violence of \$10,000,000 of property, and made 200,000 widows and 1,000,000 orphans."

In an article entitled "The Average American" (*Everybody's Magazine*), Dr. Gannet, Geographer of the Twelfth Census (1903), tells us that this composite individual is the greatest coffee-drinker in the world, his family consuming of that favorite drug a pound a week. Unlike the English, he uses comparatively little tea, — five pounds a year. He also tells us that the composite American is a consummate slave to tobacco, taking into his system of that poison twenty pounds a year. His family annually consumes seven and one-half gallons of spirits and wine, and not less than seventy-five gallons of beer, — the latter item being on the rapid increase.

"When you consider," says Bishop Potter, "the statistics of crime and pauperism; when you trace the history of insanity and other hereditary diseases; when you remember what you and I know of homes that have been clouded and shattered by the curse of intemperance, of gifted men who have been dragged down by it, of hearts that have been broken and lives that have been blasted by its deadly and damnable influence, — when all these facts marshal themselves before us, then verily we cannot laugh them out of court, nor dismiss them as unworthy our consideration. To sit still and see the material resources of a country by millions and hundreds of millions wasted by an indulgence which, as practised by the great majority, adds nothing to their efficiency or comfort, while it begets crime and breeds disease and multiplies deeds of cruelty and violence, — to sit still, I say, and witness all this without shame and without regret, ought to be, if it is not, simply impossible."

Bishop Potter again tells us that there are probably fifty times as many rum-shops in New York as there are schools or churches, — there being about 200 churches and about 10,000 licensed and unlicensed drinking saloons, and that, according to the warden of the city prison, three-fourths of all the crimes for which prisoners are committed to his custody are traceable directly or indirectly to intemperance.

ANARCHY: ITS CAUSE AND CURE

ANY one having money, however little, in the savings bank, or owning his house, however small, naturally desires the protection of government and the safeguard of the law. Any one working and earning, who spends judiciously, soon acquires a surplus for investment. Any one physically equipped — which includes habits of sobriety, reason, honesty of purpose, industry and enterprise — can always command work in America. The pressing need of business concerns everywhere is for reliable and capable service. Indeed, the business world at large is sadly wanting men who are well balanced, who are not cursed with defects and moral weaknesses which cripple their usefulness and neutralize their power. Normal physical health is the key to success.

There are controllable conditions and influences, which are unfavorable to clearness and precision of thought, and to the proper exercise of reason. These same controllable conditions and influences not only

upset balances and rob the brain of calm judgment, but vitiate the blood and steal from life all its healthful energies. These same controllable conditions and influences not only engender disease, distorting sane views of life, but foster idleness, the parent of vice. These same controllable conditions and influences develop in some temperaments imbecility and mere "good for nothingness;" in others a destructive tendency; in still others a vicious and homicidal mania. What are these unhappy conditions which thus lead to disease, discontent, idleness, poverty, and crime? What is the venomous plant from the branches of which the flaming blossoms of anarchy spring to life? What is it but the poison habit nurtured all about us?

Attention is drawn to the subject of anarchy whenever some ruler of the people is laid low by the hand of one in whose brain the fires of poison have taken the form of homicide.

How shall we stamp out anarchy? cry all the people.

How shall we?

"Let us mete out a horrible death penalty," say some. Yet the anarchistic assassin cares little for death. To his perverted mind and instincts his murderous act is heroic, and death to him is but the crown of heroism and martyrdom.

"Let us prevent the landing of anarchists on our shores! Let America be an asylum for the free, but not a lunatic asylum," cry others.

And yet the three assassins of our martyred presidents were of ourselves. They were products of our

own dram-shops. They were brewed on our own fair soil.

President Lincoln was of the people and for the people. His great heart throbbed for the cause of human liberty. His great mind grasped the varied causes of human ills. Worn and anxious in the service of mankind, his lips had but recently given to America the most cherished motto, "With malice towards none and charity for all," when the fatal shot was fired. The history of that deed, as typical, should be written in full for the health organizations of the world. It should be brought to mind how, near Washington City, at the licensed dram-shop of Mrs. Surrat, Booth, Herold, Atzerot, Payne, O'Laughlin and others made their headquarters; how in that famous dram-shop originated their inspiration; how Booth reinforced his lunacy with a glass of alcoholic drink fifteen minutes before the fatal shot; how, after the deed was done, he fled to the old rendezvous to obtain two fresh bottles of anarchistic compound; how the conspirators were generally known to be drunkards; how, when efforts were made to induce President Johnson to commute the death sentence of Mrs. Surrat on the plea of sex, he declined, with the famous remark: "She kept the nest that hatched the eggs."

In the case of Guiteau, I am unacquainted with his habits and ancestry, yet I know that in all cases of crime and misery one has but to ask which poison was it?

There may be seeming exceptions to a hygienic law, but it is doubtful if an active anarchistic propagandist has ever come into prominence, who was not physi-

cally and mentally the product of the dram-shop ; or if a criminal anarchist ever existed who did not brace himself for his evil deed, by intoxicants of some kind, at the time of the act.

Enough is known of the antecedents of Czolgosz to show that the licensed saloon influence was most potent in his life. We are informed by the press that the father of Czolgosz was once the keeper of a drinking saloon in Cleveland. How little parents realize the effects of environment on their own children ! how little they recognize that we all possess normal faculties of unknown power ! that there is implanted in every normal human life the possibility of great usefulness, great achievement, great worth, great happiness, provided that influences nourish in the right direction !

A Cleveland despatch says : —

“Czolgosz worked in the Stroh Brewery in the East End. Anarchistic and socialistic agitators of the city gather frequently in the small saloons thereabout.”

It was from a “saloon hotel” that the son Czolgosz issued forth for his murderous errand ; and eight out of ten suspects of possible accomplices in the crime, in Chicago alone, were arrested from the dram-shops of that poison-infested city.

What, in fact, is the permitted existence of the dram-shop but anarchy itself, in the present enlightened condition of the public conscience ? The dram-shop is the enemy of law and order. Its influence is the essence of anarchy. The selling of a license to legalize what fosters vice and crime, what permits the

public despoiler of health and virtue, strikes at the very foundation of government.

What is a bottle of alcoholic drink but a bottle of anarchy,—defying law and order in the complex system of the human body, and law and order in the State? The dram-shop is the breeder and feeder, the instigator and abettor of anarchy. In the school of the dram-shop law has no sacredness, statutes no force. The mills of anarchy operate within the shadow of the Executive Mansion; they interpenetrate everywhere the law-making precincts of the National Capital. They have taken an imperial possession of our fair country. Such a malign force cannot long exist among any people without undermining all respect for the supremacy and sacredness of its institutions, and any plan for a crusade against anarchy which does not strike at its root is unworthy the intelligence of the people.

Let it also be remembered that the homicidal tendencies of dram-shop influence do not strike alone at the rulers of the people. It is a continuous assault without discrimination. It strikes down our worthiest, our bravest, and our best, robbing the country of their usefulness. It strikes down our youth at the threshold of life. It murders not only the body but the soul. It not only kills its victims but renders them, while living, objects of disgust and contempt.

The great heart of the nation throbbed in tender sympathy for the gentle grief-stricken woman who followed her devoted husband to his last resting place at Canton. In bravely taking up the broken thread of her life, it may be little consolation to her

to know that she is not the only victim of that insatiable monster tolerated by the people. By the thousands the living victims of the saloon take up the burden of widowhood and the rearing of drunkards' children.

Great as has been the harvest of the past, it is absolutely certain that as long as the saloons of the country exist, they will continue every year to debauch and kill not only one but a great army of men, women, and children. Where the arrows will strike we know not, but let our sympathy extend to all victims of its terrible power.

The short transformation of the ill-nurtured, misguided boy Czolgosz, is a valuable character study. A few days of respite from the fires of alcohol had left his brain in a comparatively normal state. His counsel, a kind man, asked him why he committed his horrible deed. "Had you any special enmity against the President?"

"No. It was only because he was President."

"But what can one gain to assassinate a president when another one immediately takes his place?"

"Nothing."

The kind man talked over the situation and the desolation of the devoted wife. It took but that little to metamorphose the character of the victim of the licensed saloon.

"I am sorry I did it. It did no good. I did as bad a deed as man could have done. Had I an extra life of my own to give which could benefit Mrs. McKinley, I would cheerfully give it for her."

And instead of the brazen, sullen, defiant, vicious

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animal bereft of normal faculties, one saw for a time an abject and miserable human being cowering under the great light of reason and truth.

Anarchist! the greatest friend of man is health. The richest man on earth and the greatest king or president would exchange all for health, when health is lost. Shall the poor man who is rich envy the rich man who is poor? One may purchase a title of nobility with gold. May one so enter the aristocracy of health? The real king is he who is no slave to a diseased body.

Would that some Victor Hugo could write the greatest book of the new century, to portray in vivid character the true evolution of the Anarchist!

SEVEN FARCES OF OUR FAVORITE POISONS

FARCE 1

DRINKING TO HEALTH IN POISON

THE farces in connection with our favorite poisons are many, but the most stupendous one of all is drinking to health in poison; and to think that in all seriousness and without sense of ridicule the so-called wisest and best of people join in this absurdity. It is a spectacle worthy the keenest satire of an opera bouffe. Such a compliment on the part of one physiologist to another would touch the border of an insult.

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But the *viveur* (so-called!), surprised at criticism of this antiquated custom, which is older than belief in witches, blandly exclaims in a sort of dismay: "With what, then, shall we drink to the health of friends?"

Is there a pure liquid that best promotes health in all its integrity? Is there a liquid which of all therapeutical agents is the most potent for re-establishing health when lost? If so, let us drink to the health of friends in *water*.

FARCE 2

Asking a divine blessing upon a meal including alcohol.

FARCE 3

The man who recommends his drink as wholesome because the alcohol is *pure*, as if all alcohol were not alcohol, and all alcohol were not poison.

FARCE 4

The *ingenu* who, without fear, smokes poisons and drinks poisons, yet is *particular* about the air he breathes, the water he drinks, and the food he eats.

FARCE 5

The christening of battle-ships in alcohol. Shall we baptize our children in whiskey or champagne, and why not?

FARCE 6

The man who fancies himself strong because he can take heavy doses of poison without the usual normal effects.

FARCE 7

The man who advocates laws against theft, robbery, and murder, without asking if the law prohibits, and yet insists that the law cannot prohibit when the dram-shop is in question.

THE CLERGY AND OUR FAVORITE POISONS

HERBERT SPENCER, in "Education," thus points out the moral obligation of caring for one's body as well as the soul:—

"Perhaps nothing will so much hasten the time when body and mind will both be adequately cared for, as a diffusion of the belief that the preservation of health is a duty. Few seem conscious that there is such a thing as physical morality. Men's habitual words and acts might imply that they are at liberty to treat their bodies as they please. The fact is, all breaches of the laws of health are physical sins. When this is generally seen, then, and perhaps not till then, will the physical training of the young receive all the attention it deserves."

"Not only does this vice (self-poison) produce all kinds of wanton mischief," says Charles Buxton, M.P., "but it has also a *negative effect* of great importance. It is the mightiest of the forces that clog the progress of good. It is in vain that every engine is set to work that philanthropy can devise, when those whom we seek to benefit are habitually tampering with their faculties of reason and will, soaking their brains with beer or inflaming them with ardent spirits. The struggle of the school, the library, and

the church, all united against the beer house and the gin palace, is but one development of the war between heaven and hell."

"It is mere mockery," says a discouraged divine, "to ask us to put down drunkenness by moral and religious means, when the Legislature facilitates the multiplication of the incitements to intemperance on every side. You might as well call upon me, as a captain of a ship, and say, 'Why don't you pump the water out?' when it is sinking; when you are scuttling the ship in every direction. If you will cut off the supply of temptation, I will be bound by the help of God to convert drunkards; but until you have taken off this perpetual supply of intoxicating drink we can never cultivate the fields. You have submerged them, and if ever we reclaim a portion, you immediately begin to build upon it some temptation. The other day, where a benevolent man had established a sailor's home, I was told there were 200 places of drink round about it. How, then, can we contend against these legalized and multiplied facilities and temptations to intoxication? This is my answer to the bland objurgation of those who tell us the ministers of religion are not doing their part. Let the Legislature do its part and we will answer for the rest."

The church makes citizens and citizens make legislators. Said Neal Dow:—

"Let us not waver from our purpose; victory is at hand and will come triumphantly when the church membership feels its responsibility and lends a helping hand."

And again said Rev. Mr. Farrow, of Vermont:—

"The power to place the vote on election day is ours, and when the Christian church so pleases, the liquor traffic can be wiped out in one day."

The church is, or should be, the teacher of what is best and worthiest in the practical affairs of life. Its mission in the service of God is to elevate, to save, to regenerate, to make the world better. The church is the great moral police force of the world, leading to better and higher ways of life. There is no other great institution organized for this purpose alone. Good citizens contribute to its support, knowing that the conscience of a seemingly perverted mankind needs constant training.

The church enjoys a novel privilege in that one enters its sacred precincts desiring and expecting to be lectured; one seeks there the sensation of an upheaval of his unworthiness, — sins exposed, raked over, and flaunted in open sunlight. It is like an invigorating breeze of the wholesome fresh pure air of better life. There is no offence. Indeed, the greater and grander the storm and sharper the lightning, the clearer, fresher, and purer is the atmosphere following. It is all impersonal. In accepting one's share of deserved rebuke, one also appreciates its beneficence to others. One always appreciates good advice to others.

Less mild is the atmosphere of good advice in the household. The anxious mother grows sick at heart with the tinge of bitterness which generally follows her loving chidings. They too often dull the tender glow of her children's love. Her duty is too often her sacrifice. By infinite tact the mother may successfully conquer the little imps which invade her home, and still maintain her throne in the inner temple of her children's hearts; but to the outer

threshold she goes when the demon of poison enters. Repeated admonitions generally cost her not only the full measure of her children's regard, but often her influence. She must look to the church for strong support and help, both in the prevention and cure of evil. It is much on this account that three-fourths of the present church membership is composed of women—the mothers of the country.

When the mother in sore distress sees in her child a gradual undermining of vital forces, a weakening of moral stamina, a lowering of standard; when she becomes fully conscious of the ever-tightening hold of a poison habit; of a growing disregard for home influence; of a gradual estrangement from what is worthiest, and, turning to the church for assistance, finds it not — what then?

Mother! The Christian religion commands us to defile not our bodies. Go to a church where that all-important principle of life is intelligently interpreted. There is no time to be lost when fighting the insidious demon of poison. The poison curse is always serious and always threatening. When the human body is a gift of God, a sacred trust, should not the boy be taught, in the church as well as the home and the school, the true effects of the worst of human parasites—the favorite poisons? Of all hygienic principles, should not the inevitable relationship of the poison habit to health and morals be adequately emphasized? The mission of the preacher is to make the world better, and there are Christian churches fully equipped in both knowledge and moral courage.

Mother! Let the boy be taught in the church whatever perverts human nature; let him be taught the doctrine of physical righteousness; let the boy have a new adjustment of ideas, a new conception of 'sin, of human responsibilities and possibilities, a new conscience of the body as well as the spirit, a new life in tune with nature. Let him be taught that human life represented on earth by a mechanical instrument is governed by infallible, unerring, divine laws, which being followed result in harmony and charm of existence, if broken, knowingly or unknowingly, result inevitably in discord. Let him be taught that we are solely the product of influences every one of which counts, and that we never alter, however little, the conditions of physical life without setting in motion forces more or less subtle, which affect for good or ill our inmost character; in other words, let the boy be taught that nature pays us in blessings according to the measure of obedience to her laws! Let the boy be taught that human life in all its functions is sacred, and that respect for the body will insure respect for character. Increasingly better motives will spring from increasingly better health. To the student of physical culture many mysteries will be unfolded. We are not evil by nature, but rather by misusing and abusing right conditions.

Mother! human nature is glorious if its conditions are healthy. The nearer humanity places itself in proper relations to the laws of nature, the more is it purified and elevated, the more nearly are the human and divine merged. The positive and active

tendency of perfect health is towards what is best and what is happiest. The natural tendency of health is to develop physically, mentally, and morally. The natural tendency of disease and suffering which are products of broken laws is towards evil. The most fatal mistakes of mankind result from ignoring the fact that physical man is not apart from mental and moral man; that the best interests of one cannot be secured by neglect of the others. Like the separate branches and roots of a tree, physical, mental, and moral functions together compose the normal man.

The most important studies of mankind are causes. What causes an abnormal condition? What causes evil tendencies? Sin and misfortune are rampant in the world. What are the causes? That is the question. When causes are known, remedies are nearer at hand. Let us have practical Christianity in all its glory. Let us have the gospel of health. We need to be taught that to live in tune with the Infinite is to live in tune with nature. The keynote of modern thought is — nature. A broader fraternity, a more universal co-operation, is needed, that man and all living creatures may attain a condition of well-being and happiness, a realization of the highest good that the earth affords.

Dr. Moore (Professor of Theology in Harvard University) says: —

“The modern conception of Christianity involves a new apprehension of the social function and obligation of the church. The minister ought to have studied the economic as well as the ethical aspects of questions of labor, charity,

and reform, and to be acquainted with the manifold ways in which men are trying to realize the whole value of Christianity as a social force."

What the church most needs to study are causes of human decadence, divine law and order, more of nature, and especially human nature. Nature is God's manifestation on earth, and the more we study it the nearer we get to the great Creator Himself, and the more sincerely we must appreciate and worship Him. The church should teach that health — physical, mental, and moral health — is man's best friend, and that whatever undermines it is his worst enemy. "In the great world battery, embracing all life and replete and athrill with power, no life is inert unless self-severed from the generator."

Physical righteousness advanced by the church and school and State would herald for humanity the dawning of a new life on earth; a deeper, sweeter life; a vaster life in power of thought and range of performance; a happier life in capacity of enjoyment; a more sacred life in a new and irresistible desire to benefit and make happy all other living creatures.

One of the most promising features of the intellectual development of the present time is a new interest in the study of nature and its methods, and an increasing suspicion that a large share of physical, mental, and moral evil is the result of defective teaching. The church cannot afford to ignore it.

"One may not expect a pure soul by producing a defiled body. To defile the body is to defile the soul. The body can be robbed of none of its claims and exempted from none of its obligations."

We must have a higher humanity. We want that expansive, athletic quality of soul and body, that uplifting, exhilarating, that inspiring and initiative quality of instinct that is fed and sustained by wholesome conditions. We want a bulwark of Christian principles, a splendid scheme of order, complete in adaptation to the requirements and opportunities of the times. We want broader visions and loftier ideals. One marches rapidly, blindly, and stumblingly over the hills, rocks, and pitfalls of life, backsliding when not progressing, and never standing still. The essence of life is movement and transition. New unfoldings, new developments of life — of individual, national, social, and industrial life are ever presenting themselves. To carry out the great mission of Christianity, the church must needs march by the side, equipped with the latest appliances of modern moral warfare.

We are to fight evil tendencies, and the church should teach us where and how to find and recognize them. The church has long speculated regarding the problem of Satan, the spirit of evil. What and which is he? Does he promote lower standards of life? Is he an insidious foe, coming with alluring smiles to unhinge the balance of reason and dethrone calm judgment? Leads he first with chains of flowers, which transform into coils of an anaconda when the stage from frailty to full madness is reached? Is he infectious and pestiferous? Is he a shrivelling blight, a gangrenous taint which envelops his victim with the mould and decay of disease? Does he open the way not only to insanity, but to

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crime? In the guise of riches, is he the very genius of moral and financial pauperism? Does his seed, sown in the name of friendship, hospitality, and respectability, grow always and inevitably into curses? Is his grip the old man's of the sea, not only the burden of the victim, but to be imposed on son and son's sons for generations to come? Is he the king of impostors, giving decay for seeming strength? Does he grapple not only individuals, family, and nation, but the church itself? Is this Satan so hard to find?

The clergymen of to-day need not retire to the wilderness like Buddha of old, to study the problem of right and wrong, and what best serves the right and best defeats the wrong. He may study nearer home. He may go to the nearest library, for modern scientific research has analyzed the poisons, and demonstrated their true effects on the divine organism of man, while modern and ancient history has fully recounted their ravages. Let him also study for cause in the haunts of poverty, disease, and crime. When the ravages of alcohol, tobacco, and opium are so well known, when they are all about us, in what we see, and hear, and read, is it not more than ever deplorable that our moral guide, our teacher of divine laws, our chieftain of the church should look at them with eyes that are blind, hear them with ears that are deaf, and know them with lips that are silent?

From whatever source emanates the influence or example which promotes the dram-shop habit, is it not, alas! more difficult to discuss than the dram-

shop itself? It is harder to combat an insidious cause than a flagrant result; harder to condemn the mild delights of first stages of intoxication than the last stages of it; harder to repudiate what begins in the name of respectability or religion than what ends in ruin and disgrace.

The church is ever ready to alleviate suffering. The better time to treat trouble is before it begins, and practical Christianity must needs recognize what causes nine-tenths of the evil in the world.

Let it be understood that churchmen do preach in the interest of physical health, and that most of the beneficent work of the world emanates from the church. All honor to the Archbishop Mannings and the Bishop Lattys of the Catholic Church; to the intrepid army of the almost entire Methodist Church; to the Canon Kingsleys, the Archbishop Farrars, and the many heroes of all churches. Those ecclesiastical teachers of divine laws who have not yet studied the demon of poison are perhaps conspicuous exceptions to the rule, and there are exceptions to all rules!

And can the clergy of the bottle and the weed not comprehend that the church itself does not thrive on degeneration? What raises the status of the people raises the power of the church. The church is of the people, and the decadence of the people is the decadence of the church. If the church will not kill the poison traffic the poison traffic will kill the church, for momentum is greater on a down grade.

A governor of a jail at Edinburgh spoke of this subject in his official report. The jail contained 3,325 persons confined on account of drunkenness. After saying that four-fifths of the cases confined in all the jails of Scotland were directly caused by the use of poison stimulant, he added : —

“Build a church and a penitentiary in every street with all the means and appliances on the side of religion and virtue, and then allow a dram-shop to be opened on the same street with all its means and appliances towards vice and crime, and the result will be that criminals of all sorts will be produced much faster than they can be reclaimed.”

The Christian church has perhaps never fallen into a more pitiable condition than at the present time in France. France, along with ourselves, is marching after the countries of old that became infested with the poison habit. An interesting study of the subject is made by Gaston Routier in his book, lately published, “Grandeur et Decadence des Français.” M. Routier tells us that there is little bond of church union in France, the general tendency being against it.

“One needs scarcely say,” says M. Routier, “that, more or less, all the morals of religion, whether of Buddha, of Confucius, of Mahomet, or of David, are admirable. But in our time truly religious men are rare in all denominations. Religious belief, even fanaticism, is the sweet guaranty of the vitality and indestructibility of a race. Alas ! there is even no fanaticism in France ; there is only left an indifference to religion.

“The evil eating out the French heart comes from on high (the so-called best of the people, Ed.). We must

study even in the ashes the sources of the contagion, the conditions menacing this national gangrene. We may then see where to apply the red-hot iron."

The clergy of France, blind to the greatest agent of sin ever known, join in the great marching army of Bacchus, and all go together. "The red-hot iron" should simply be applied to the general poison habit, which develops all that is iniquitous and blights all that is worthy. To eradicate it should be the mission of the church universal.

England, as well as America, should also look to the perpetuity of her church by the use of the "red-hot iron." In a learned article, "The Political Situation in England" (*North American Review*, Sept., 1901), Prof. Goldwin Smith discusses the status of the Church of England, though not from the point of view here indicated. He says:—

"Strange would be the aspect of a country covered with cathedrals and churches from which . . . worship had fled. Yet to this, present tendencies point."

What the world most needs, and what the great Creator would most enjoy, is a religion including more of humanity, the uplifting of humanity, the reclamation of humanity.

A student of Georgetown College (Charles Wardell Stiles) wrote a clever article, published in the *Georgetown College Journal*, Nov., 1897, on "Why should a College Student study Biology?" Said he:—

"As Georgetown University is one of the American Institutions that has overcome the old prejudice against

science, and has shown its conviction that science and religion in their search after truth run not in divergent roads but along parallel lines, moreover, as we have no less than thirteen biologists lecturing this year in the post-graduate school, and as we offer a more extensive course in biology than any other Catholic institution in America, the question 'Why should we study biology?' seems a fitting one. Many claim that the study of biology is demanded as a matter of general education, — agreed, but the prime reason for its study by college students should be claimed for its distinctly moral tendency. It teaches the effects of environment; the effects of use and disuse; the effects of contamination and infection; and the oftentimes fiendish laws of heredity. Now the college student is young, jolly, happy, not yet given to careful consideration of consequences in all details; subject to temptation. . . . The study of biology forces the thought upon him, and with it comes a reflection on the laws of heredity and the effects of environment. He recalls that his actions during college years on and off the campus, as well as his later actions, are not deeds of the moment only, but actions, the result of which may be seen in himself for years; . . . actions which may be traced in his children and children's children. My first claim for biology is, therefore, that its study, more particularly that of the various phases of contamination, infection, and heredity, and of the influence of environment, has a distinctly moral effect on the student and is thus a protection to himself, his children, and his country. It teaches hygiene, furnishing physiological data, showing how best to use our physical power, . . . our knowledge of all subjects being immeasurably enhanced by the knowledge of how to take care of our bodies. The biological student does not confine his study of history alone to the United States, Europe, or so-called Ancient

History, covering an insignificant period of a few thousand years, but encroaches upon the millions of years preceding the history of man, covering as far as possible the history of the world and the origin of self. . . . Nor must I forget to apply biology to theology. How often is it that even prominent clergymen make statements from the pulpit, which, if they were acquainted with even the rudiments of biology, they would look upon as exhibitions of ignorance. The clergyman believes in a Creator, yet how few of the clergy have studied the creation of God. I am firmly convinced that this intense ignorance of nature on the part of many clergymen is responsible for at least a part of the feeling between students of theology and students of nature. Both are seeking after truth. To the student who expects to enter the ministry, therefore, I heartily recommend the study of biology. It will give him a much more exalted opinion of the Creator he preaches. He will be led to more closely *observe*. It is indeed remarkable how many educated people go through this world blindfolded. To the student of nature every tree, every rock, every flower, every animal assumes a new interest."

ERRORS OF EDUCATIONAL METHODS AND DANGERS OF COLLEGE LIFE

It is delightful to think that human nature will be continually better developed by education, and that this can be brought into a form suitable to humanity and thus open up for us the prospect of a future happy race of men. — KANT.

DARWIN also believed in a bright future for humanity: —

"If man by a slow process has been evolved from the monkey, it would not be unreasonable to suppose, on the

basis of such a theory, that out of man may be evolved a being as superior to man as man is to the monkey."

Nowhere is reform more needed than in our educational methods. They are deficient in advancing the very fundamental principles of life. In knowledge and practice of sanitary laws lies the foundation of all human success, whatever the calling. Vigor of constitution alone feeds and furnishes the stamina, the courage, the mind itself, both to acquire and to apply education. It is not only the basis of what makes life profitable, but what makes it moral and enjoyable. It is of paramount importance that these vital principles should be thoroughly engrafted by educational training.

A scientific course of study on physical culture should be obligatory at every college and school in the country. It is well known that by intelligent physical culture the body may be developed and strengthened almost at will. It is also well known that our boasted civilization represents a people nine-tenths of whom are physically defective, while the fact is an impressive one, that a great majority of degenerates, the physically weak people of to-day, might be physically, mentally, and morally sound had they been blessed with the advantages of an education which included the training of the body as well as the mind.

If at all colleges and schools worthy the name the "poison curse" which now dominates humanity had been exposed in all its bearings, the fashion of the favorite poisons would have long since passed away.

Our one-sided system of education clearly has not and does not properly advance the status of the human race; neither has it advanced human happiness,—happiness being chiefly dependent upon conditions of health. Indeed, like the play of “Hamlet,” with Hamlet left out, the great collegiate drama is played with the chief rôle forgotten.

The tendency of present scholastic training is to develop one set of faculties at the expense of others. The school graduate is abundantly equipped with valuable information of one sort, and is at the same time densely ignorant of the proper use and development of his own body. Indeed, a large percentage of students leave school-life broken in health, on account of gross violations of nature's simplest laws of hygiene which have not been taught them. It is not too much to go still further and say that the present college life is absolutely dangerous to health and morals. The fashion of tobacco and alcoholic drink emanates largely from the college. There is always at those institutions of learning what is known as “the smart set.” It is generally composed of a few attractive students who come from our most prominent families. They have had the advantages of social training and travel. Their manners and habits are both the study and admiration of the other students. Upon instalment in college our “popular fellows” too often set up tobacco and alcohol “joints” in their rooms. The tables and walls are decorated with the latest design of pipe, tobacco-pouch, and jug for the entertainment of friends. Again, the chief occupation of the exclusive college

societies, which all seek to join, is smoking and drinking; the reunions of old college graduates are celebrated by the favorite poisons; the habits and influence of the learned college president and faculty are generally favorable to the spread of these brain-obtunding vices; the songs of the college popularize them in jingling melodies. The students in general very naturally learn to associate "a good fellow," "good manners," "social advantages," "the proper thing," with the enticing cigarette and the "flowing bowl."

It is needless to say that all college students are of the most impressionable and imitative age. They are in the formative period of life. They have indeed been sent to college for the preparatory tilling of the soil, for the culture which is supposed to best fit them for the real pleasures and successful battles of life. What is the business of a college but to teach youth that knowledge which best fits one for life? As far as I know, and outside the public schools and at Oberlin College, there is absolutely no check based on scientific knowledge that prevents the college student from reverently bending the knee at the altar of the favorite poisons. Parents send their boys to college to receive the best education the country affords, and two to one the education which most impresses itself upon their after lives and the lives of their children is the education of the pipe and the bottle.

A mother sometimes expostulates, but the disconcerted son, at the awe-abiding threshold of his alma mater, explains how he desires his college acquaintanceship to be of the "best" and most unfortunately (he is very sorry) it will not do to be classed among

the "prudes," and so against his own best judgment, and with his mother's doubts and fears, his "joint" is duly established.

It requires great natural force of character for a young man to come out of college with a clean bill of physical and moral health. It is gratifying to say that many have done it; indeed, many of our best men with the highest aims of life have run the collegiate gauntlet and come out whole. As Bismark said: "One-third of the students of the German universities destroy themselves by dissipation; one-third wear themselves out by overwork; and the rest govern Europe." As hard work under hygienic conditions never kills, but rather conduces to long life, Prince Bismark could better have said that two-thirds of the German students kill themselves with dissipation of some sort, and the rest govern Europe.

Several years ago, having been impressed with the sad case of a personal acquaintance, — a most promising and delightful young fellow who entered college free of all bad habits and was expelled in his junior year for habitual drunkenness, — I wrote to one of the trustees of Harvard University. It was a letter asking if college laws prohibiting the use of tobacco and alcoholic drinks could not be instituted and enforced, at the same time suggesting that the rigorous law which could expel a young man for drunkenness could be equally enforced against what caused drunkenness. The answer stated that college students had to be treated as "men," and something more was said about "liberty," and that was all. It was not quite all, however, for among "the ships which have passed amid

storms in the night" was our dismantled and disabled young friend just mentioned.

To be sure, one may point to the great interest manifested in college athletics, and to that period of training for athletic contests when all the favorite poisons are absolutely prohibited — a tribute to hygienic principles. The fault is that those periods are spasmodic ones only, and the training is often over done. The contestants often return to beer and tobacco when games are won. The training given them has not been conducted on a plan which emphasizes physical culture as an all-important principle of life, to be crystallized into daily habits and followed now and forever. They have not been taught that what well fits a game of sport, better fits the game of life. They have not been taught that health is power and something to be worked for with all one's force at command; that ill health is contemptible; that what conduces to ill health is contemptible, not to say ridiculous, the practice of which displays the supremest and most contemptible of ignorance; that ugliness and decrepitude of form and feature is contemptible, showing despicable habits on the part of self or ancestors. They have not been taught that the decadence of individuals and the decadence of nations begin with neglect of physical culture. This contempt for what debases physical life, and respect for what best advances the higher and rational life, is neither a part of the collegiate curriculum nor the collegiate religion. Compulsory physical training, with due apologies to the favorite poisons, is for special occasions only; and, moreover, this tempo-

rary physical training is for the selected few. There is no obligation on the part of the vast majority who most need it.

Mr. Eliot, President of Harvard University, publishes his views on the value of athletics, though what he calls their "broadest possible sense" should, as it seems to me, include a more expanded comprehension of the favorite poisons:—

"I am in favor of college athletics in their broadest possible sense," says he; "nobody appreciates more highly than I do the value of athletics in a university. I value them not chiefly for their physical effect, though that is very valuable, but more for their effect on the moral fibre of the individual. The moral fibre of the individual is what tells in this world. . . . That word 'strenuous' quality indicates the quality which athletics may give a man—the strenuous, robust quality, vigor, sand, grit, courage, determination, and resolution, and with it many a time,—more often than the contrary,—purity and sweetness. . . . There is no need of entering upon any extended discussion in regard to the extent university sports should come under the immediate control of the faculty (may one ask, why not? Ed.). . . . As a rule, the higher the standing of the athlete in his particular branch of sport, the higher his standing in his class. And this is as it should be."

What the world most needs is the systematic physical training of each and all. The result of an inter-collegiate foot-ball game or boat race little represents the physical stamina of any college. It would rather be indicated in a report of the average health and strength of all the students, accurately given by the

physical trainer. The college that cannot see its way to adopt a plan for general systematic physical culture "in its broadest sense," is not the college that is needed for the poison-stricken twentieth century.

The transition period from boyhood to manhood is a time of special danger. David Starr Jordan, of Stanford University, said, on the subject of college discipline : —

"Half the vice in colleges is the vice of corrosion. The corrosive effects of an unwholesome life are felt throughout the college community. If the good a college does to a man is less than the mischief due to his presence, it is well to get rid of him. . . . It is no longer fashionable to be fast. It is disreputable to grow old before one's time. Let the pleasure lover go to work or go home. Neither is culture and anæmia longer related. The color of life is red."

The New Voice investigated the drinking temptations and habits of several of our leading universities, its attention being especially given to Harvard, Yale, and Princeton universities. As a sample of the information which *The New Voice* gave, the following is a specimen (pub. Feb. 3, 1898) : —

"The environments of Yale College are of the most debasing sort. Within two blocks from either side of the campus of Yale University and the 'Green' are sixty-six rum-shops. All but four or five are ordinary saloons, the others are liquor-selling stores or college clubs, which hold regular licenses. All these resorts are patronized by students more or less, but many are practically sustained by the college boys' trade.

"For two days a *Voice* staff correspondent prosecuted inquiries in New Haven, and was able to learn of but three out of the two hundred and fifty professors of Yale's faculty who were even suspected of voting or throwing their influence on any occasion against this state of affairs. So far as could be ascertained from officers of reform organizations and others likely to know, every member of Yale's faculty, with three exceptions, vote regularly at the local option contests to license the sixty-six grog-shops within two blocks of the Campus and Green. The two leading college clubs, the Graduates' Club, between the Centre street chapel and Sandall's saloon, and the University Club, at the corner of York and Chapel streets, have regular licenses.

"Yale is subdivided into a multitude of little clubs and secret societies, most of which have degenerated into little better than drinking clubs.

"At many of these secret drinking clubs beer is delivered openly. The two medical societies are especially notorious for this practice. The Delta Kappa Epsilon and the Psi Upsilon have beer regularly delivered to their fraternity halls by the case."

After the various publications in *The New Voice* and other periodicals concerning the lax drinking habits of various universities, the permanent committee on temperance of the Presbyterian assembly issued this circular of warning:—

"A larger number than ever before of the youths of Presbyterian families are now being sent from home to receive instruction in higher institutions of learning.

"It is incumbent, at this time, on all our church courts, in the discharge of their pastoral responsibilities, to faith-

fully warn parents of the temptations that may beset their sons as they enter upon college life. The adversary, knowing well the value of the game he would ensnare, has set his alcoholic man-traps with hellish cunning around some of our colleges. Parents who have taught their children to pray 'Lead us not into temptation,' should solemnly consider whether, at this momentous epoch of their lives, their boys, from whom the restraints of home have been just removed, should be exposed to this peril.

"The Presbyterian Church has long been teaching that temperance is total abstinence from intoxicants, not their moderate use; and that the traffic, licensed or unlicensed, is a curse to be constantly combated by every Christian citizen. . . . May they be kept in mind by parents when they make selection of a college for their sons. Of course, intemperance is not the only peril to which our youth are exposed, but unquestionably on no other rock are so many precious freighted lives wrecked. . . .

"Meantime let parents affectionately be reminded that the moral and spiritual interests be not subordinated to the intellectual. The existence in any institution of demoralizing influences cannot be atoned for by any affluence of facilities for scientific and literary culture. 'What shall it profit a man if he gain the whole world and lose his own soul?'"

One of our greatest educators, Horace Mann, had much to say on this subject: —

"Some of the most awful and heaven-defying vices that destroy the peace of society and turn all the sweets of life into bitterness," said he, "are college vices full grown, — the public manhood of the academic childhood of guilt.

"Again," says he, "I am certain I could have performed twice the labor both better and with greater ease to my-

self, had I known as much of the laws of health and life at twenty-one as I do now. In college I was taught all about the motions of the planets. . . . But about my own organization and the conditions indispensable to the healthful functions of my own body, I was left in profound ignorance. The consequence was I broke down in my second college year and have never had a well day since. Whatever labor I have since been able to do, I have done on credit instead of capital—a most ruinous way either in regard to health or money. . . .”

The medical director of the U. S. Navy thus writes in his report:—

“The depressing effect of tobacco upon growth by diminishing the forces concerned in tissue change, its effect upon the heart and pulsation, the disturbance of muscular control, of ability to concentrate the mind upon study, the dyspeptic troubles, impairment of vision, headaches, and the disturbance of sexual development, are conceded by most observers and clearly demonstrated by many.”

We can well understand how delicate is the machinery of the brain by the vigor or weakness of mental action in good or bad physical conditions.

We are told that in 1875, on the recommendation of a board of medical examiners appointed to consider the effects of tobacco upon the cadets at the Naval Academy, Admiral Rogers, the superintendent, issued an order prohibiting its use in any form. In 1879 this order was rescinded. In 1881 it was again issued, and at that time all the officers of the institution who had before favored the plan of unrestricted permission to smoke, confessed that the experiment had been a

failure. The medical inspector of the institution reported only one-half the number on the sick list for minor ailments during the period of prohibition as compared with that of unrestricted use.

In June, 1881, the use of tobacco was also prohibited in the military academy at West Point.

In the *Lancet* of June 9, 1883, some facts are quoted from Dr. Decaisne, in a report to the Society of Pub. Med. in France, on the effects of the use of tobacco upon thirty-eight boys committed to his care: —

“Twenty-two of them had distinct disturbance of the circulation, unnatural sounds of the valves of the heart, palpitation, deficiency of digestion, sluggishness of the intellect, and a craving, more or less pronounced, for alcoholic drinks. In thirteen, there was an intermittent pulse. In eight, analysis of the blood showed a marked falling off in the number of red corpuscles. Twelve suffered from frequent nose-bleeding. Ten complained of agitated sleep and constant nightmare. Four had ulcerated mouths, and one became the victim of consumption, which the doctor thought due to the great impoverishment of blood from the use of tobacco.”

Jay W. Seaver, M.D., College Physician of Yale University, made, in the *University Magazine* for June, 1891, the following statement: —

“The general interest that has been shown in some statistics recently published in the *Yale News* regarding the effect of the use of tobacco on the growth of young men, leads me to make a more extended statement of the facts.

"Through the assistance of several members of the senior class, who have kindly helped me in compiling my records and securing the exact data, I am able to make a more complete statement and equally interesting, from a scientific point of view. The data at present discussed relate to 187 men, composing the present senior academic class at Yale. All of these men have been examined and measured at least twice during the course, viz., immediately after entrance and in the last term of the senior year, with two exceptions. Over 90 per cent of the men were also examined in the sophomore year, and many in the junior year.

"The material is fairly complete, therefore, and the group large enough to eliminate the elements of mechanical error and chance growth.

"A record of the users of tobacco has been kept at Yale for the past eight years, for the main purpose of determining the number of men who began the habit while in college; and, from the uniformity of the records, considerable confidence has been felt in the results obtained.

"On entering college, the class of '91 had a list of 38 tobacco users, or about 18 per cent of the 205 men. At the beginning of the junior year this percentage had been slightly increased, although eighteen of the men who were recorded as tobacco users left the college for one reason or another (! Ed.). At the end of the senior year the record stands as follows : —

"There are 77 men who have never used tobacco.

"There are 22 men who have used it slightly at rare intervals, of whom six have begun the practice in the last term of the senior year.

"There are 70 men who have used it regularly.

"The growth of the men in four of the principal anthropometrical items of varied character is as follows : —

	Weight.	Height.	Chest Girth.	Lung Capacity.
Non-users . . .	11.78 lbs. ¹	.894 in.	1.74 in.	21.6 cu. in.
Irregular users	11.05 lbs.	.788 in.	1.43 in.	14.45 cu. in.
Habitual users	10.66 lbs.	.721 in.	1.276 in.	12.17 cu. in.

“If this growth be expressed in the form of percentage, it will be seen that in weight the non-user increased 10.4 per cent more than the regular users, and 6.6 per cent more than the occasional users. In the growth of height, the non-user increased 24 per cent more than the occasional user. In growth of chest girth, the non-user has an advantage over the regular user of 26.7 per cent, and over the occasional user of 22 per cent, but in capacity of lungs the growth is in favor of the non-user by 77.5 per cent when compared with the regular users, and 49.5 per cent when compared with the irregular users.

“It has long been recognized by the ablest medical authorities that the use of tobacco is injurious to the respiratory tract, but the extent of its influence in checking growth in this and in other directions, has, I believe, been widely underestimated.”

Dr. Seaver's conclusions in regard to the dwarfing effect of tobacco are fully corroborated by the following statement of Prof. Edward Hitchcock, M.D., of Amherst College, more recently published:—

“The matter of tobacco smoking as an influence upon the physical development of Amherst students has been studied in the history of the class of '91. Of this class, 71 per cent have increased in their measurements and tests during their whole course, while 29 per cent have remained stationary or have fallen off.

¹ Metric measurements, also given by Dr. Seaver, are omitted.

"In separating the smokers from the non-smokers, it appears that in the item of weight the non-smokers have increased 24 per cent more than the smokers; in height they have surpassed them 37 per cent, and in chest girth, 42 per cent. And in lung capacity there is a difference of 8.36 cubic inches (this is about 75 per cent) in favor of the non-smokers, which is 3 per cent of the total average lung capacity of the class.

"Here, then, is scientific demonstration that the use of tobacco checks growth in weight, height, chest girth, and most of all and most damaging of all, in lung capacity. . . . Many imagine that it is 'manly' to use tobacco. Instead, it hinders the growth of the user in all that goes to make a man."

From an address by Philip S. Wales, Surgeon General U. S. Navy, I give the following:—

TOBACCO AT OUR U. S. NAVAL ACADEMY

"Unquestionably, the most important matter in the health history of the students at this academy is that relating to the use of tobacco. I have urged upon the superintendent, as my last official utterance before leaving this institution with which I have been so long and so pleasantly associated, the fact of the truth, of which five years' experience as health officer of this station has satisfied me, that beyond all other things the future health and usefulness of the lads educated at this school require the absolute interdiction of tobacco.

"In this opinion I have been sustained, not only by all my colleagues, but by all other sanitarians in military and civil life whose views I have been able to learn, while I know it to be the belief of the officer who is to succeed me in the charge of this department, and who was one of the

board of medical officers which, in 1875, reported 'that the regulations against the use of tobacco in any form cannot be too stringent.' Since then three successive annual boards of visitors have indorsed the prohibition of tobacco 'as a wise sanitary provision.'

"With a sense of the serious responsibility which devolves upon the sanitary officer of this establishment, conscious that the bodily welfare and happiness of these young men and of *their future offspring* may be permanently influenced by this vicious indulgence, I have most earnestly advised that the strongest efforts of the authorities of the academy shall be directed toward the prevention of this pernicious, indefensible, and wholly unnecessary habit. . . .

"I learn from Professor Oliver, head of the department of drawing, that he can invariably recognize the user of tobacco by his tremulous hand, and by his absolute inability to draw a clean, straight line.

"The irregularity in the heart's action, which tobacco causes, is one of its most conspicuous effects. Candidates are annually rejected for cardiac disturbances, who have subsequently admitted the use of tobacco; the annual physical examinations of cadets reveal a large number of irritable hearts — tobacco hearts — among boys who had no such trouble when they entered the school. . . .

"Finally, the antidotal effect of tobacco makes drinking of stimulating liquors the natural consequence of smoking. Decaisne found, in examinations of children under fifteen, many of them older than cadets whom I have known to be inveterate smokers, that 'they furthermore might become dull, lazy, and *predisposed to the use of alcoholic drinks.*'

"Aside from the effect on the nutrition, the adult smoker must be conscious that tobacco is not an aid but an obstacle to mental application; and it was actually found in the *École Polytechnique* that 'a comparison made

between smokers and non-smokers showed that the non-smokers took the highest rank in every grade, and further, that the smokers continually lost grade.'

"An agent that is capable of such potent evil, which through its sedative effect upon the circulation creates a thirst for alcoholic stimulation, which exerts a depressing and disturbing effect upon the nerve centres, which determines functional diseases of the heart, — which impairs vision, blunts the memory, and interferes with mental effort and application, — ought, in my opinion as a sanitary officer, at whatever cost of vigilance, to be rigorously interdicted."

The effect of tobacco on school work is thus described by H. H. Seerley, Principal of the Iowa State Normal School:—

"After making a study of several hundred boys, running through a period of ten years, I give only observed facts, and neither assume the conditions nor jump at foreordained conclusions.

"1. Boys that begin the habit at an early age are stunted physically, and never arrive at normal bodily development.

"2. Accompanied with the use of the narcotic were certain disordered physical functions, such as indigestion, impaired taste, defective eyesight, dull hearing, nervous affections, and diseases of the heart. I have not found a single case of early addiction to the habit of tobacco-using that did not suffer with one or more of these direful abnormal conditions.

"3. Tobacco, used in any form, destroys the ability to apply one's self to study, and prevents comprehension or remembrance of lessons. The mental faculties of a boy under the influence of the narcotic seem to be in a stupor,

and, since depraved nerve-power stultifies and weakens the will-power, there is but little use for the teacher to seek to arouse the dormant paralyzed energies, or to interest and foster the fagged desire. I have never had a pupil addicted to this habit whose scholarship record was good, and in almost every case the deportment was below the average standard. . . .

“Other Observations. — So far as my observations have extended, not a single boy has passed the examination required for admission to the high school after he had acquired the habit, and not one has graduated from the high school who began the habit after beginning his course in the high school.

“But the moral results are also as serious. Pupils under the influence of the weed are constant subjects of discipline, are not truthful, practise deception, and cannot be depended upon. A change in character in a formerly good boy is a very strong indication that some habit is getting hold upon him whose tyranny must be broken before he will again be clothed in his right mind. . . .

“If these observations mean anything, they declare that something ought to be done to save child-life from the pitfalls that commercial interests are digging, and that greed is encouraging; that more should be done than to instruct by oral or text lessons in school; that teachers, parents, and philanthropists are not yet sufficiently aroused regarding the magnitude of the evil of tobacco-using by children; that in the crusade against alcohol we should recognize that other evils, though more quietly, are just as surely sapping the strength and destroying the vigor of the youth of this generation.”

ATHLETICS AND PHYSICAL PERFECTION

For a perfect physique there can be no great advantage in extreme size; let us rather have a happy medium. It is more portable and convenient. Man could gain nothing and lose much to be fashioned after the dimensions of the elephant. The main object is *soundness*, activity, endurance, beauty, and grace.

In the interest of athletics there has been a revival of the study of hygiene on a scientific basis. The contests of physical strength and endurance between the various colleges, and especially in America between Harvard, Yale, Princeton, and Cornell, excite the most intense interest. Their athletic games and contests attract audiences of many thousand people. Those selected for the teams or crews of their universities are subject to the most careful tests, the chief of which are soundness of heart and lungs, which ensures "good wind," a steady pulse and coolness in emergency, muscular power and agility. In fact, to attain this physical fitness, months of the most careful scientific training is practised under the supervision of professional trainers, who make a life-study of physical development. Of course, food, drink, hours for sleep, exercise, recreation, etc., are all under strict regulation. The special fact worthy to be noted by the world at large is, that when these athletes are training for the highest physical development, all poison stimulants are absolutely prohibited. The advantage of a vegetarian over a meat diet is also becoming a matter of great interest.

In answer to letters addressed to the universities of Harvard, Yale, Princeton, and Cornell asking information concerning the uses of tobacco and alcohol by the college athletes, the replies stated that an absolute prohibition of all tobacco and alcohol is imperatively demanded of all members of the college teams and crews. The trainer, of course, seeks to make these young men, as nearly as possible, perfect specimens of physical manhood, and it stands to reason that taking into the system what devitalizes every function of it would be not only ridiculous but downright imbecility. The young man of impoverished blood-cell, irregular struggling heart action, inaccurate sight, unsteady muscles, and weakened nerves — the inevitable condition more or less of all inebriety — would hardly be able to compete in athletic games.

Physical perfection is rarely seen in America excepting among professional athletes. We may as well sorrowfully admit that the American type of physical strength and beauty is not, as a rule, of the highest standard. Even laboring men living in the pure air of the country districts are too often plain in appearance. They should be superb specimens of manly vigor and beauty, and were it not for the debasing physical effects of the favorite poisons, a wholesome country life would make them so. The favorite drugs pervert everything.

That the world has always been, and still is, passionately fond of physical perfection, is encouraging. All men of physical perfection are heroes and all beautiful women are heroines.

May we hope that neither the men nor the women of the future will need poison of any kind to quiet nerves or to call out reserve strength, for the good reason that they will ever have the ready article in abundance. The study of the twentieth century will be physical culture, and a new race of men and women will delight the world of the future. Strength of body will lift the individual above the power of disease, as strength of mind lifts from the power of sins.

In studying the games of ancient Greece and later of decadent Rome, it is interesting to note how tastes for certain kinds of games change and deteriorate with the poison habit. The sober, clean, and pure-blooded ancient Greeks looked upon physical perfection as something divine, as all uncontaminated nature is divine. It was worshipped with religious fervor as the work of God. Both blood and character served to qualify contestants for the Olympic contests, the honors of which were sought by their highest functionaries. Garlands of the wild olive sufficed for prizes. All Greek writers dwell with pride on a race which cared for nothing so much as honor, all of which is in contrast with the greed, gambling, and cruelty of modern sport.

In wrestling and boxing contests, the ancient Greeks disallowed the clenched fist, the use of Roman straps, or whatever injured the living form divine. The killing of an antagonist not only forever disqualified a combatant, but subjected him to severe punishment. In decadent Rome the character of games completely changed. Professional athletes alone con-

tested, and the divinity of life was changed for the brutality of it. Gladiators killed each other to satisfy the palsied sensations and savage instincts of the spectators. The taste for the modern bull-fight again represents the vitiation of normal human nature.

THE RELATION OF THE FAVORITE POISONS TO BUSINESS

Health is the capital of the laboring man. — LATHAM.

“Wine has no rudder.”

The man who sends away in smoke the money that would help to place him beside the capitalist, and uses up his nerve power that might make him the peer of any man, can be counted upon to think that the country is going to the dogs; that wages are outrageously low; and that the world has not given him the chances that are given to others. — LIDA B. INGALLS.

“**T**HE general fact still remains,” says Professor Mathews in “Getting On in the World,” “that it is the man of tough and enduring fibre, of elastic nerve, of comprehensive digestion, who does the great work of life. It is Franklin at the age of seventy camping out on his way to arouse the Canadas, as our hardiest boys of twenty now camp out in the Adirondacks. In the learned professions a good constitution is doubly indispensable. There is nothing else which so taxes, tires, and exhausts the life force as mental effort. Instead of being feeble and sickly, the thinker, whether in the law office, the pulpit, the counting-room, or the hall of legislation, needs to be stalwart and hardy.”

Ambassador Choate emphasized the same idea in an after-dinner speech to the Chicago Bar Association : —

“When I look around me upon this great company of busy and successful lawyers, resting for the moment from their never-ending labors, I can easily see that success in our profession everywhere rests upon the same foundation. It is the same old story of the sound mind in the sound body. The sound body is at the bottom of it all.”

Our Commissioner of Labor (Mr. Wright) declares that what is grappling the hydra of poison by the very throat (he uses mild expressions, however) is business. He admits that the great forces of civilization are all co-operating to bring about this result, but of them all, the most practical, the most effective is that of the growing requirements of business.

When the man who drinks, or smokes, or punctures his skin with a hypodermic needle fails to be trusted in business, that counts. Business conditions and methods have become a most conspicuous factor in the cause of temperance.

The time has finally arrived when the inebriate has ceased to have a footing in the business world. One now prefers to travel on railways whose equipment includes engineers and brakemen, switch-tenders and watchmen, in fact, any and every employee and employer whose heads and nerves are at the command of the owners, — not occasionally, but *continually*.¹

¹ The following letter shows how those guardians of the public safety, the railway officials meet the requests of the well-organized army of the poison traffic. The saloon keepers were very much

The public is also about ready to demand total abstinence from poisons by operators of water craft and other means of human transportation ; not only passengers, whose lives are at stake, but stockholders whose money is involved are equally interested. One can sleep better in a steamer berth when quite sure that the men in charge (which means every link in the chain of management) are sound.

Manufacturers have also learned by experience that costly machinery and material cannot profitably be trusted in the hands of men who fuddle their brains with artificial stimulants. The business man

wrought up by the action of the railway authorities in discharging certain employees for frequenting a so-called hotel at Elgin. They threatened to adopt "a system of reprisals" if the railway company would not allow its men to visit their hotels. They also threatened the withdrawal of freight on the part of wholesale dealers and brewers as well as their political influence. The president of the Michigan Central Railroad Company replied as follows :—

To —

DEAR SIR:—I have your letter as to the recent discharge of certain employees of this company. While deprecating any controversy or difference with the Hotel Men's Association of St. Thomas and Elgin, it seems to be but proper that I should state fully and plainly the position of the management of this company. Its rules prohibit, in the most positive terms, the use of intoxicating liquors by its employees, whether on or off duty. In some of the States through which its lines run, such use is by statute made a bar to employment. An experience of over twenty years in the operation of railroads has satisfied me that the observance of such a rule is essential to the best interests of the public as well as the railroad company. . . . It is the purpose of the management to enforce the observance of this rule by every legitimate means in its power, and it will do so regardless of any threats or any adverse action on the part of the Hotel Men's Association.

Yours truly,

H. B. LEDYARD, President.

of to-day needs not only his calm and well-balanced judgment and his physical endurance for times of accident or emergency, but for all times. This normal condition is attained only by strictly hygienic habits of life, and strictly hygienic habits of life admit of no poisons whatever.

Indeed, this conviction now pervades all the world of business — commercial and professional. Clear brains, steady hands, normal or sound conditions are distinct business qualifications. A man who is a total abstainer from all poisons is worth commercially ninety-nine per cent more than the man of whom one is never *absolutely sure*.

In domestic service, also, the employee who drugs himself is always more or less unreliable on the special occasions when one most needs competent service. He is never permanent. The inebriate, no matter what is his degree in the school of degeneracy, is always fitful, restless, whimsical, doubtful, abnormal. I have personally long since learned by experience never even to consider the employment of a man or woman who either drinks or smokes, and the comforts of home have been greatly enhanced since adopting that rule of policy. The smoker is especially a distinct menace in the way of fire. A very large proportion of all fires is the result of smoking. There has been much literature written on this phase of the subject of tobacco, which, if read, would end the employment of a smoker in any establishment of value not fireproof. The careless handling of matches, the burning ends of cigarettes or cigars, the stray sparks of lighted tobacco,

and the contents of pipes alive in possibilities, have made a record in the history of fires and holocausts which would be surprising to one who has not turned attention to the subject.

In the business world personal habits affect the employer as well as the employee. The employer's punishment comes principally in loss of credit. Business men prefer not to loan money to, or to have business dealings with, the man who "fuddles with poisons." Such affiliations suggest in a mild degree a business partnership with a lunatic asylum.

In order to test the effect of alcohol upon labor, our government has lately concluded a novel investigation through the department of labor, by sending a schedule of inquiry to employers of labor throughout the country. To the several questions asked, replies concerning several million employees were received. To the question, "Do you make careful inquiry into the liquor habits of all applicants for work?" about five-sixths replied in the affirmative.

It is curious to note that the liquor dealers themselves stated that in the employment of men they took into consideration their drinking habits.

The most valuable contribution to temperance literature furnished in many a year was the report by the Labor Department, of the answers to the following inquiries:—

"What means, in your view, better than now employed, can be taken by employers, communities, organizations, municipalities or States, to lessen the consumption of intoxicating liquor among the people?"

Proprietors of about five thousand establishments contributed their suggestions, and about two hundred different means for the great reform were outlined. Over one thousand suggested full prohibition; about eight hundred thought the result could be accomplished by the refusal to employ drinking men. Others suggested education, abolition of saloons, improvement of social conditions, government control, local option, prohibition of treating, and the example of employers. Some would make drunkenness a punishable misdemeanor, etc. All outside of those financially interested in the poison traffic itself, earnestly desired reform.

An eloquent temperance sermon is preached every time an applicant for insurance enters the office of a life insurance company. All such companies now either refuse to insure the lives of non-abstainers from poisons or charge an extra rate. Mr. Robinson (formerly Chief Constructor, R. N.) in a paper on "The Value of Life Being Increased by Taking no Intoxicating Drinks," stated, before the British Association for the Advancement of Science, that in some life insurance offices the superior lives of abstainers is recognized by a charge of twenty per cent less to teetotallers than to moderate drinkers.

Competition has become so great in the business world, and the avalanche of hygienic reform now moving upon us is so swift, that we are likely to be required not only to be responsible for our own habits of life, but for those of our parents. When a reform gets well started it is hard to stop.

Francis Galton, F.R.S. (Author of "Hereditary

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Genius," "Inquiries into Human Faculty," etc.), thus writes on the subject in an article on "Heredity as a Merit in Business."

"The indications of superior breed are partly personal and partly ancestral. We need not trouble ourselves about the personal part, because full weight is already given to it in the competitive careers, — energy, brain, morals, and health being recognized factors of success. It is the ancestral part that is neglected and which we have yet to recognize at its just value. The question arises; a youth is a candidate for permanent employment, his present personal qualifications are known, but how will he turn out in later years? Competitive examinations deal with the present, not with the future, although it is with the future of the youth that we are especially interested. Much of the needed guidance may be derived from the family history. If two youths were of equal personal merit, of whom one belonged to a thriving and long-lived family, the other to a decaying and short-lived family, the chances are greater of the youth first mentioned becoming the more valuable public servant."

Chief Moore, of the U. S. Weather Bureau, after issuing an order prohibiting the smoking of cigarettes, stated that in order to secure satisfactory results, a strict discipline was necessary, to which cigarette smoking did not tend.

"Some of our men," said he, "who were regarded as the most thorough, competent, and reliable, gradually became careless and lax. In almost every instance it was found that the men were cigarette fiends. Men who use cigarettes seem to become deadened to the fact that neglect of duty means reproof, suspension, or expulsion."

SOLDIERS AND THE POISONS

THERE was much surprise when the sudden call for a volunteer army to go to our late war in Cuba revealed the fact that so great a percentage of our men of military age were physically disqualified to enlist.

Tobacco heart generally prevailed, besides other physical weaknesses, all of which strikingly illustrated the general use of the favorite poisons.

Col. T. W. Higginson has brought to light very interesting figures from the tabulated medical Statistics of the Civil War, showing how large a proportion of men were disqualified at that time, as follows :

“ Among lawyers, 544 out of 1000 were disqualified ; among physicians, 670 ; among journalists, 740,” etc.

In the late Cuban War volunteers were accepted without great discrimination, — knights of the spiculated and attenuated blood-cell being too general. In a letter from Richard Harding Davis to the *Boston Herald*, dated, “ In the Trenches at San Juan, Cuba, July 3, 1898,” he described the deplorable state of health of our soldiers, and thus continues : —

“ Those who smoke — and they are in the majority — were suffering agonies from the lack of tobacco. Their nerves were so unstrung in consequence that, as a substitute, they were smoking grass, tea leaves, and herbs.”

Drinking has been very demoralizing in the English army, and many accounts of it are extremely inter-

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esting to the student of military affairs. England, however, is quick to see causes of incompetency in her fighting force.

The British Commander in Chief, Lord Wolseley, wrote in 1881 as follows :—

“The cause of temperance is the cause of social advancement. . . . Nearly all the crime in our army can be traced to intoxication, and I have always found that when with any army or body of troops in the field there was no issue of spirits, and where their use was prohibited, the health as well as the conduct of the men were all that could be wished for.”

The same year he wrote again :—

“About ninety per cent of the crime in our army is owing to drunkenness, and when our men are removed from the temptation of intoxicating liquor, crime is practically unknown amongst them. During the operations I conducted in South Africa in 1879, my own personal escort was composed almost exclusively of teetotallers. They had very hard work to do, but grumbling was never heard from them, and a better behaved set of men never assisted me—a fact which I attributed to their being almost all total abstainers.”

The successes of General Sir Horatio Kitchener and his victory at Atbara, attracted attention over all the military world, owing to the fact that his force was composed exclusively of total abstainers. For months previously, his soldiers had not been permitted to touch any kind of stimulant whatever. It was a most important test of natural force and energy as compared with artificial force and energy. Note

the contrast between General Shafter's half dead army of invalids gasping at Montauk after the Cuban War, and the triumphant troops of General Kitchener, who, during and after unparalleled hardships and a long desert march, in fact, after the most remarkable marching and fighting recorded in history, showed not only scarcely a trace of illness, but were in better "fighting trim" at the end of the campaign than at the commencement of it.

The pioneer temperance movement in the British army was owing to efforts of Lord Roberts, who first put the army Temperance Association on its feet in India thirty years ago, and was its executive officer as long as he remained in that country. His successor in command of the Indian army, General Sir George White, was also his able successor in the temperance work of the army.

As a result of the efforts of these two men, the Army Temperance Association of India now numbers over 20,000 members, a third of the entire force. The comparison of health and morals between the abstainers and the non-abstainers has been carefully reported in the official returns of the Indian army.

By orders of the commander-in-chief, Lord Wolseley, careful and exhaustive experiments have been made of late in the British army for the purpose of testing the effects of poisons in reference to the physical endurance and staying qualities of the troops. For instance, one regiment has been deprived of every drop of stimulant, while another belonging to the same brigade has been allowed malt liquors at a canteen, and a third, a ration of grog in the form of

whiskey. The experiments showed that the whiskey soldiers were especially active at first, but showed notable signs of fatigue and lack of spirit and endurance after the third or fourth day. The beer soldiers showed the same signs in a less degree, while the abstainers from every kind of stimulant "increased in staying power, alertness, and vigor every day." As a result of these experiments the British War Department decided, not because of principle, but to promote the physical endurance and general efficiency of the troops engaged in the Soudan campaign, not to permit a single drop of stimulant, excepting for hospital use, either by officers or men.

In an article on "Teetotal Warriors," by "Ex-Attaché," is the following:—

"Thanks to total abstinence, the men of the Soudan have been able to make forced marches of the most extraordinary character across the burning desert and under a blazing sun, the heat of whose rays can only be appreciated by those who have lived under the equator. The Soudan is famed for its deadly climate, which either kills or prematurely ages the majority of white folks who penetrate beyond its frontiers; . . . yet in spite of this there has never been a campaign where there has been so little sickness, where so few men have been compelled to fall out even in the longest marches, and where the troops have been got into such magnificent physical and moral training that they could actually cover thirty miles of sand with empty water bottles, without slaking their thirst once from the beginning to the end of the march, at the close of which they would still find themselves sufficiently fresh and vigorous to win a hard-fought victory such as that of Atbara."

The success of every action, whether on sea or land, now depends so much on "good gunnery," on accuracy and precision of sight, and calmness of nerve, that the stimulant habit again counts for all its disadvantages. In this respect the tobacco habit is perhaps even worse than that of alcohol.

Professor Oliver, head of the department of drawing in the Naval Academy at Annapolis, has observed in the pupils addicted to the use of tobacco, not only trembling of hand and general inability to perfectly control the muscles, but also an impairment of vision, so that the direction of lines is not properly perceived. There is a shrivelling of the optic nerve, and the pupil of the eye is unnaturally dilated, etc. He says : —

"In an experience of fourteen years, many thousands of drawings having passed through my hands, I have had occasion to challenge cadets on their use of tobacco, as evidenced by their work, and I have in no instance made a mistake."

Again says "Ex-Attaché" for the Navy : —

"It is no longer fierceness, fury, and reckless dash that are required of the men, but calmness and collectiveness. In naval engagements there is little boarding to be done in these times of ironclad warfare. Vessels are no longer armed with tier upon tier of small guns, some of the men-of-war of the early Victorian era having over a hundred of them. Modern battle-ships and cruisers are equipped with gigantic pieces, relatively few in number, but carrying projectiles of colossal weight over a range of several miles. It is no longer necessary to pepper the hull of a man-of-war full of small cannon-ball holes in order to sink her. This

can be achieved by one single well-directed shot from any of the great guns with which the warship of the present day is armed. Everything depends, therefore, upon the precision of the gunnery, and the belligerent whose every shot carries home, is practically certain to win the day."

In a recent address delivered by General Lord Methuen at Bristol, England, he said that the British army now contains forty thousand total abstainers.

"What do I as a soldier think that temperance does for the British?" exclaimed he. "Well, it does for the army what it does for all civilians — it saves the prison, it saves the hospital, and it economizes. On service, too, it gives us a man far more reliable than the man soaked in drink. Temperance saves wastage; that is to say, we do not have so many men leaving the front for hospital or prison, and in whatever country the abstainers fight, the civilians in that province do not suffer the terrible cruelties and horrors that accompanied wars in times past. If I look at temperance from the smallest point of view, it is the finest means I know towards the end. If I look at it from a far nobler point of view, I remember that civilians send to us many thousand lads every year, and just as they send them to school and expect to get them back morally, mentally, and physically fitter, so we of the army are bound to return them their lads as men, with a finer mental, physical, and moral equipment than when they came to us."

Lord Curzon's late speech in India, at a meeting of the Army Temperance Association, is refreshing after plodding through the malarial swamp of so much dram-shop influence in army circles generally.

"What are we here for?" exclaimed he. "We are here because Providence has before all the world laid a solemn

duty upon our shoulders, and that duty is to hold this country by justice, righteousness, and good will, and to set an example to its people. . . . There never was such a responsibility. The man who sets a bad example is untrue to his own country. . . . It is therefore, officers and soldiers, not on mere grounds of abstract virtue, not for the sake of the discipline and reputation of the army, nor even for your own individual good alone, that I have stood here this afternoon to plead the cause of temperance, but because the British name in India is in your hands just as much as in mine, and because it rests with you before God and your fellowmen to preserve it from sully or reproach."

Let us Americans still further understand the status of the temperance movement in the British army. The British generals who have been active in the organization of the Temperance Association in the home army comprise nearly the whole list. Among those who are actual officers of the Association are: Lord Wolseley, Commander-in-chief, Field Marshal Lord Roberts, General Sir George White, General Lord Methuen, General Sir Charles Warren, General J. Kelly-Kenny, General Sir W. F. Gatacre, General Sir R. H. Buller. The list of Vice Presidents of this Association comprise seventy-three of the leading generals of the British army.

Some interesting statistics are given in the official record of deaths in our American army (during the war with Spain) from April 7, 1898, to February 28, 1899.

Killed in action	329
Died of wounds	125
<i>Died of diseases</i>	5,277

But a small portion of our army went to Cuba. They were generally living in camps in our own country, without exposure to bullets or tropical climate. Unwholesome flesh food contributed a part, yet the greater reason for this enormous mortality, along with additional disease which was not immediately fatal and not counted, resulted from the use of the favorite poisons freely offered in the canteens all about them.

The days of war will be over when humanity takes to total abstinence from all poisons. Courts of arbitration will then be sufficient to settle disputes among nations as civil courts now settle disputes among individuals. Until that time arrives, however, let America and all the world understand that he who cannot defend himself is a poor defender of others; that true courage is very largely a matter of a sound mental organization, and that any country must reckon at true value the strength and endurance of any army that carries the banner of total abstinence from all poisons.

SNAP-SHOTS ON THE SUBJECT OF LEGISLATION

"Ill fares the land, to hastening ills a prey,
Where *grog-shops flourish*, and men decay."

There are no rights whatever
Without corresponding duties. COLERIDGE.

We must have a nobler, higher, holier ambition than to reform one generation of drunkards after another. We must

seal up the fountain whence flows the desolating stream of death. — GENERAL CARY.

The temperance cause lies at the foundation of all social and political reform. — RICHARD COBDEN.

Of what use, let me ask, is the wealth of this community, but to train up a better generation than ourselves? Of what use is freedom, I ask, except to call forth the best powers of all classes and every individual? What but human improvement is the great end of society? — DR. CHANNING.

Drink, the only terrible enemy England has to fear. — THE LATE PRINCE LEOPOLD, DUKE OF ALBANY.

A strange infatuation has for ages dominated civilized man, who by instinct would extinguish conflagration and yet not only permits but even kindles and protects by force of positive law the flames enkindled by poisons and lighted from the infernal pit. — U. S. SENATOR BLAIR (*The Temperance Movement*).

Liquor-selling is one of the most criminal methods of assassination for money ever adopted by the braves of any age or country. — RUSKIN.

The propitious smiles of Heaven can never be expected on a nation that disregards the eternal rule of right which Heaven itself has ordained. . . . Let us lift up a standard to which the wise and honest may repair. — GEORGE WASHINGTON.

Civilization is the perfecting of civil life. — GUIZOT ("History of European Civilization").

To know that men are wilfully against "light and knowledge" antagonizing their best interests and at the same time obstructing the best meant and most disinterested efforts in their behalf, is a great aggravation of the intrinsic troubles which beset almost every attempt to do good by removing great evils; . . . nothing attempted in the way of unmixed blessing to the human race has illustrated this vicious and amazing perverseness so much as the hostilities which have been waged against temperance reform. We behold men of all grades of influence and social rank, of all shades of belief and scope of intellect, of

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all professions, alas ! rushing to the defence and rescue of a monster vice that in its huge sin and desolation we might place in righteous estimation before war, famine, and pestilence. — U. S. SENATOR COLQUIT (*North American Review*).

He who sells truth for occasion, counts to-morrow. — ANDREW CARNEGIE.

God give us men,
A time like this demands
Strong minds, great hearts, true faith and ready hands, —
Men whom the lust of office will not kill ;
Men whom the spoils of office cannot buy ;
Men who possess opinions and a will ;
Men who have honor ; men who will not lie ;
Tall men, sun crowned, who live above the fog,
In public duty and private thinking. HOLLAND.

ALBERT BARNES in 1852 thus dissected the poison traffic : —

“It (the poison traffic) costs \$100,000,000 annually,¹ and renders no compensation but poverty, want, curses, loathsomeness and tears. Could they be collected together, we would see in our country an army of 300,000 drunkards, not made up of old men, but those of the spring and summer time of life, — of our youth, our men of talents and influence ; enlistments from the bar, the bench, the pulpit, the firesides of piety, the abodes of the intelligent as well as the humble. In the same group could be placed 100,000 criminals, made such by the use of poison drink, — criminals of every grade supported at the expense of the sober. In the same group would be no less than 200,000 paupers in a land abounding in all the wealth that the richest soil can give, and under all the facilities which the most favored spot under the whole heaven can furnish for acquiring an

¹ It cost in 1902, \$1,239,108,955.

honest subsistence. The innumerable woes incidentally caused could not be estimated.

"If this state of things were produced by any other sweeping pestilence, general alarm and activity would seize each and all of us. Yet the world has never known anything like it. The father of mischief has never been able to invent anything that could diffuse more widespread and dreadful evils.

"It is agreed further and well understood that this is the regular effect of the traffic and use of this article. It is not casual, incidental, irregular. It is uniform, certain, deadly as the sirocco of the desert, or the malaria of the Pontine Marshes. . . . The destroyer seeks his victim in every glass. He exempts no man from danger that uses it. It prostrates the most vigorous frame ; clouds the most splendid intellect ; benumbs the most delicate moral feeling ; palsies the most eloquent tongue.

"The establishment of every distillery, every dram-shop, every grocery that sells it, secures the certainty that many a man will thereby become a curse to himself, his friends, and the world. Is this an employment for a conscientious man? Is this a subject to be flippantly tossed aside or lightly considered by the mother, the father, the sister, the brother, the pastor, the legislator?

"Of course the object in allowing this infamous traffic is solely for *making money*. . . .

"The liquor traffic counteracts the very design of the organization of society. Society is organized on a benevolent principle, the structure of which is one of the best adapted instances of design and benevolence anywhere to be found. It is on this principle that a lawful employment will not interfere with the rights and happiness of others. It may not only not interfere with their rights and happiness, but will tend to directly promote their welfare. The

farmer, the merchant, the physician, the lawyer, the mechanic, the sailor, the legislator, etc., in supporting themselves, contribute an indispensable benefit to others. All are friends of mankind. He injures no man at the same time that he benefits himself. The traffic of poisons is a violation of this wise arrangement. It tends to sap the foundation of the whole economy. It benefits solely the trafficker and curses mankind.

“If a physician could live only by diffusing disease and death; if a mariner could pursue his business only by importing the plague on every return voyage, or by making prey on peaceful commerce; if every manufacturer could produce what would necessarily blight every farm and produce sterility in its neighborhood; if every judge doomed to punishment every honest and honorable man; if every preacher dispensed the logic of Satan, each business would be a fraud, an outrage too intolerable for public endurance. How should the community act toward a man who would advertise the sale of consumption, of fevers, of paralysis, of insanity, not only for home use but to be transported to the laughing hillsides of Maine, or to the fertile plains of Iowa? Suppose with the same ease he could diffuse profanation, robberies, murders, and suicides, if it brought money or national revenue? And yet why not? Does he not act on the same principle as the man who deals in ardent poison — a desire to make money, and that only?

“Besides, every man in honor is bound to pursue such business as will render a valuable consideration for what he receives from others. One who receives in trade the avails of the industry of others, is under obligation to restore that which shall be of real value,—all being a system of fair reciprocity. Does the traffic of the dealer in poison conduce to the welfare of the family? Does he give for

the honest earnings of others what will bring a wholesome harvest? Or if he could palm off for what is good, what is merely worthless, instead of dispensing that which saps the very foundation of happiness, morals, and health, in insinuating, enticing, and blandishing poison,—this curse of civilization and the reproach of every honest citizen who mildly tolerates it. . . . But for his infamous trade, how soon would our jails and prisons, our lunatic asylums and our poor houses, our habitations of guilt and infamy disgorge their inmates! . . .

“Nor does our trafficker in poison feel called upon to alleviate or cure his victims; rather can he diffuse his wares for gain, and call upon his worthy countrymen to assume not only the responsibility of producing these granite prisons, lunatic asylums, and hospitals by public tax, but endless charitable institutions by private tax, for all this pauperism, crime, and disease, which grows out of this vice as an overflowing fountain.

“Legislator, a son requires all your forethought, vigilance, and solicitation. The town, the State, the country is but a collection of sons.”

New light on the question of prohibitory laws marks a great difference between those of to-day and those of early days, which were based on observations only of the ill effects of the poison habit. The scientific study of the physiological effects produced by the favorite poisons has opened quite a new field that brings a wider conception of the problem. We have seen the rapid spread of intoxication and degeneracy under the license system in France, England, Germany, etc. This, with the impartial authority of census reports, points not only to the diminishing use of spirits in locations where prohibition has been enacted, but

at the same time to better social and sanitary conditions, less lawlessness and increased prosperity. This, to the student of government, would seem proof enough that poison as a diet is not to be either recommended or tolerated. In fact, the march is towards total and absolute prohibition.

“Some assert,” says Dr. Crothers (*Popular Science Monthly*), “that personal liberty is infringed by withdrawing the means of poisoning one’s self. The welfare of the country is the supreme law, and no one has a right to do anything, to have anything, to be anything, inconsistent with that. It is an undoubted and universally acknowledged right of society to protect itself from every evil from which it suffers. The daily, hourly working of the public machinery is constantly illustrating the fact that the Roman law maxim, *Salus populi suprema lex*, is as authoritative to-day in all civilized nations as it was in the time of Augustus. It is the daily practice in this country to take away property, liberty, and life when the public good requires it. . . . A public nuisance is forbidden by law, and may be summarily abated in all civilized countries. The liquor traffic is a great public nuisance, more dangerous, more hideous than all others combined.”

Amasa Walker, author of “The Science of Wealth,” thus speaks of “personal liberty”: —

“Prohibition becomes the defence of the general good. It is not a breach of personal rights, but the safeguard of public liberty. If there is any habit or practice which brings disease and suffering and disorder, which abridges the power of labor and the span of life, which inflicts misery upon the innocent and unoffending, which entails expense upon the whole community for the charge of

pauperism and the punishment of crime, there can be no doubt of the right and duty of the people to protect themselves through the power of their government by the most severe and efficient laws which can be devised."

David R. Locke, in an article in the *North American Review*, September, 1897, says:—

"What would be thought of a proposition to make a law regulating burglary, arson, larceny, forgery, assault and battery? And yet the traffic in intoxicating liquors is a greater crime than any of these, because it is the parent and cause of all of them, with pauperism, insanity, wretchedness, and everything included under the general head of human misery thrown in. It is the only traffic on earth permitted to exist on the lowest of all kinds of selfishness, which sees suffering . . . unmoved and which makes profit out of the sufferings of others. There is no traffic permitted to exist so destructive of everything that is good and promotive of everything that is bad. It blights, it sears, it rots, it destroys everything it touches. . . . It is the cause of 90 per cent of the pauperism with which the world is afflicted and for which good men have to pay, and fully 90 per cent of the crime in the world. It makes paupers and criminals of men in the first instance, and entails pauperism, insanity, and an irresistible tendency to crime upon posterity. Liquor using is idiocy, and liquor selling a crime. This monster, which is eating the very foundation out of everything that is good and decent in society, should be strangled and burned with the stake of public opinion thrust through its foul body. . . . An evil, a known, marked, admitted evil, . . . an evil which the sense of the entire civilized world has branded as an evil, can no more be 'regulated' than a barrel of powder can be fired off by

degrees. Any evil that needs 'regulation' needs death ; . . . killing is the only remedy."

As Mr. Locke intimates, we could better tolerate a law permitting burglary than a law permitting liquor selling. Could a law permitting burglary once get a political backing, we should probably hear the same arguments advanced in its defence as are now used to defend liquor selling. For instance, the representatives of burglars in legislative halls would demand absolute freedom for the money-making trade of constituents, and, in case of opposition, "laws for regulating robbery" would be discussed and acted upon. The robber politician would orate upon the subject of "freedom," for which our forefathers fought and bled, and for which our flag waves. The burglar antiquarian would tell us of the ancient and time-honored practice of burglary. New versions of Robin Hood would set our youth aglow. We should hear with more or less of truth that ancient, to say nothing of modern wars were simple burglary on a grand and magnificent scale, for which individuals have secured imperishable renown. The burglar divine would tell us of burglary mentioned in the Bible, and the dangers of "hypocrisy" in making prohibition laws ; that people being naturally prone to evil would, in case of prohibition, steal on the sly instead of in the open. He might tell us, indeed, that those prohibition laws — the Ten Commandments — are often and universally broken, and prohibition schemes from the time of Moses to the present have been dismal failures. The burglar socialist would tell us that burglars have their families to support, and that great suffering of

innocent women and children would follow the uprooting of prosperous and remunerative occupations; that burglary is an occupation that gives profitable employment to many, namely, gun and ammunition makers, miners of saltpetre, pawnbrokers, dealers in horses and what feeds horses, renters of houses, etc., all of whom would suffer by the abolition of burglary.

Of course, in case of laws permitting burglary, we should need extra hospitals for people who are shot or strangled, and extra penitentiaries; but the burglar philanthropist would tell us that the system of burglary should never be attacked, because burglars pay so large a tax and give so liberally in money contributions for the support of benevolent institutions of this description. Money, coming easily, would also enable burglars to contribute largely towards the general expenses of the government, which would again inspire the easy philosophy of the burglar economist. We should hear from the burglar voluptuary of the fascinations, the excitements, and the luxury of helping one's self to the possessions of others.

But let us return to Mr. Locke:—

“No prohibitionist claims,” says he, “that prohibition does away with the use of intoxicating liquors entirely. Every one knows that in the prohibition States of Maine, Iowa, and Kansas liquors are bought, sold, and drunk. Other causes which have been loose upon mankind, such as leprosy, . . . cannot be stopped at once by the edict of legislation. ‘Thou shalt not steal,’ with nine other ‘thou shalt nots,’ are violated to-day. . . . Does any one suppose that the rum-enthralled soaker of Portland, whose stomach would make a fair war-map, . . . whose enfeebled system

the fires of alcoholization have been burning and eating for years, is not going to have the stimulant? He would have it were it forbidden by twice the authority of the utterer of the Ten Commandments.

“As a matter of course, liquor will be sold and drunk, no matter what laws are enacted against it. But, mind you, under the well-enforced prohibition laws of those States, the drinkers are only those who are already ruined, either in whole or in part, and leaving out individual hardships and individual heart-strings as well, it makes precious little difference how much this class get of it. Confirmed drinkers and confirmed hoodlums are as a rule incurable. The sooner they are out of the way, so far as the community is concerned, the better. There is no knife to remove the cancer of appetite when once fixed; there is no medicine that can resuscitate the will-power drowned in alcohol. In ninety-nine cases out of a hundred the man once enrolled in the great march of drunkards remains true to his flag, and he marches to no other drum-beat. His fate is sealed, and the sooner death relieves him from the service the better. In life he is a curse to himself, a burden either to some one individual or to the community at large, and what power he wields by virtue of having been born a man, and being borne in the census roll as a man, is always wielded to the detriment of everything that is decent and good. . . . These confirmed victims of drink will have it as long as they can beg, borrow, or steal the money to pay for it, and men will be found who will furnish it to them. It may be a druggist who keeps a back room; it may be an ingeniously contrived hole in the wall or cellar. . . .

“The admission that prohibition does not entirely prohibit is no argument against prohibition. It does prohibit, and at the right place. The dealer who is compelled by virtue of the sweeping prohibition law, to which penalties

are attached and which penalties are enforced when the crime is brought home and fastened, may and will sell to confirmed drunkards, but what is he going to do with the boys and young men who are not confirmed drunkards? He dare not sell to them, and much less dare to entice them into his place. The claws of the hyena are pared, and its teeth are extracted. . . . And besides, it is not constantly in the way of the boy. The gilded saloon, with its light and warmth and glitter and show, is not on every corner, furnishing him more than a comfortable lounging place. There is no place open where he can hear the laugh, the song, the jests of rum, which amuse him more and more as he hears them. To get rum he must go in search of it, and he must undergo the severest kinds of tests before the seller dare commit himself to the chances of furnishing it to him. The young man who lays the foundation of his ruin by occasionally taking a drink with a friend, because he is invited rather than because he wants it, is spared this temptation. . . . The recruits for the great army are saved, because there is nothing enticing to invite them."

Archbishop Farrar cries out in Westminster Abbey :

"How long do you mean this to continue? How long are our working classes to be hemmed in with glaring temptations, and their dwellings fringed by public houses on all sides as with a cordon of fire? How long is the reeling army of our drunkards to be recruited by those who are now our innocent sons and daughters?"

A book by Robert C. Pitman, LL.D. (Associate Justice of the Supreme Court of Massachusetts), called "Alcohol and the State" (1877), is small, and so complete in essential points that it should be found in every library.

"Let us look," says Justice Pitman, "into contrasted homes, where the only variable element is the drinking habit of the head. The full wages of the temperate man bring from year to year better food, better clothing, and better shelter. Improved sanitary arrangements tell on the health of the father, wife, and children. The house becomes more and more a home. The passer-by notices the vines that cluster about the doorway, and the little flowers that peep through the windows; upon the inside walls the picture speaks of a dawning taste, and the piano or other musical instrument shows that the daughter is adding a charm and refinement to the family circle. Books and periodicals show the surplus dollar. Every influence is elevating.

"Introduce the element of drinking and you reverse the picture. Year by year the physical comforts of the house lessen. The tenement must narrow to the means, and locate itself in noisome neighborhoods. The wife first pinches herself in food and clothing, but the time soon comes when the children too must suffer. The scanty clothing becomes ragged. The church and the school know the children no longer. No flowers of beauty adorn, no sound of music cheers such a dwelling. The fire goes out upon the hearth, and the light of hope fades from the heart. Soon the form of the family is broken, and public charity cares for the scattered fragments. An American home has been blotted out.

"Now it is not with private misery that we are here concerned, but with the effect upon the State. If the chief interest of the State is in the character of its citizens, then no agency is more destructive of its interests than the dram-shop, because the dram-shop is the great enemy of the home, and it is the character of the home which is not only the test, but the efficient factor in an advancing or a falling civilization. . . .

"The accurate statistical answers to 'What are the burdens intemperance lays upon us?' and 'What, if any, are the benefits which the traffic in poisons can show as an offset?' leave no doubts. . . .

"Let us look for a moment at what we spend for enlightening our intellects in comparison with what we spend for muddling them. The total income of all the schools of learning, public and private, from every source, for the year, is given as \$95,402,726, not one-sixth of what we waste on liquors. . . .

"All the libraries in the country, both public and private, are said to contain \$91,057,876 worth of books; so that we drink up our books in less than two months.

"The total value of church property in the United States is put down at \$354,483,581. If it were all to burn up, about six months of abstinence would replace it.

"A government that professed no interest in the health of its people would deserve neither the endurance of its subjects nor the respect of the civilized world."

The chapter, "The Chief Occasion of Crime," begins as follows:—

"The malignant action of alcohol . . . is sometimes spoken of as that of an excitant of the lower faculties or the animal passions, and sometimes as that of a depressant of the higher and rational nature; . . . we have no occasion to enter into the discussion. Whether the animal nature is excited unduly, or the spiritual deadened, the same result follows. The 'moral equilibrium of character' is destroyed. It matters little whether we fire up the locomotive beyond control, or pitch off the engineer."

The chapter, "The Universal Ally of Evil—The Universal Antagonist of Good," begins:—

"We have already considered its direct influence (the drinking habit) as a stimulant of crime, and its indirect as the great cause of poverty and pauperism. We have also seen how it animalizes human nature and debases human stock. But we have now to notice that it intensifies all the perils of our civilization, and perils which affect the integrity of our national life and the stability of our government. . . .

"But few of our people seem apprehensive as to the result of our experiment of universal suffrage. . . . By it all men are made sovereigns. . . . Every drunken ballot imperils every sober man's interest. . . . The dram-shop is the ally of every corrupt political ring. . . . In some of our large cities it is able to dictate nominations. In more, it is able to defeat any one who incurs its ill will. Great cities are becoming more and more the great powers in politics, and the actual or threatened supremacy of the dangerous classes there cannot but excite the anxiety of the most determined optimist. The State of New York . . . has recently appointed a Commission . . . 'to devise plans for the government of cities.' It is well for the State to bestir itself before it finds the cities, and the worst element of her cities, governing it. But no schemes or plans will work without the public virtue of citizens. The dram-shop mocks the name and destroys the very substance of that virtue. Within its sphere it makes bad citizens faster than schools and churches make good citizens."

There is absolutely *no* "respectability" in any trade that is "destructive of everything that is good and promotive of everything that is bad." Trade which "blights, sears, rots, decays, destroys everything it touches;" which manufactures pauperism, crime, disease, and idiocy for good people to pay for

and suffer for ; trade which "eats the foundation out of everything that is good and decent in society" can never be "respectable." Who should care to respectableize it ? The so-called "respectable" places are indeed more dangerous than the slums, being the recruiting stations.

We are told that vice exists and we must practically do the best we can with it — better regulate it than let it run without restraint. Such logicians forget that it is the poison traffic itself that manufactures the vice. That vice is not natural but a thing of education ; that vice is but perversion, resulting from some specific cause ; that the woof and the thread of the whole wretched fabric of vice results chiefly from traffic in certain poisons.

Lord Chief Justice Coleridge stated, from the bench of the Supreme Court of England, that —

"Judges were weary with calling attention to drink as the principal cause of crime," but he could not refrain from saying that "if they could make England sober they would shut up nine-tenths of the prisons."

Says the Earl of Shaftesbury ("Nineteenth Century," December, 1883): —

"It is impossible, absolutely impossible, to do anything to permanently or considerably relieve poverty until we have got rid of the curse of drink."

Mr. Livesley, in an admirable article on the same subject, says : —

"While drinking continues, poverty and vice will prevail, and until this is abandoned no regulations, no efforts, no

authority under heaven, can raise the condition of the working classes. It is worse than a plague or a pestilence, and the man is no friend to his country who does not lift up his voice and proclaim his example against it."

It has been found that in one square mile of East London, a place of great poverty and wretchedness, but one penny (2 cts.) a week, per family, is spent for education, while 4s. 3d. (\$1.02) is spent on drink. England is continually attempting to relieve this poverty in every way rather than applying the axe to the root of the evil.

Said Arch Deacon Farrar in Westminster Abbey:—

"We have heard much in these days of 'Horrible London,' and of the bitter cry of its abject. What makes those slums so horrible? I answer it with certainty and with the confidence of one who knows—drink! What is the remedy? I tell the nation with conviction founded on experience, that there will be no remedy till you save these outcasts from the temptation of drink. Leave the drink and you might build them palaces in vain; leave the drink and before the year is over your palaces would be reeking with dirt and squalor, with infamy and crime."

HOW DOES THE POISON TRAFFIC PAY THE STATE?

Strange as it may seem, this thing, *business*, which is now playing so important a rôle for temperance, has heretofore served as an excuse to uphold the poison traffic. On account of the erroneous impression that the poison traffic helps business and reduces taxation, legislators have been slow to study both sides of the question.

In the matter of public revenue it has been easier to count the credit side only. The damages inflicted upon the community by granting a vested right to men to poison their neighbors, must also be taken into the account.

A license tax does pour money into the treasury, but however great the amount, it cannot bear any proportion to the cost of the trade, either to the community or the State. It has been computed that it does not pay one per cent of that cost. The people of the United States now pay approximately fourteen hundred million dollars yearly for alcoholic drink. How does this colossal sum, taken from wholesome avenues of business, compare with the infinitesimal figures paid into the public treasury for licenses? How far does this blood-money go to pay for the police, penitentiaries, jails, public hospitals, expenses of criminal procedure, poor houses, insane asylums, and the thousand other items that may be charged directly and indirectly to alcoholic drink? David R. Locke, in the *North American Review* (September, 1887), says:—

“Toledo, Ohio, pays \$3,000,000 yearly for rum. The city supports a costly police force, and has an expensive infirmary, house of correction, insane asylum, and gorgeous courts, and the receipts from licenses all told is about \$80,000. Rum does not pay in license 1 per cent of its direct cost to the community.”

A little illustration of the expense of granting privileges for liquor selling is shown in the following official reports of the assessor and other officers of

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the comparatively sober city of Washington, D. C., in 1896.

Paid for police force	\$510,665.99
Paid for contingent expenses	22,587.44
Paid for charities and corrections	506,396.05
Paid for Police Court expenses	114,876.81
<hr/>	
Making a total of	\$1,154,526.29
Received for bar-room and wholesale licenses	299,772.22
Balance against the city for one year	\$854,754.07

These facts and figures, taken from the official records, prove that the city is running behind in its finances on the liquor question at the rate of more than three quarters of a million dollars each year.

Rev. Dr. Wheeler took it upon himself to investigate the financial conditions of the little towns of Peterborough and Hillsborough, New Hampshire, which in a small way illustrate the principle of license and anti-license. Peterborough in 1898 had been a prohibition town for seven years; Hillsborough in 1898 contained five licensed saloons. In the report for 1898 the comparative bills for taxes were as follows:—

Peterborough (25,000 inhab.).	Hillsborough (2,300 inhab.).
For police, \$78	\$1,224
For the poor, 224	2,180

When the figures were brought to the attention of the business men of Hillsborough the saloons were closed.

Dr. Wheeler, in a lecture, told an amusing story of the little prohibition town of Antrim, N. H. (1,300 inhabitants). Visiting there for a couple of

days, he strolled in, out of curiosity, to hear the proceedings of their annual town meeting.

The report of the treasurer announced a bill of \$11.50 for the police department, the small size of which quite astonished the Rev. Dr. Wheeler. A man in the audience arose and demanded the reason for this exorbitant expenditure. According to his knowledge, there had been no need for the services of a policeman. The treasurer explained that the money had been expended for tags for muzzling dogs. The treasurer further reported a bill of \$6.25 for the support of the poor.

The same old watch-dog of the treasury again arose to say that as every one knew there were no poor in the town, he would like to know just how this \$6.25 was expended, etc.

This reminds one of the report of Mr. F. B. Boyce (Hon. Sec. New South Wales Local Option League), who came to America to investigate the workings of prohibition. Visiting the prohibition town of Pullman, Ill., the following questions propounded by him were answered by the chief clerk of the town:—

“In what year was the city of Pullman founded?”

Answer. “27th May, 1880.”

“What is the population at present (1883)?”

Ans. “7,500.”

“How many churches does it contain?”

Ans. “Five have organizations here.”

“How many schools, also, and teachers employed?”

Ans. “Two school buildings and thirteen public school-teachers.”

“How many lockups or gaols?”

614 The Aristocracy of Health

Ans. "None."

"Number of magistrates, with amount of salaries?"

Ans. "None."

"Number of police and their cost?"

Ans. "One at £12 a month."

"What is the annual amount spent on relief of the poor?"

Ans. "Nothing."

"Can you furnish us with your statistics of crime?"

Ans. "We have had no crime."

"Have you any asylums, such as those for lunatics, orphans, benevolent, etc.?"

Ans. "None."

"Is the trade in strong drink prohibited?"

Ans. "Sale of malt, vinous and spirituous liquors forbidden."

It is now a well-established fact that grog-shops create no wealth, but merely absorb it from those who do create it, and that every grog and tobacco shop is a sponge that sucks up money and diverts it from legitimate, wholesome, and mutually beneficent channels of trade. In other words, if wage-earners should turn the vast amount of money now spent for alcoholic drink and tobacco into those avenues of trade which tend to the betterment of their condition and that of their families and towns, there would be not only a wonderful increase in all legitimate business, but a gain in the way of revenue for the State.

Sir James Paget, F.R.S., in an address at the International Health Exhibition, at London, 1884, thus speaks on the subject of "National Health and Work":—

"The public itself should consider more than it does, the utility and the means of maintaining its own health. . . . It may be shown the quantity of work which is lost to the nation, either through sickness or through deaths occurring before the close of the working time of life.

"The pattern healthy man is he who lives long and vigorously — who in every part of his life, wherever and whatever it may be, does the largest amount of the best work that he can, and when he dies leaves healthy children. And we may regard that as the healthiest and most prosperous nation which produces, for the longest time and in proportion to its population, the largest number of such men as this ; . . . and which can show the largest amount and greatest variety of work . . . work of whatever kind that can be regarded as a healthy part of the whole economy of the national life ; . . . all national welfare is dependent on such work ; . . . the greater part of the national wealth is the income from the work which is the outcome of national health."

The problem of conflict of capital and labor is simple and easy enough. If the money that goes for poisons (chiefly paid by the poorer classes), and for which there is no benefit in return, should go for proper investment and in wholesome avenues of trade, there would not be a pauper in the United States.

If the money spent by the laboring classes for alcohol and tobacco were invested in railroad stocks, they could very soon own all the railroads in the country.¹

¹ Senator Colquit, of Georgia ("Nineteenth Century"), writes as follows : —

"It gives the friends of prohibition a pang of mortification akin to pity to be obliged to answer the financial argument of the saloonist

When the town or State deals out licenses for pay, it of course becomes a liquor seller. It makes

and advocator of free liquor. The stock argument of the anti-prohibitionist . . . has been the one of pecuniary loss to any community that should vote for liquor exclusion. It has been said, just before every election, that a vast amount of capital, till then properly employed in the liquor trade, would be driven out; that incidentally the hundreds of houses rented for the traffic would be taken possession of by rats and bats; and that the hundreds of men who tended the man-traps would be hopelessly shut down from useful employment.

“In fairness and honest dealing, will the advocates of free liquor point to one solitary authenticated case where these direful results have followed prohibition? Take the famous case of Atlanta; here was a city of 60,000 inhabitants that boldly entered this contest, and while not at all regardless of consequences, were yet willing to meet them. Perhaps as much as a million dollars was invested in the liquor trade by her citizens. . . . The houses for dribbling out the pestilence numbered probably 150. . . . The nerves and faith of temperance men were severely tried by the predictions of the ruin that was to follow. . . . Notwithstanding these fearful vaticinations, the friends of temperance took the risk of all the harm that was to come, of doing right, and making men better, and rendering unhappy women and children more resigned to their lot. The victory achieved at the polls did not end, by any means, the labor of the prohibitionists. For months after the contest closed, these wearied toilers were kept busy answering inquiries from every part of the Union as to the extent of the material damage which had followed the city's exclusion of the liquor traffic. The old argument, killed as it had been by the facts in the case, was constantly resurrected, and was made to do service in many a succeeding temperance campaign.”

A few extracts are given from the report of the City Council by Mayor Hillyer, of Atlanta, upon the occasion of his taking leave of the mayoralty a year after the triumph of prohibition:—

“I here bring the testimony down to date, that the city, collectively, was never in better condition than she is to-day, and that our people as individuals have very greatly prospered, both materially and morally, since prohibition was adopted; that their progress and improvement moves with an accelerated pace as time goes on, and that the end of the year just closed found our people more advanced

criminals with one hand, to punish them with the other. In a republic it breeds a population, which cannot govern itself, to govern it. It destroys Health, the source of industry, wealth, and happiness, and at a *money loss*.

Arrogant commerce has had no end of protection, while the health of the nation has been left to chance and to crushing conditions of abuse and neglect, contrary to every law of growth and development.

To show that there is no general prosperity resulting from a law which enables one class of people to grow rich by making another class poor, let us quote from Mr. William Hoyle, a distinguished statistician of England ("Our National Reserves, and How They are Wasted"). There was a period of hard times in England, beginning in 1873, and the reasons for it furnished a subject for much speculation.

"During the entire period of the recent long depression in trade," says Mr. Hoyle, "some very remarkable economic phenomena have presented themselves. In the first

therein than ever before. . . . I think it highly probable that Atlanta has, during the last two years, advanced and increased more in houses built, and population, and in the general elements of prosperity, than all five of the next largest cities in Georgia, that hold on to the bar-rooms, put together. Is there any other city, where they have bar-rooms, that has a surplus of over \$225,000 in the treasury, on a clean balance-sheet, at the end of the year, and can sell 4½ per cent bonds at par.

"I found the city with nearly one hundred and thirty bar-rooms. I leave it with none. When I remember the acrimony and fierceness of the contest by which the result came about, but that not a solitary tragedy, or riot, or anything to bring reproach on the good name of our fair city occurred, that wounded feelings have healed, and all are again practically united, I am thrilled with pride to be one of such a people."

place, the warehouses of the country have been crowded with goods wanting customers, and side by side with these there have been multitudes of persons in distress and want, needing the goods which so overcrowded the warehouses. And then, further, there have been the banks with their coffers glutted with money, seeking to be employed in carrying out the purchase and the transfer of stocks in the warehouses to the backs and the homes of the people who were in want; at the same time wages have been comparatively high, and the price of food has been low, thus giving a large margin of the nation's income as available for investment in manufactured goods; and yet the desired trade has not come. How has this arisen?

"There can only be one answer given to this question, viz., the one given by the *Economist* newspaper in its annual trade review in 1876. The *Economist* then stated that the dulness of trade arose from the fact that from some cause or other the means of consumers had become lessened; or, in other words, people had become so impoverished as to have no money with which to buy the goods.

"What was it that impoverished the people? There were several minor causes that had contributed to this, chief among which were the bad harvests of the country. The loss from this source was variously estimated in different years at from £20,000,000 to £50,000,000 per annum; but the main cause of impoverishment was this: the money which ought to have gone into the tills of the grocer, the draper, the tailor, the furniture dealer, etc., went into the till of the publican; £136,000,000 yearly thus spent, and another £100,000,000 sacrificed to atone for the mischief which the expenditure of the £136,000,000 caused, could have no other result than to produce depression in trade. There was every element of trade prosper-

ity present except the buying element, but, unfortunately, that element, instead of applying itself to the purchase of the goods which filled the warehouses, wasted its resources at the public-house ; for instance, £4 per head were spent yearly in drink, and but eight shillings on cotton goods, and so people were in poverty and rags, and manufacturers could find no market for their goods.

“The question may arise in the minds of some, What does it matter whether the money be spent in drink or in the manufactured goods, or in house-building or in improving land, or indeed in any way? for it is said, does not the money circulate in the country in one case just as much as in the other? Let us look at this point for a moment.

“I will suppose the case of one hundred men, each earning two pounds weekly. On an average the men spend twelve shillings per week each in drink, which, unfortunately, for many men is not extravagant. At the end of the year these one hundred men will have spent £3,120. Well, it is said the £3,120 is not lost, for it is circulating through the country, and, therefore, what does it matter how it is spent?

“Suppose, however, that instead of spending the twelve shillings weekly in drink, they put the money into a building club and invested it in building houses ; the money would build twenty houses worth £156 each, and at the end of the year the £3,120 would be circulating in the country, just as was the case when spent in drink. In the one case there are £3,120 circulating plus nothing ; in the other case there are £3,120 circulating plus twenty houses added to the wealth of the nation.

“Let us pursue the comparison further. As a result of the £3,120 spent in drink, there would probably be some hundreds of cases of drunkenness ; there would be neglect and loss of work ; there would often be cruelty and misery

at home ; there would be sickness, accidents ; there would be neglect of families, pauperism, crime, vagrancy ; there would probably be some addition of persons to the unemployed population of the country, and maybe, also, some parts of the families of the hundred men would find their way down among the lapsed masses of society. And there would further be the costs and burdens resulting from this condition of things ; and the waste of labor and cost of striving to neutralize and remedy them. It is a low estimate to assume that from these causes £2,000 would be lost to society, in addition to the £3,120 of direct expenditure, or over £5,000 in all.

“Let us follow the other expenditure in its results. In the first place, we find some twenty or more men set to work to build the houses. These, of course, would earn weekly wages, and at the end of the week, themselves or their wives would be off to the shops to purchase goods for their families ; and besides this, there would be the absence of the drunkenness and misery which resulted when the money was spent in drink.

“In one case we have £3,120 circulated, plus a further indirect loss of some £2,000, all of which is abstracted from trade plus resulting misery that is appalling.

“In the other case we get £3,120 circulated, plus twenty houses added to the nation's stock of wealth, plus employment found for twenty or more workmen, plus increased trade for the shopkeepers and manufacturers, plus a diminished taxation owing to the absence of the drink evil, plus happiness to the families concerned, instead of misery and maybe ruin.

“In order fully to appreciate the economic influence of these two courses of action, we must carry the comparison into the second year. The one hundred men who kept off the drink start the year with twenty houses, valued at

£3,120, whilst the others have nothing. If these houses were let at 4 shillings each, weekly, they will yield £200 per annum, or it is an addition to the men's income of two pounds each, yearly, for which the men do not work. The third year it would be more, and the fourth year more again, and so wealth would go on increasing, the demand for labor would correspondingly grow, and along with both there would be comfort and plenty instead of misery and ruin.

"A moment's reflection will start the problem in the mind of every thoughtful person; if to redeem an expenditure of £3,120 from drink, and transfer it to other and legitimate channels, so much of economic and social good results, what would have been the sum of the economic and social good which would have resulted from the redemption of the whole of the drink expenditure of £136,000,000 yearly during the last ten years? I fancy that in such a case we should not have been here to-night discussing problems, social, economic, etc., for the problems would have been solved, and the evils associated with them would have disappeared.

"The social questions, which give to our statesmen and philanthropists so much concern, would have no existence were it not for causes that we ourselves set in operation. The question of how to secure good trade, insure fair and steady wages, provide work for our unemployed population, remove the inequalities of wealth and poverty which exist, how to banish pauperism and vagrancy, and largely reduce crime and lunacy, how to lift up from degradation the lapsed masses of our country, how to secure better dwellings for our working classes, with other problems, are all bound up with the question of the drinking habits of the nation; remedy this, and all the others will practically disappear."

Rev. John Kirk, of Edinburgh, says in an address : —

“This United Kingdom of ours is threatened with terrible poverty. The plague which in various forms is coming upon us is emphatically national. . . . A small number of people are becoming enormously rich, while the great mass of the community are becoming rapidly poor. . . .

“Especially in London, scores are dying of literal starvation for lack of food to eat. . . . It is to be expected that explanations of this state of things should be given, but it is immensely strange that the most obvious of all should not even be suffered to be hinted at in the press, in the pulpits, or on the platform! . . . Above one hundred and fifty million pounds of sterling money a year is actually being handed over by the masses of the people into the hands of a few families for worse than nothing! The expenditure of this money in liquor involves far more than an equal loss in efficient labor, and in other ways. The ignorance of the multitude is so great, the fascination of the liquor is so powerful, the huge swindle is so supported by law and government, and the stream of gold is so enormous, that it is ostracism to lay it bare to the public eye, and yet it is wonderful that it should be possible to be silent on the subject, when the great body of the nation is rapidly sinking into helpless poverty by this iniquity alone! Only look at the subject for a few moments. Allow this liquor system to be suppressed, and at least three hundred million pounds of sterling money annually will remain in the ownership of the mass of the people. Let this sum as a capital be employed as it is employed now, wherever liquor-selling has been suppressed; let this wealth accumulate as it will, and must do, and what would even seven ‘bad harvests’ do? The truth is palpable. These harvests would not give the people serious concern.

They would buy up our own farmer's grain, such as it is, at a good price, and do the same with the American and other grain. All would prosper, perhaps, with the solitary exception of those who are now growing rich at the expense of their country's threatened ruin. . . .

"In the meantime, the subject is daily becoming one of more terrible importance to the great mass of the people. There is a fascination in alcohol so strong that its sale has only to be introduced into a neighborhood to make it perfectly sure that it will carry everything before it. You may educate and civilize as you can; you may evangelize in the best possible methods; yet, if you keep up the distribution of strong drink among a people, you may rob them to any degree and they will not even complain. It is incredible to what extent the brewer and distiller have men and women at their will."

THE PROHIBITION PARTY AND POLITICS

It is the individual opinion of the author and compiler of this book, that the prohibition party makes a mistake by voting in the clouds and throwing away its power. The two great political and opposing parties of our country are not quite perfect, and probably never will attain an ideal state; but if reformers reject existing parties and insist upon organizing new ones without the power to win, in other words, if they cast their votes into the air, they simply lose the opportunity of becoming an active, positive force in deciding between two men, one of whom is sure to be elected.

The dram-shop element of the country is eminently astute in the management of its political affairs. It

recognizes the important fact that law is all-powerful, and it seeks to control as far as possible the making of it.

The highly respectable people of the country, who at heart deplore the institution of the dram-shop, are in the vast majority. In fact, should the dram-shop element flaunt in their political faces a dram-shop ticket and a banner avowedly their own: "Long live the dram-shop!!!" it would be snowed under in a blizzard of indignant disapproval; and yet the small minority — the dram-shop element — rules the majority by tactics which are very clever indeed, and well-worth studying.

First, the dram-shop element acts under any and all circumstances as a unit, and it casts the force of its influence for individuals rather than parties.

Second, while the eminently respectable element remains at home, deploring the wretched condition of the country, the dram-shop element is active in attending and controlling the primary or preliminary caucuses which appoint delegates to conventions, who in turn nominate the candidates for the various offices from Constable to President of the United States.

Third, the dram-shop element never throws away its votes. It is votes that count. It recognizes the fact that but one of two candidates representing the two great and opposing parties will be elected. It merely selects and supports the one of the two candidates which better suits its purpose. On the other hand, the prohibition party rejects both candidates. It is more than probable that at least one of the candidates, if not both, disapproves of the dram-shop,

but what is the candidate to do? He wishes to be elected, both for the sake of party and self. The dram-shop element, however small, is an active, positive, united force in politics. Although the party candidate may sympathize with prohibition, he receives from the prohibition party no support. The prohibition party wants everything or nothing, and thus places itself practically out of the contest.

When the successful candidate is elected, the dram-shop element promptly demands and receives its reward for political services, which is paid in laws to debauch the people. On subjects of reform, therefore, legislatures are practically the slaves of the minority.

Again, the prohibition party never gets credit for its full strength, as many who believe in prohibition are not willing to throw away their votes, and so the real opposition to the saloon is underestimated.

THE SUBJECT OF DIET IN GENERAL AND OF URIC ACID IN PARTICULAR

Oh, friend, I know not which way I must look
For comfort, being, as I am, opprest,
To think that now our life is only drest
For show ; mean handy-work of craftsman, cook,
Or groom, we must run glittering like a brook
In the open sunshine, or we are unblest ;
The wealthiest man among us is the best ;
No grandeur now in nature or in book
Delights us. Rapine, avarice, expense,

This is idolatry; and these we adore;
 Plain living and high thinking are no more;
 The homely beauty of the good old cause
 Is gone; our peace, our fearful innocence,
 And pure religion breathing household laws.

WORDSWORTH.

Man's rich with little, were his judgment true;
 Nature is frugal, and her wants are few;
 These few wants answered, bring sincere delights;
 But fools create themselves new appetites.

EDWARD YOUNG.

I would recommend to every one that admirable precept which Pythagoras is said to have given to his disciples: "Pitch upon that course of life which is the most excellent, and custom will render it the most delightful." — JOSEPH ADDISON.

If we would have health, we must live for it. — ELLEN G. WHITE.

The origin of most disease is fear of fresh air, and no fear of what goes in the mouth. — DR. PAGE.

Diet, as at present used, is often the product of a vast amount of ignorance; it is the cause of a hideous waste of time and money; it produces mental and moral obliquities, destroys health and shortens life, and generally fails to fulfil its proper use. Health may be defined as a satisfactory condition of nutrition, strength, and power of endurance. — ALEXANDER HAIG.

A natural appetite is a relish for plain food. — SIR HENRY THOMPSON.

"**M**AN is what he eats," says a German proverb; and Dr. Radcliff tells us: —

"If we could solve the problem of diet, it would almost amount to the re-discovery of Paradise. Wrong eating and drinking and the breathing of vitiated air form the triple fountain head of nearly all our diseases and our misery."

"It is now beginning to be discovered," says Dr. Rossiter in "Good Health," "that for centuries people have not eaten the right foods to make the best bodies. They have been ignorant of the physiological laws of nutrition, of the proper combinations and proportions of essential elements, of the vital importance attaching to such knowledge. They have cultivated artificial and abnormal tastes, and gradually demoralized their natural instincts. The influence of heredity, good or bad, is cumulative, and tends to increase in geometric proportions.

"If a man eats wrong foods, the result is manifested in his whole being. If he overeats, his stomach makes him sleepy, dull, and cross. His mind is confused and sluggish. If he habitually overeats, this condition becomes chronic, his entire body is poisoned, his brain secretes an inferior quality of mind, and he transmits to his children a constitution and an intellect weaker than his own. On the other hand, if he does not eat enough, or if the food that he eats is not sufficiently nourishing and does not supply all the needed elements in the right proportions, the man becomes anæmic, impoverished in blood and brain. Again, excessively stimulating food brings about a condition of the blood still more potent in changing and modifying character than eating too much or eating too little."

The question is, what is the proper diet? Of all the sciences, that of "Dietetics" seems to be the least perfected. Other important problems of natural law are practically solved, while the question of food as best suited to the different conditions of human life, has been comparatively neglected. So indefinite has been general knowledge on the subject, that those wishing to adopt best foods have had repeatedly to

change their dietary in accordance with new suggestions and fads, which each succeeding year brings forth. A scientific basis of dietetic reform is needed and demanded, and undoubtedly the diet of the twentieth century will be greatly changed from that of the one just passed.

Many valuable scientific works have explained the needs of the system for certain classes of foods; indeed, all physiologies and works on dietetics furnish, more or less, these items of information. We know certain elements of food are required for creating muscle and flesh, certain others to generate heat, and certain minerals are essential for other purposes; but when we come to the practical side of the question What shall we eat? the most of us get hopelessly confused in a jungle of words,—albumens, albuminoids, proteids, protein, carbohydrates, and other terms that require a special study for comprehension. In a helpless way we end by eating what is set before us, and calling in the physician when evil consequences assert themselves. We need a simple solution of a complex problem.

One fact is definite and easy of comprehension,—that the superb structure and fibre of all the lower animals, in their natural state, exhibit a striking comparison with the dyspeptic, nervous, anæmic organizations of the large majority of mankind. It is quite apparent that lower animals, except when infected by man's dominion, are almost universally well, and that mankind is almost universally ill, or at least unsound.

A huntsman finding a deer, a bird, a fish ill or disabled, at once concludes that there has been an

accident, a combat, or an inadequate supply of food. The legion of man's diseases are unknown to the lower animals unless under man's dominion.

The contrast between the prevailing health of all lower animals in a wild natural state, and the prevailing physical degeneracy of man, and the difference in the mortality of the young, are more surprising still when we stop to consider that in all vital principles the physiology of man and the lower animals is identical, and that *the normal condition of all life is one of absolute health*. That man is physically unsound, as a rule, is a clear condemnation of his general habits of life. In searching for the causes of human ills, we must especially study the natural diet of mankind. Does man eat and drink scientifically, as he would wish to travel? and shall the vehicle for the journey of life be less scientifically conducted than the car or ocean steamer?

Undoubtedly the incapacities, irritabilities, and miseries of mankind which are not directly due to the habitual taking of poisons known as such, result from errors of diet. Accidental causes are comparatively small. With knowledge and ability to establish and maintain favorable conditions, man should excel the lower animals, both in physical perfection and in the enjoyment and appreciation of life. Man should not only eat to live, but so eat as to wish to live, and live superbly.

"The general outlines of a man's mental character and physical tendencies," says Sir Henry Thompson (Lord Kelvin), in "The Nineteenth Century," "are doubtless largely determined by the impress of race and family, i. e.,

the scheme of the building; but to a very large extent the materials and filling in of the frame-work depend upon the food and training. No matter, then, how consummate the scheme of the architect, more or less failure to rear the edifice results when the materials are ill-chosen or wholly unworthy to be used."

The subject of foods is also of vital importance in the cause of temperance. People often feel the need for artificial stimulants because they are improperly fed. The man of absolutely sound health does not crave a poison to support what is already strong enough in itself. The self-sufficient and glorious feeling which results from firm muscle and rich blood, kindles in itself sufficient vitality without the aid of drugs.

Before discussing various theories in relation to foods, we may briefly mention that those necessary for creating muscle and flesh are the *gluten* of grain (a brown material); the casein of milk (the curd); the lean portion of meat; the white portion of eggs, etc.; that the foods necessary to provide the motive power of the human machine are the fats (of meat, vegetable oils, cream, etc.) and the sugars and starches.

Nature has also provided simple foods which furnish in proper proportions the natural requirements of the human mechanism. By knowledge of these proportions man is also enabled to combine several substances, which taken together will supply all bodily needs.

The Sanditarian (another word for "vegetarian") can easily extract from the primary products of the earth (grains, nuts, fruits, and vegetables) all the

principles necessary for the maintenance and growth of the body-machine. He must, however, have his food proportions correct. One great error has been that, in the use of wheat, man has in white flour utilized but a part of the grain. The wheat grain, that perfect food taken as a whole, is composed of various layers, each of which has its specific food value. One layer next the outside contains gluten, the muscle-building part; another layer contains phosphates, utilized by the system in forming bone and teeth; a larger portion of the grain is pure starch, which supplies heat to the body, and which portion almost alone is utilized in making pure white flour; hence bread made of this white flour is practically a heat-producing food only,¹ while that made of the whole wheat grain, containing the various elements required for complete nourishment, may truly be called the staff of life.

Wheat, oats, corn, rye, barley, nuts, etc., in combination with fruit and water, are each and all in themselves perfect foods when the whole grain is taken.

There is, of course, some difference in the various grains calculated to better suit different conditions of climate. For instance, wheat, a perfect food for the majority of those living in a temperate climate, contains the maximum of flesh-forming material, along with a proper amount of starch and a moderate

¹ Magentie (in France) experimented upon dogs with white bread, to prove that it alone could not sustain life. Dogs were fed exclusively on each kind of bread, every care being taken to equalize all other conditions. At the end of forty days the dogs fed solely on white bread died, while those fed from the bread made of the whole grain remained vigorous and in prime condition.

amount of fat for fuel, and sufficient mineral elements for other necessities. Corn better suits the physically active in that it contains more fat-producing material than most of the other grains, while it has also its supply of flesh-building and all other necessary ingredients. Rice seems to be the ideal grain for the tropics, or semi-tropics, where physical activity, waste of muscle, and demand for fat are small. Of all the grains, rice contains the least flesh-building material and fats, and is the staple food of tropical and semi-tropical countries. In colder latitudes rice is combined with cheese, butter, or vegetable oil to supply a greater proportion of fat. In the Arctic regions inhabitants eat a large percentage of heat foods which the appetite naturally craves.

Sir Henry Thompson thus speaks of beans: —

“In the vegetable world there is no product so nutritious as the bean, holding its own against the beef and mutton of the animal kingdom. By most stomachs, haricots are more easily digested than meats, and consuming weight for weight, the eater feels lighter and less oppressed as a rule after the leguminous diet, while the comparative cost is greatly in favor of the latter. . . . Beans, lentils, and peas form strong foods of great value — with fats, however, in small proportions; beets, carrots, parsnips, and turnips, also the cabbage tribe, — lettuce, spinach, asparagus, celery, onions, tomatoes, — contain little flesh-building material but pure water, certain salts, and refreshing qualities.”

An almost universal mistake is in taking too great a proportion of heat food. The machine is thus clogged

with more fuel than can be consumed by bodily use, resulting in fatty degeneration of tissues, etc. This result is chiefly caused by making the bulk of our diet, white bread, potatoes, starch, sweets in the way of desserts, etc. The physical culturist usually abandons sweet desserts as well as white flour.

Drs. Kellogg and Oswald have done the world a very great service in calling attention to the value of nuts as a food. In this new century there will undoubtedly be a revolution in the use of

NUTS AS FOOD

Nuts have been generally considered more or less indigestible and with apparent good reason, for the standard of the digestive and assimilative capacity of mankind is disreputably low. Nuts furnish the highest standard of diet. They are the strongest, richest, and most concentrated of foods, containing all the elements for an active and long life. They contain the germs of trees which may live hundreds of years. It is quite easy to understand that when taken in "moderation" they can build a substantial and enduring physical fibre like that of the squirrel, the parrot, and the gorilla. They demand, however, an active, hygienic life for their digestion and assimilation — in fact, one must live up to a nut diet. In connection with abundant fruit they produce a strength and vigor far ahead of the possibilities of meat.

Baking renders certain nuts more digestible for frail humanity, as almonds, filberts, chestnuts, and

peanuts. When taken uncooked they are more digestible if ground in a mill and sprinkled on, or mixed with other foods, as cooked or uncooked fruits, sandwiches, etc. The pecan and English walnut seem to be the most digestible of nuts, and peanuts, which belong rather to the bean family, the most indigestible for many. The Italian chestnut (which should be abundantly cultivated in America) has long been a valuable food for European peasants. They take it boiled, roasted, or ground into meal, and made into bread and cakes. It is said that in good seasons chestnuts sell as low as one cent a pound. Nuts have different food values: almonds, English walnuts, pecans, hickories, and peanuts are among the strongest in muscle-building qualities. The chestnut is largely composed of starch, and is treated as rice in the cooking.

Our U. S. Department of Agriculture has just begun the publication of a series of special reports from various consuls abroad on "Nuts as Food in Foreign Countries," which will be of great service to Americans. California has of late years gone very largely into the planting of nut trees, and English walnuts from California, as well as pecans, are now the best in the world. Nuts in future, like wild fruit of the past, will probably be developed into new glories of size and flavor, and the culture of nut trees will probably increase enormously in the new century.

While grain crops exhaust the soil in a few years, nut trees improve it. Dr. Felix Oswald has written some especially valuable articles on the wisdom of nut tree culture.

Let us be more grateful for nuts ! Together with fruits, nuts constitute a perfect food, loaded as they are with the richest and most exquisite of flavors, and, moreover, sufficient unto themselves without spicing or sweetening or cooking.

SHALL WE CHANGE OUR DIET AND HOW ?

The subject of tobacco, alcohol, and other well-known poisons, at first attracted more particularly the attention of the writer. If only they could be avoided, it seemed as if the question of diet would take care of itself. But when one comes to realize that man may double his capacity for work and enjoyment by cultivation of sound health, by making his body as far as possible a stronger and more efficient machine, the study of diet becomes of paramount importance.

In giving a few theories of different authorities on questions of diet, I hasten to say that I am but a student, interested in everything old and new on the subject, and with no theories of my own to advance. The science of food is still in its infancy. In reference to diet, man is still in the experimental, groping stage. He is still discussing whether he is frugivorous or carnivorous, and what kind of food best promotes the fullest and best of life. He learned, indeed, but yesterday, that he has probably erred both in the choice of food and in the amount which should be taken.

There are those who advance theories for cooking grains beyond the usual time of preparing them.

There are others bolstered by cogent arguments, who advocate raw foods, telling us that a part of the energy of food is lost by fire, which is destructive of life, and that living tissue is best nourished by living cells ripened by the sun; that by boiling vegetables, certain phosphate salts are dissolved into the water, which is generally thrown away; that the lower grain-eating animals thrive best on uncooked foods. There are, again, those who would have us live on hot water and beef, and again, others who repudiate all grains for meat, nuts, and fruit.

The study of what has been unfortunately termed "vegetarianism," has assumed a new importance since the late experiments and discoveries of Dr. Haig, M.A., and M. D. Oxon, F.R.C.P., the English physician and scientist, which are attracting everywhere the attention of health students.

A new interest has also been added to the subject on account of recent reports from the athletic world of those who have practically adopted the diet of the Spartans and Athenians at their best, and of the sturdy athletes of old, which was free from flesh foods and stimulants.

The first surprise in the study of foods which comes first hand from the earth, was in the fact that physiologically man is not specially adapted to the eating of flesh foods.

Says Professor Wiener of Harvard University:—

"Looking at vegetarianism in the light of comparative anatomy, it is self-evident that man was designed to be a vegetarian and nothing else. Quadrupeds are divided into classes according to their foods, and with the single excep-

tion of man no animal as a class has ever varied from the design of nature.

"These classes are the carnivorous or flesh-eating, the fruit-eating, the grass-eating, and the omnivorous. Each of these classes has distinctive organs adaptable to the digestion of the kinds of food it eats and to no other kinds.

"Man has artificially become an omnivorous animal in spite of the fact that anatomically he is a fruit-eating animal. It is an amusing and significant fact that the only typical omnivorous animal is the pig. Man is trying hard to be a pig."

Indeed, all testimony goes to show that we are physiologically not adapted to a flesh diet. The human liver is too small, and the human intestines are too long, for that kind of food. The inner coating of the intestines is also formed differently for the assimilation of animal and vegetable foods.

As before said, scientists divide animals into four general classes according to their diatetic habits, as follows: carnivorous (feeding on flesh); frugivorous (feeding on fruits, grains, vegetables, and nuts); herbivorous (feeding on grass and herbs); omnivorous (feeding on all classes of food). The flesh-eating animals have a comparatively short alimentary canal. It is three times as long as the length of the body (measuring from the nose to the end of the backbone), while that of the frugivora (the ape-family and man) is twelve times the length of the body; in the omnivora, ten times, and in the herbivora thirty times.

In carnivorous animals the alimentary canal is not only short and simple of structure, but smooth, tending to facilitate the rapid passage of flesh food. For

assimilation and digestion, flesh foods do not so much require the aid of those ferments which line the walls of the intestines of man, and which suit the slow passage of vegetable substances. On the contrary, the putrescent tendencies of dead flesh, especially when exposed to conditions of warmth and moisture, give rise to poisonous substances of the most offensive character; and this type of food requires a quick passage through the canal. There is another marked difference in the quality of the digestive ferments in the stomachs of flesh-eaters and vegetarians. The antiseptic and germicidal property of the gastric juice of all flesh-eating animals is more powerfully active than that of the frugivora. For this reason flesh is likely to undergo decay in the human stomach. The farinaceous foods and fruits are best digested in a stomach in which the gastric juice is not too highly active nor too acid, for excessive acidity would interfere with the digestion of starch and the dextrine of fruits. In herbivorous and frugivorous animals (including man) the alimentary canal is not smooth, but is so formed as to delay the movement of the partly digested food in the intestines.

The inner surface of the human stomach is serrated with wrinkles formed by the membrane which lines the whole of the intestinal canal, and which forms valvular folds in a considerable part of the intestines. The colon (first of the large intestines) of both the frugivora and herbivora is much larger than that of the flesh-eater. It is also sacculated. The colon of flesh-eaters differs little from the smaller intestines, while the interior surface is smooth.

The stomach of flesh-eaters consists generally of a simple globular sac without internal division, while the stomach of man is more complicated.

For the sake of better coping with the resultant poison products of a meat diet, the carnivora are provided with a much larger and more highly developed liver than is given to man and the other frugivora. It is not only larger, but more active, producing a greater secretion of bile. It is said that by experimenting with dogs fed upon various dietaries, there is shown to be an increase of fifty per cent or more of bile if they are kept on a meat diet alone.

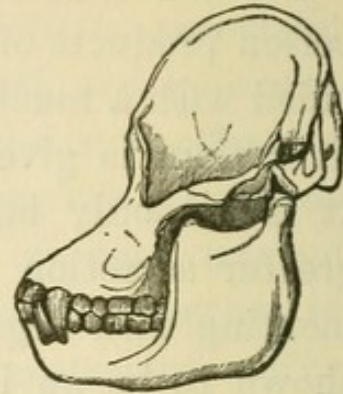
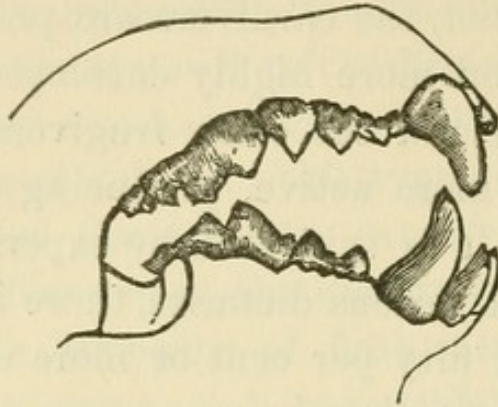
Prof. Walter Wyckoff, in *Scribner's Magazine*, tells of an autopsy made upon an Esquimau who died in New York, which revealed the very astonishing fact that his digestive organs had become modified to more resemble those of the carnivora, owing to many generations of meat-eating.

As the human species (aside from the Esquimaux) are unprovided with livers capable of properly handling flesh substances, and are often called upon to cope with favorite poisons beside, it is not strange that a perfectly sound human liver is the exception to the rule.

The teeth of meat-eating animals are fashioned differently from those of man and all frugivora. The carnivora are supplied with four long canine teeth (eye-teeth or cuspids), two in each jaw, and the back teeth are saw-shaped, all being calculated to tear flesh. They present nothing which approaches a grinding surface.

In other animals not absolutely carnivorous, but

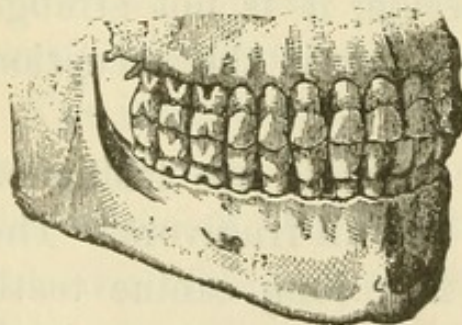
which eat more or less of meat, the development of the canine teeth is less prominent. The teeth of the herbivora are crown-shaped, serving to grind grass,



Skull of Orang-Outang.

twigs, and other vegetable and woody substances upon which they naturally subsist.

There is not the slightest resemblance between the eye-teeth of man and the eye-teeth of carnivorous animals, although the somewhat pointed shape of our cuspids is given as evidence, by the advocates of the flesh dietary, that man is partly carnivorous. These cuspid teeth of the horse, camel, stag, and ape-family,



that are not meat-eaters, are also pointed and proportionally larger than those of man. These sharp teeth are needed for biting any firm vegetable substance.

It will be seen by the following cut that human teeth are regular and of even length.

Again, carnivora have but one movement of the jaw, which is up and down. They do not grind their

food, but shred it to a slight extent, and send it to the stomach to be acted upon by the powerful digestive ferments which nature has provided for them. Man and all frugivora have well-developed salivary glands, which are active and highly effective in the digestion of starch, while the salivary glands of the carnivora are comparatively small. In carnivorous animals the tongue is very rough and rasping, while in the higher apes and man it is smooth.

The nearest approach to man in physical structure is met in the ape family, particularly the orang-outang and gorilla. In fact the general organization is identical.

“The masticating organs of the orang-outang are so closely similar,” observes Professor Lawrence (“Lectures on Physiology”), “that they might easily be mistaken for human, the only difference being that the cuspids are relatively longer and more pointed, and the elevations on the grinding surfaces of the molars more prominent and pointed, by which characteristics the orang approaches nearer the carnivora than man. The articulation of the lower jaw, the form of the stomach, the comparative length of the intestines, the relative capacity of the cæcum, and the cellular arrangement of the colon in the orang likewise correspond very closely with those of the human body; and in what part soever a difference is detected, it denotes man to be less formed for animal diet than the orang. . . . Comparative anatomy, therefore, warrants us in concluding that the alimentary organs of the orang are the true type with which to compare those of man in order to ascertain his true dietetic character. Now, as the orang-outang and most species of monkeys, when in their pure state of nature and when left free to choose their own

food and to follow their undepraved instincts, are wholly frugivorous, subsisting exclusively on fruits, nuts, and esculent, farinaceous vegetables, we are perfectly justified by all the laws of correct reasoning in concluding that the natural food of man is not of that mixed character which many physiologists would have us believe."

We also find from authorities that monkeys, like men, will acquire the habit of meat-eating and take to the fascinations of any poison, as alcohol or tobacco, after having been forced for a time to take it. Indeed they will learn to eat almost anything that luxurious man has called food, and some even become remarkable for gastronomic eccentricities. Experience has taught those having the care of menageries that feeding monkeys on flesh renders them gross and shortens their lives.

"The ostensible reason," says Dr. Smith ("Fruit and Farinacea"), "for regarding man as omnivorous is that he can subsist upon a great variety of animal and vegetable productions . . . but, if properly considered, this only evidences the wide range of adaptability which his organism has received, in considering which we are apt to overlook its special adaption. We know that man *can* live on flesh alone, but this does not prove that he is carnivorous; he can also live exclusively on fruit and other vegetables, but we ought not to conclude from this that he is frugivorous; and it is equally illogical to infer that he is omnivorous because he can feed with comparative health and pleasure on a mixture of both animal and vegetable substances. The question we have to determine is whether the development of the physical, mental, and moral powers of man are equally complete upon whatever kind of food he

lives, or whether there is a definite kind upon which all the interests of his economy are better maintained than upon any other. We have seen how far comparative anatomy supports the opinion that man is frugivorous, and we shall find it corroborated by the evidence from every other source."

COMPARATIVE STRENGTH-GIVING QUALITIES OF ANIMAL AND VEGETABLE FOODS

The nutritive elements of animal and vegetable foods are precisely alike.¹

We find that all foods are derived from natural products (water, air, gases, and minerals of the earth), and that in taking them from the vegetable world (grains, nuts, fruits, vegetables, etc.) we, along with other frugivorous animals, take them first hand and freshly prepared, and if we eat the flesh of animals we get the same elements in other form second

¹ Dr. Edward Smith, in "Foods" (*Inter. Sci.*, Ser. No. 3), says: "There seems to be an indissoluble bond existing between all sources of foods. There are the same classes of elements in flesh as in grain, and the same in animals as in vegetables. The vegetable draws water and minerals from the soil, while it incorporates the air in its own growth, and is then eaten to sustain the life of animals, so that animals gain the substances which the vegetables first acquired."

Dr. Radcliff says (*Pop. Sci. Mon.*): "There is no essential difference as to the chemical composition between vegetable albumen and fibrine and legumine and oily matters, and animal albumen and fibrine and caseine and oily matters; there is no perceptible difference in the albuminose or peptone into which the vegetable and animal nitrogenous substances are alike transformed in the process of digestion; there is no difference in the way in which the vegetable and animal oily matters are emulsified and then taken up directly into the general circulation of the blood."

hand. Consequently beef, mutton, etc., are but productions of the earth in another form, and what is of especial interest is the fact that it is in a form no stronger as food than originally furnished. There is a popular belief that animal food is more nutritious or richer than food first hand, and that it will in consequence give more force and firmness of muscle to the partaker. This is a fallacy.

As before remarked, the nutritive elements in both meats and vegetables (grains, nuts, beans, etc.) are the same, both proceeding from the same source originally.

There is, however, a most important difference between the two kinds of food (meat and vegetable), which has been set forth with great emphasis by Dr. Haig in his books "Uric Acid" and "Diet and Food Considered in Relation to Strength and Power of Endurance, Training, and Athletics."

After so long a period of ignorance, prejudice, and conflicting theories concerning this important question of diet, it is refreshing to have at last some positive evidence on the subject, based on competent scientific research. Science at last must be our teacher. Science alone abjures all sentiment and theory for hard fact proved by experiment and expert testimony.

We learn from the experiments of Dr. Haig how man becomes surcharged with an excess of uric acid by the eating of meat, and the reason is briefly as follows: In the living body there are continually two processes going on, viz., secretion and excretion; first, building up of cellular tissue; second, breaking down of it into waste matter which is intended to be

eliminated. In the natural process of waste production certain poisonous substances are formed, the principal one of which is uric acid. If these excretory products are fed to rabbits, the rabbits become poisoned as quickly as if fed with alcohol. In health the normal quantity of waste products is eliminated by the kidneys, etc. A want of proper elimination manifests itself in Bright's disease, rheumatism, gout, fatigue, etc. We have in health a liver and other organs of sufficient size and force to manage our own excretions, but not that of other animals in addition. The question is whether a purer diet than that containing the excretion of other animals is not intended for mankind.

As the breaking down of living cellular tissue is constant, there is contained in the tissues of an animal when killed an inevitable amount of waste matter more or less ready for elimination, but which is not yet eliminated. In eating such food one eats along with it this certain amount of waste matter which the animal would have cast off later, but which added to our own waste matter to be eliminated forms an excess or burden upon the system. The uric acid undergoes no chemical change in its contact with the gastric juices, but is absorbed into the blood of the meat-eater.

Dr. David Paulsen writes very disrespectfully of meat extracts as follows:—

“Fortunately for the sick, beef tea is not now advocated as much as a few years ago. It contains nothing but the waste matter of the animal tissue, that which would go to make up the secretion of the kidneys at a little later stage,

and which has been well named 'concentrated nastiness.' It contains little or no albumen available for force production, and is nearly as pure a stimulant as a glass of wine."

This is a disturbing revelation which throws a new light on all soups made from extracts of flesh. Very fortunately, no end of good soups can be made from the vegetable world.

Dr. Kellogg thus speaks of it:—

"Flesh food contains . . . quantities of poisonous substances, resulting from force-expending processes. . . . In fact every vital process results in the production of poisonous or excretory substances.

"In vegetable food products we have a pure source of stored energies. In animal bodies we have only vegetables at second hand in process of oxidation or deterioration. . . . In the flesh of even a healthy animal there is always present more or less of broken-down products which are on their way out of the body as excretions naturally removed by the kidneys, the liver, the skin, and other organs."

Dr. Haig, in his book "Uric Acid," reports many experiments to show the exact amount of poison taken by the flesh-eater from the excrementitious matter of meat tissues—also the exact physiological effects. He had long suffered from severe headaches, for which he had tried all the supposed drug remedies for relief, without success. He finally found relief by renouncing a flesh diet, which led him to an exhaustive examination of the reasons for it.

"I had previously," says he, "tried a great variety of alterations in diet, . . . but on the non-meat diet a change for the better was at once apparent. . . . A further study

of the clinical history of migraine brought out such a strong relationship to gout that I began to suspect that uric acid might be the poison of which I was in search, and I therefore proceeded to estimate the excretion of uric acid and urea. . . . When I separated the urine excreted during the headache from that both before and after it, a definite and distinct relation between the headache and the excretion of uric acid at once became apparent.

“I have made two discoveries with regard to the causation of disease by uric acid. First of all, I found that uric acid taken by the mouth passes into the blood, and that if this fluid is kept in a condition to hold it in solution, it will remain in the blood until the kidneys have time to pass the whole of it into the urine. . . . The uric acid excreted normally in the urine comes from two sources: (a) the uric acid introduced into the body out of nitrogenous food, and (b) the uric acid introduced into the body in meat, meat extracts, soup, tea, coffee, etc., all of which contain it in considerable quantity. . . . The explanation is therefore complete; meat produces the headaches by introducing into the body and blood uric acid plus substances of the xanthin group, and the same headache can be produced at will by swallowing any one of these substances in a state of comparative chemical purity. . . . My second discovery . . . was that uric acid, when present in excess in the blood, *affects its quality in an important manner*, producing the changes met with in anæmia and other diseases.”

THE DANGER OF EATING DISEASED ANIMALS AND COMPARATIVE IMMUNITY FROM DISEASE

We have seen that by eating dead animals at the time of killing, we necessarily take uric acid belonging to uneliminated waste products. When the dead

animal is kept any time before eating (being more or less putrefied), we necessarily eat more or less of ptomaines, which are products of the decomposition of flesh. We again run risks of eating certain preservatives which are often used for embalming purposes to prevent as far as possible this process of putrefaction. We again run risks of swallowing the germs of actual disease if the poor dead animal in life was of unsound health.

We naturally take it for granted that the habits of all animals (aside from man) are hygienic. We like to believe that the lower animals are fed from pure sources, that their drinking water is uncontaminated, and that the air they breathe is not fouled by poisonous gases or absence of sunshine. In their natural and free state they are, as a rule, absolutely sound in health, but often become diseased when under the control of man. We forget that their flesh and blood is like our flesh and blood, and that what is injurious to the physical well-being of man is likewise injurious to other animals. In the first place, with the greatest of care it is extremely difficult to keep stables and small enclosures absolutely clean, and so the poor brutes confined in them are almost necessarily subjected to vitiated air. Nothing less than the freedom and space of open fields can insure the absolute health of animals.

Water given to stock from pools or wells near stable yards or other unwholesome places is generally impure. In a wild state animals get abundant exercise which is denied them in confinement. The process of fattening animals is also strictly unhygienic.

Fat is a disease in itself. Allowed a proper amount of food and exercise, an animal is never fat. As a wise correspondent in an agricultural journal remarked, "it is hopeless to attempt to fatten chickens while they are at liberty." They are generally placed in small coops and overfed in order to produce this state of disease — fat.

Probably the most cruel and diabolical of practices is the fattening of geese at Strasburg in order that man may eat diseased liver, *pâté de foie gras*. The unfortunate geese are confined in small boxes in warm, dark rooms, and by a forcing apparatus are fed all the food that can be thrust into them without immediate killing. The liver becomes enlarged through fatty degeneration, and is then sold everywhere as a luxury. No person with any natural feeling should ever encourage the brutal traffic. Indeed

"conditions for fattening all animals are recognized as in the highest degree productive of disease in human beings. . . . A stall-fed ox is always a diseased ox ; a fat pig is always a mass of accumulated excrementitious matter."

All animals under the commercial care of man are subject to malarial parasites through bad water ; to the germs of tuberculosis, or consumption, cancer, cholera, typhoid fever, anthrax, and endless other diseases which result from various unhygienic conditions.

It should be borne in mind that in America one death in seven is due to tuberculosis, and in England among the upper classes the startling proportion is one in five. The germs of tuberculosis do not always attack the lungs, but the throat, the intestines, the

stomach, or any organ which happens to be weakest. This manner of death often results from the use of tuberculous animal flesh.

The alarming conditions of tuberculosis among cattle, and cholera among swine, etc., has only of late years been understood. It is now not uncommon, for governments to interfere and destroy entire herds of cattle to prevent the spread of these and other diseases.

"The researches of Law and others," says Dr. Kellogg, "have shown that at least one in every fifty of cattle slaughtered in the United States is tubercular. Hence those who eat beef may count upon it as certain that on an average at least every fiftieth beefsteak is tuberculous. . . . Ordinary cooking, as, for example, in the broiling of steak, does not kill the parasite. Martin found that even when cooked at a temperature of 212° degrees, the tubercular germs are not certainly killed, while Toussaint determined that in the interior of an ordinary broiled steak which reached a temperature of from 163 to 176 degrees during the cooking, tubercle germs still survived and were capable of producing diseases. It is true that the tubercle bacillus is killed at a lower temperature when isolated, but when embedded in a mass of meat it is so protected that prolonged boiling is necessary to destroy the parasite, and even that boiling has no effect upon the poisons produced by the germ, which when present in the flesh, as Professor Law has shown, are capable of producing a deleterious influence in the human body. . . .

"The great frequency of this disease is shown by statistics gathered at the abattoirs of various cities. For example, at Paris 6% of all cattle slaughtered were found to be suffering from tuberculosis; in Holland 20%; in

Pomerania 50%; in Hanover from 60 to 70%; in Leipsic 20%; in Edinburgh 26%; in Baltimore 3.5%. Professor Law reports that while visiting dairy herds in New York he found the proportion of tubercular cattle to be from 5 to 98%.”¹

Again it is said that the liability to take disease is increased tenfold by meat-eating, the habit producing more or less of blood-poisoning. The editor of *Medical Progress* thus speaks of it:—

“The truth seems to be that while a person subsisting upon a lean-meat diet may be unconscious of any abnormal

¹ At an international congress of tubercular consumption recently held in London (June, 1901), Professor Koch advanced the idea that bovine bacilli were more fatal than the human bacilli to other animals; that on account of difficulties in the way of experiment on the human family, transmissibility of bovine bacilli to mankind could not as yet be definitely known; but that in his opinion there was not enough danger to warrant the universal fear of contagion from this source.

“The congress accepted Professor Koch’s statements with protests. Fearing lest dairymen and butchers should agitate for a relaxation of present restrictions, English physicians rushed everywhere into print with reminders that Professor Koch’s investigations are still only in the experimental stage; that 60,000 persons in Great Britain die annually of tuberculosis; that probably 30 per cent of all breeding and milking cattle in the country are in some degree tubercular, and that a grave national danger may result from any modification of existing precautions. The English Government refused to accept Professor Koch’s views seriously, on the ground that they did not meet the assent of the general body of scientific men, and that high medical authorities have advanced many cases to disprove Professor Koch’s views, such as accidental inoculation among dairymen and veterinary surgeons working with open sore or cut among diseased cows,” etc.

Dr. Salmon, Chief of U. S. Bureau of Animal Industry, says “It is astonishing from any point of view to find a sanitarian saying that he does not deem it advisable to take measures against the flesh of not only tubercular animals, but animals suffering from serious disease, no matter what that disease may be.”

condition, he is like a person in a powder magazine — in constant danger of vital catastrophe. The poison-destroying functions of his liver and the poisoning-eliminating capacity of his kidneys are taxed to their utmost to keep the proportion of ptomaines and leucomaines in the tissues down to a point which permits of the performance of the vital functions. The margin of safety, which nature has wisely made very large in order to provide for emergencies, is reduced to the narrowest possible limit, so that anything which temporarily interferes with the functions of the liver or the kidneys, or which imposes additional work upon them, may be sufficient to obliterate the safety margin, and produce an attack of grave or fatal disease."

Flesh food is generally not eaten immediately after the death of animals. In the parlance of the dining-room, meat at that early stage would be considered tough and fresh. The deceased animal is hung for several days until the germs of putrefaction have partially disintegrated the flesh fibres, when the meat becomes more tender. Dead flesh, especially of birds, also acquires in the process of decay a *haut-goût* which is much relished by the gormand. In that case, one takes into the stomach in addition to uric acid the very unpleasant germs of putrefaction, whose scavenger mission is to dispose of dead flesh.

Again, the flesh-eater not only wastes much energy and strength in fighting the ordinary microbes of putrefaction, but is always liable to encounter a still more virulent poison, called by Vaughan and Novy "putrefactive alkaloids," better known as ptomaines, which are evolved from certain processes of protoplasmic putrefaction. It is said that certain savage

tribes poison their arrows by sticking them into the flesh of decaying dead animals, and that butchers have to take great care not to cut themselves with their knives, and students and physicians in post-mortem examinations also avoid with great care what are called "dissection wounds."

Absolute disease is often occasioned by internal battles with the unfriendly germs of dead flesh; and a languid out-of-sorts feeling, which manifests itself sometimes without apparent cause, is often due, it seems, to this source of danger.

It may be said that vegetables are also subject to decay, though not so readily or offensively as dead flesh. Grains kept in dry air will keep in absolute soundness for centuries. Nuts and many of the fruits also keep for months in dry air or under conditions which would prove ruinous to dead animal flesh. When vegetables are in a state of decay, they are also unfit for food.

Thus we see that in meat-eating we encounter dangers: first, of the inevitable poison waste products which are more or less ready for elimination and are not yet eliminated; second, of the germs of putrefaction always to be counted upon in dead animal flesh; third, of the germs of actual disease.

We also find that appendicitis results chiefly from eating meat. The length and want of smoothness of human intestines render them unfit for the quick passage of dead flesh, and at the same time the favorite poison habit (pepper, etc.) produces catarrhal and weakened conditions of the mucous membranes and muscles of the intestinal canal. If they are not

normally active, they become clogged with putrid flesh matter. The appendix is a sac liable to receive retarded substances just indicated. It is also said that another disease (tape worm), prevalent enough to support specialists in its cure, springs necessarily from the eating of diseased flesh. This subject is fully discussed in "Shall We Slay to Eat?" by Dr. Kellogg.

It is said that fish are also tainted by various parasites. A New York naturalist, after careful examination, reported fourteen varieties of parasites in the fish of New York harbor into which the sewerage of the city flows.

One also finds that the disease of trichinosis so resembles that of cerebro-spinal meningitis, muscular rheumatism, winter cholera, etc., that it never gets full recognition for depredations under its own name. Fattened swine are but diseased flesh, the parasites and pathogenic germs of which range all the way from mange to trichinæ. The conditions imposed upon them for the purpose of fattening are especially unsanitary.

The alarming increase of cancer is confined almost solely to people who indulge in the favorite poisons. All vitiate the blood, and when blood is vitiated from any cause, cancers and tumors become common diseases. M. Verneuil, a French scientist, states that a study of the subject has convinced him that the use of meat as a regular food (and especially pork) is largely the cause of cancer. M. Roux, Dr. Jameson, F.R.C.P. (physician for diseases of the skin at the Edinburgh Royal Infirmary), and many others who

have made the subject one of special study, have published articles confirming this report of M. Verneuil.

Dr. Williams, F.R.C.S., in the *London Lancet* (Aug. 20, 1898), says:—

“Statistics show that the consumption of meat has for many years been increasing by leaps and bounds; . . . it is more than double what it was half a century ago when the conditions of life were more compatible with high feeding; . . . the proportionate mortality of cancer now is four and a half times greater than it was half a century ago.”

Dr. Haig suggests that cancer “may often have its way paved for it by the chronic and recurrent local irritation produced by urates in the tissues,” a condition always engendered by the use of flesh foods.

It is said that animal food has become comparatively cheap in Australia, where it is now generally eaten, and that notwithstanding an exceptionally salubrious climate, the prevalence of tuberculosis in its various forms, — scrofula, consumption, etc., as well as cancer — is becoming as common as in England. I leave this most disagreeable subject along with an endless abundance of testimony which thrusts itself upon any one who cares to look for it.

It may be mentioned that a Jewish custom requires the espionage of a meat inspector to be sure that no dead flesh polluted by actual disease shall defile the human organism. It is not pretended that inspection in the great killing establishments is carried out excepting in the most cursory way, — a glance of the eye, — and yet it is only by the microscope that one could positively determine the absence

of disease ; again, this inspection is not made outside large establishments. Small establishments are frequent everywhere, and generally belong to butchers themselves.

It is said that as a general rule these Jewish bodeks reject a third of the meat they examine (without a microscope) which meat is sent to the general market.

THE HAIG DIETARY

Dr. Haig furnishes a food scheme which is known as the Haig Dietary, and which many are adopting. In his book, "Uric Acid," he gives us the benefit of extensive experiments reducing the action and strength of foods to an exact scientific basis. Before quoting from him, it may be well to repeat that the element of food which gives muscular strength and energy is albumen ; that a product of waste matter in the system — uric acid — is highly poisonous ; that, on account of failure to pass off uric acid, one becomes blood-poisoned, which means deficiency in red corpuscles to conduct nutritive elements ; and when one is thus poisoned in a very mild degree, it may be recognized by a feeling of fatigue ; a little more expresses itself in headaches ; an habitual condition of uric acid poisoning expresses itself in gout, rheumatism, Bright's disease, and other diseases.

After mentioning that the system is called upon to eliminate its normal amount of uric acid, resulting from tissue waste, Dr. Kellogg says : —

" According to Landis and Sterling, the amount of uric acid excreted through the kidneys daily is 32.5 grains on

a flesh diet, and from three to ten grains on a non-flesh diet. . . . When we take into account the further fact that uric acid has been shown to be, when taken in connection with other poisons which are always found present with it, one of the most active of all known disease-producing agents, the figures cited become exceedingly significant. If a meat diet increases the amount of uric acid found in the urine from three to ten times the amount found when a pure natural dietary is used, it is evident that the question is well worth careful and earnest consideration."

Dr. Haig shows by careful experiments that in a carnivorous dinner one easily swallows, aside from other poisons, from 2 to 4.5 grains of uric acid.

"I consider, therefore," says he, "that every man who eats what is called ordinary diet, with butcher's meat twice a day, and also who drinks acid wines or beer, will by the time he is 35 or 40, and certainly by the time he is 50, have accumulated 300 to 400 grains of uric acid in his tissues, and possibly much more; and about this time . . . he will probably be subject to attacks of some kind of gout or chronic rheumatism. . . . If the blood of such a patient suffering from wasting diseases is examined every few weeks, a steady and continuous fall of the blood decimal, changes in quality of blood hemoglobins, etc., will be found corresponding to the amount of uric acid passing through the circulation, and this is no doubt the secret of the causation of much of the anæmia of old age and wasting disease."

Dr. Haig considers certain foods improper, in that they flood the system with this undue amount of uric acid, more than can be normally eliminated, and so

he divides his foods into "uric acid foods" and "uric acid free foods." He is not strictly vegetarian, in that he makes milk a large factor of his dietary. He says that he is interested in any food only as it bears on the prevention or treatment of disease. His foods, therefore,

"have one thing in common, that they contain no uric acid, or very little, indeed, compared with animal flesh . . . or vegetable substance rich in alkaloid, such as tea, coffee, and cocoa, which are, for reasons given in previous chapters, to be excluded."

When the tissues are poisoned by a retention of uric acid, they fail to properly assimilate food and become laden with waste products which are not quickly removed; thus an inability to produce force may result from two causes: first, by a selection of food which does not contain enough albumen; second, by a condition of uric acid poisoning which will not allow the tissues to make proper use of albumens.

Athletes and others who have experimented with foods free of meats and stimulants testify unanimously that for full nourishment much less food is required than when taking the old diet of meat, tea, coffee, or wine. This is chiefly owing to the following reasons. The blood is purer when relieved of the extra burden of the waste products of dead animals, — ashes, so to speak; the agents of the blood (hemoglobin) for carrying the nutritive substances are less poisoned and devitalized; the purer blood flows more readily in all the smaller passages; and last but not least, the walls of the entire circulatory tract are

more absorbent when free from the benumbing and drying influences of poisons. Mr. Eustace Miles concludes that tea-drinking often prevents nearly a third of the "proteids" (muscle builders) from being turned into useful material.

Less energy is also required to run an easy working machine than a rusty one. Sleep more readily promotes recuperation. The mind is clearer and the body lighter and freer from depressions. Reserves are made richer rather than poorer. And, moreover, when this delightful working order of the body machine is accomplished, the effects of a deleterious article of diet are perceived more quickly than before, because readily absorbent membranes take up bad food as easily as good food. It requires very little mud to cloud a glass of absolutely pure water.

After most exhaustive experiments, Dr. Haig found that he could produce at will any condition of headache, rheumatism, etc., by the administration of certain foods and stimulants, or could cure certain abnormal conditions of uric acid poisoning by discontinuing their use.

This tabooed list contains all animal foods (excepting milk and fresh cheese), tea, coffee, cocoa, absolutely all alcoholic stimulants, and tobacco.

Dr. Haig would also change our dietary to one of great simplicity.

"I may say also that simple food of not more than two or three kinds at one meal is another great secret of health; this may seem harsh to those whose day is divided between contemplating and preparing their food and eating it. . . .

“In any case, the best of health, strength, and nutrition are not to be obtained by waste of time and money on elaborate food when the simplest things are all that are really required and accepted by nature.”

Dr. Haig gives the quantity of nutriment needed as follows: Multiply the body weight in pounds (minus surplus of fat) by nine, and it will represent in grains the amount of albumen that is needed for a sedentary life; multiply it by 10.05 for an active life, such as that of the day laborer; multiply by 6 for old people, and by 15 for growing, active children.

“Example: A man weighs 160 pounds, but his active weight twenty years ago, before he became stout, was only 130 pounds, and he is now sedentary; therefore 130×9 equals 1,170, and 1,170, or say 1,200, grains of albumen per day will be required for his proper nutrition and force production. . . .

“Given sufficient albumens, it is a matter of very little consequence where they come from, excepting where poisons are swallowed with the albumen, as in case of flesh diet.

“With these simple facts kept in mind, there is no difficulty in getting sufficient albumen, and therefore sufficient strength and nutrition out of many kinds of foods besides those which form the staple diet of England to-day.

“But those who have been ignorant of these facts and have attempted to walk without the light of knowledge, have fallen into many and great errors, but chiefly in one of two directions.

“Either they have been ignorant of quantities required, and have greatly overestimated the nutritive value of garden vegetables and garden fruits, attempting to live on these alone, which it is almost impossible to do, or

they have underestimated the nutritive values of such things as milk and cheese (nuts, grains, etc., Ed.), and have attempted to eat them in as large quantities as of the above fruits and vegetables.

"It is also possible, by introducing more food than can be digested, to overpower digestion so that nothing is digested and absorbed, and starvation results, a fact which is brought to the front in the most interesting manner in the writings of Dr. Dewey ("The True Science of Living," by E. H. Dewey, M.D., Norwich, Conn.).

"Now, the albumens required for an active man of 140 pounds (140×10.5) is 1,470 grains, which can be obtained, for instance, from

10 oz. of bread	8 %	albumen . . .	340 grains
2 oz. oatmeal	12 %	" . . .	104 "
2 pt. milk	3 %	" . . .	525 "
2 oz. cheese	33 %	" . . .	281 "
1 oz. pulses	22 %	" . . .	94 "
Fruit, nuts, and vegetables, say $\frac{1}{2}$ to			
2 oz.			126 "
			<hr/>
			1,470

Now, it is obvious that such a diet list may be varied greatly in very many directions.

Dr. Haig's personal diet is approximately as follows:

<i>Breakfast.</i> — Bread and toast, or oat cakes		3 ounces
Butter	2	"
Porridge made of any of the various meals — oats, wheat, hominy, etc.		
	$8\frac{1}{2}$	"
Jam	$1\frac{1}{2}$	"
Milk, including that taken with porridge		
	1	pint

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Lunch. — Soup made with milk and vegeta-

bles, butter or oil	10 ounces
Bread	2 $\frac{3}{4}$ "
Butter	2 "
Bread and butter pudding . .	4 $\frac{1}{4}$ "
Cheese	1 $\frac{1}{4}$ "
Milk	6 "
Fruit	2 "

Supper. — Savory rice or macaroni with

cheese	3 "
Scones	2 $\frac{1}{2}$ "
Butter	2 "
Rice pudding	4 $\frac{1}{4}$ "
Fruit	5 "
Sugar with fruit	2 "
Milk	6-10 "

Dr. Haig's advice to athletes is very interesting. He mentions with great satisfaction the fact that the successful athletes of the present day are abstainers from meat foods and stimulants. He says:—

"It follows absolutely from my researches, published in 'Uric Acid' and elsewhere, that a diet entirely free from animal flesh, tea, coffee, and similar alkaloid containing vegetable substances, is far the best of all kinds for training and athletics. As shown, the material (albumen) for production of the required force can be made absolutely certain; . . . at the same time the enormous practical advantage is obtained of making sure of a free circulation through all the tissues, nerve centres and muscles alike, keeping them both well supplied with fuel and also free from waste products and refuse during their time of trial.

"Hitherto the knowledge we now have has been applied more or less haphazard . . . and yet even so, it has

achieved some wonderful results ; . . . the way in which cycling and other records are made and held by vegetarians, small as their numbers are when compared with the meat-eaters in this country, is really remarkable . . . it is evident that training and athletics as at present carried on upon a diet containing these poisons (poison in meat, tea, etc.) must also be carried on at a ruinous strain upon the vascular system, especially the heart and vessels ; and speaking as a physician, I believe that more or less serious results . . . organic trouble in the system is no very rare result of the process, even in the young and presumably healthy, as evidenced by such signs as palpitation, sleeplessness, dyspepsia, and more or less hypertrophy and dilation of the heart."

Dr. Haig's studies turn him naturally into a strict temperance advocate. He says :—

"Alcohol, tobacco, and other stimulants, we have already seen, do not produce force, they merely alter its distribution in time. When an acid causes feelings of well-being and an increased excretion of urea, it merely causes the metabolism of a certain amount of albumen, which was there before and independent of it ; it merely alters the time relative of the metabolism of this albumen, converting it quickly into available force and urea in one hour, while without the stimulant the same albumen might have been slowly converted into force and urea over three or four hours. . . .

"It follows that all artificial and unnatural stimulant is wrong ; it merely calls out the reserves of force and makes the body poorer in the following period to a corresponding extent ; every up is followed by a down, and nothing is really gained by stimulation. . . .

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“A food introduces force from without; a stimulant merely calls out force already in the body. . . . Now here is a fundamental distinction between a food and a stimulant, and one which is already known to athletes.

“A stimulant increases available force only so long as there is albumen available for it to act upon. Force is thus proportional to the quantity of food (if within the limits of digestion); but it is not proportional to the quantity of stimulant, and it bears a constantly smaller and smaller proportion to it as the stimulation is repeated.”

Dr. Haig further says that if athletes would take milk instead of stimulants they would have a continual supply of fresh power and would not run the risk of collapse, for reserves are always likely to run out by the repeated taking of stimulants.

He is especially hostile to tea and coffee, the poison they both contain, called zanthins, being similar to uric acid (see page 442). They act as stimulants at first, like alcohol, etc., and later they come into the blood as the very poison, uric acid, which is the cause of much of the depression.

“For we have seen,” said he, “that fatigue is partly due to deficiency of albumens, and also partly due to deficient tissue circulation, rendering the stock of albumens useless because they cannot get to the tissues, and this defective tissue circulation is the effect of uric acid, to which the zanthins in tea and coffee are equivalent.

“Practically those who cannot get through their daily work without calling out these reserves with alcohol or tobacco, the action of which I have considered in ‘Uric Acid,’ are weak or diseased, and are entering on the weak or diseased road to physiological bankruptcy. And who

are the people that are thus constantly calling on their reserves? Not those that live on the diets in the above tables, far from it, for those who go on these diets commonly give up alcohol and tobacco, if they used them before when on other diets.

“It is the flesh-eaters who want the stimulants, and the reason is simple, for on all flesh diets they are constantly taking that terrible poison, uric acid, or the zanthins, and those are first stimulants and afterwards depressants; they first unnecessarily call out the reserves and then plunge all into depression and feeble nutrition by blocking the circulation, and while this is going on, other stimulants as alcohol or tobacco or tea have to be called in to keep things going.

“It follows that the only way to get clear of stimulants is to give them up altogether; if you keep on using any of them you must be led to take more and more and gradually to add others which are more powerful.

“On the other hand to live on one's income, to have one's reserves entire and untouched for that evil day of trial which is sure to come to all, to work calmly and steadily without fuss, and without friction, is alone sufficient to make life worth living; and so great is the difference between physiological solvency and physiological bankruptcy that I do not exaggerate when I say that the knowledge of how to attain to the former has repaid me a thousand times over for all the time and trouble expended on experiments. Then again, the physiologically solvent know to the full the joys of a strong and useful life, while the bankrupt knows these joys but once, in the memory of what he was before he began to call on his reserves, and as these reserves get smaller and smaller, the stimulants, and even the more powerful ones, such as morphine and cocaine . . . fail ever more and more to bring

him even for a moment to the level of physiological health which the solvent man enjoys continually. . . .

“No doubt those whose bodies are full of urates as the result of years of flesh diet and tea are likely to get pale at first on the new diet, as it will bring a lot of uric acid into their blood on its way to be eliminated ; but this is merely the evil of the old diet, being brought out, and if they persevere they will in twelve or eighteen months have a better color than most meat-eaters, as, the uric acid having been eliminated, their blood will recover and improve.

“And then again, if the muscles produce force more smoothly, continuously, and pleasantly with less of friction, in a supply of albumens which are free from the poisonous products of dead animal tissues, and if muscular life becomes more pleasant from this cause, how much greater is the value of this physiological solvency when we realize that it applies also to the great centre, the organ of the mind, and find that here, also, the result is better work, better and more easily performed, and not only better work, but a more kindly, true, and noble relation to all the conditions and phenomena of life.

“Indeed, I think it is not too much to say that, just as in regard to force and nutrition, insolvency leads to ever less and less work, worse and still worse performed, as the reserves are one after the other called out and used up ; so in regard to mind does insolvency lead to ever less and less mental range and activity, and worse than all to narrow, mean, selfish views of the world and all it contains ; and this mental attitude is in many cases the prelude to that complete loss of mental power and balance — insanity. Our asylums are full to overflowing, and we are building new ones day by day. Would it not be wiser to spend a little money in cutting off the stream at its source? . . .

On the other hand, perfect, complete and continuous solvency of mind and body lifts both to ever higher and higher levels of power, beauty, and knowledge of truth ; forming at once the highest attainable development of the '*mens sana in corpore sano.*' "

Dr. Haig attributes the "all-pervading anæmia which is seen in London" principally "to the poisons of flesh and tea;" and says that many mental and moral obliquities are no doubt due to the obstructed circulation of poor and poison-laden blood.

"But these diseases have crept over us so gradually that we quite fail to recognize the full extent of our loss ; and even in my own case I should formerly have said that, apart from headaches, I had good mental and bodily health on meat and tea, because I knew no better. . . . I must point out also that the effect of a uric-acid-free diet on my own strength and power of endurance has been enormous ; words quite fail me to give an idea of it, and only those who experience it in themselves can fully understand what I mean.

"I believe that I do not exaggerate when I say that the effect of getting free from uric acid has been to make my bodily powers quite as great as they were fifteen years ago ; indeed, I scarcely believe that even fifteen years ago I could have undertaken the exertion I now indulge in with absolute impunity."

In his book "Diet and Food in Relation to Strength and Endurance," Dr. Haig again says : —

"The records we are now getting from all sides, show that the less animal flesh a people take, the better do they come out in trials of force and especially in endurance.

“As regards force production, those having equivalent quantities of albumen available from any source, animal or vegetable, will be equal to each other; but in endurance those will do best who get their albumen from . . . such sources as are practically free from uric acid and who do not indulge in such stimulant poisons as tea, coffee, and other alkaloid-containing substances. . . .”

Dr. Paulson remarks after quoting Dr. Haig:—

“It is true that a person can get albumen from meat, but we have to take with it waste products which have practically the same effect upon the system as tea, coffee, cocoa, and morphine in small doses. . . . When a man is drunk, he imagines he is wonderfully strong; so also when he gets meat.”

Again says Dr. Haig suggestively on this point:—

“The man who has dined on flesh, though possibly more lively and energetic at first, will find himself at the end both of his stimulation and available albumens and faced by rapidly falling urea and increasing fatigue, some time before his opponent, who gets a precisely similar allowance of albumen from other sources.

“Stimulation is not strength, but force rendered a little more quickly available; and it is always followed (and it must be so) by an exactly corresponding amount of depression.”

Again:—

“It follows, also, that quite an exaggerated and erroneous estimate has been formed of the power of meat to produce force, because its stimulating effect has been mistaken for power and the depression which follows has either been overlooked or later has been counteracted by

alcohol, tobacco, and other more harmful stimulants ; but the man who gets his albumen from a less stimulating source, having no early stimulation has also not subsequent depression, and so probably never feels the want of any alcohol at all. Hence it comes about that those who take alcohol or tobacco on a flesh diet, generally very soon give it up when they give up flesh, having no craving for any stimulant."

Dr. Haig also speaks of a certain amount of dullness in the morning hours as the very common effect of meat-eating — an effect experienced by all those who indulge in any habit of poison taking.

Regarding these discoveries of Dr. Haig, Mr. Eugene Davis writes me as follows : —

"In my opinion Dr. Haig will in time by the verdict of all mankind outrank all other discoverers — not because the great achievements of others are not entitled to due praise, but because Dr. Haig's work more intimately affects the fate of humanity, here and hereafter, and will exercise a more powerful influence upon the destinies of the human race. However great the discovery of the Origin of Species and the power to analyze and subdivide the solar rays, the world could in the absence of such knowledge have enjoyed many of the benefactions of the Creator ; but the man who by strict scientific methods demonstrates that the daily food of mankind, above all, the food of the cultivated and dominant forces of society, contains rank poisons from which proceed practically all ailments, all malaise, all insanity, and all crimes, such a man not merely making the discovery, but suggesting and proving the remedy, is the greatest benefactor of his race since the opening of the Christian era.

“ In an age in which science is coming to be appreciated for its practical bearings, recognition cannot be denied the most urgent consideration of all that enables mankind to reach its ideal. We are all to be congratulated that throughout the ages of blood and iron men *did* adhere to the ideal, and ever aspired to a better and nobler life than seemed consistent with their environment. I fully believe that the masterful labors of Dr. Haig will largely account for the many vagaries and lapses of mankind from the path of progress, and for the numerous retrocessions of civilization, during which the jails and lunatic asylums are constantly expanding their walls.”

DR. KELLOGG'S DIETARY

The dietary recommended by Dr. Kellogg differs somewhat from that of Dr. Haig. Instead of milk, fresh cheese, and the cereals constituting the chief muscle-making food of his menu, Dr. Kellogg's staff of life consists of the cereals and nuts. Indeed, he eliminates milk and cheese, considering that the eating of animal food of any kind, milk included, exposes us to danger of animal diseases. Although he does not specially mention it, there is a growing tendency to add a few drops of preservatives to milk that is sent to city markets, to prevent souring. Dr. Kellogg calls all animal foods “germ foods.” He considers that an absolutely simple dietary, consisting of cereals, nuts, fruits, and vegetables in the glory of their endless natural flavors, is quite sufficient for the normal palate of reasonable man; but in the goodness of his heart he recognizes that man is pampered man, and he sets to work to compromise with him.

He attempts very successfully to imitate flavors of the old questionable dietary through the combination of wholesome products of the field, garden, and forest. And it so followed that at the famous sanitarium at Battle Creek a new feature was added, — a laboratory for experiments and invention of new foods to take the place of animal foods. The factory, at first intended for the use of patients only, has grown into an enormous establishment where continually new health foods are being invented and produced for all who want them; as for that, factories are springing up over all the country for the manufacture of new cereal and nut foods to supply the ever-increasing demand for such articles of diet.

Dr. Kellogg also provides us with a substitute for milk, helping to carry out the prophecy of Dr. Richardson, who said that in time milk, as well as other forms of animal food, would be derived directly from the vegetable kingdom. Two of Dr. Kellogg's substitutes for cow's milk are made each from almonds and peanuts slightly roasted. When crushed to a fine pulp and mixed with more or less water, they form a cream or milk in which the proportion of fat and albumen is practically the same as in cow's milk. When the nut pulp is mixed with an equal quantity of water or cooked fruit, it forms a substitute for butter; more water makes cream, and still more a milk, which resembles in appearance cow's milk. If left to stand, a cream rises.

In an admirable book of Dr. Kellogg's, "The Living Temple," which every physical culturist should read, he tells us how to prepare cocoanut cream, as follows: —

“Put the cocoanut meat through an ordinary vegetable shredder, pour over the pulp twice the quantity of boiling or scalding water, and let it stand half an hour; then squeeze the juice through a fine cloth (cheese-cloth) and let the milk so obtained stand for three or four hours in a cold place. A rich cream rises which may be used in the same way as dairy cream, or, like ordinary cream, may be worked into butter.”

Other foods prepared under the direction of Dr. Kellogg, to be used as meat substitutes, are various mixtures of nuts, gluten, or the entire grains, and are called protose, nuttolene, nuttose, etc., which used with various seasonings somewhat resemble meat and game foods. These preparations are canned, and keep indefinitely. They are sliced and broiled (possibly with *maitre d'hotel* sauce) or used in the making of any fancy dishes for which meat is used, such as croquettes, timbales, meat-pies, salads, hashes, etc. The chief difficulty with these nut and gluten preparations is, that being much richer in nutritive qualities than meat (about 25 per cent richer), they cannot be so freely eaten without danger of indigestion. Nuts, being an exceedingly concentrated food substance, should be eaten very sparingly, and well admixed with other food less rich in nutritive qualities. Two to four ounces of these nut foods are all that can be safely taken at a meal. Dr. Kellogg prefers all breads to be served in hard biscuit form, which requires slow mastication; and he discourages the use of cane sugar.

When one comes to consider the number of new methods of hygienic treatment which Dr. Kellogg has

perfected, his original research, the large number of books and articles of various kinds which he has written, the training schools for physicians and nurses which he has established, his numerous lectures, and the vast number of patients which directly and indirectly he treats, it is evident that this great hygienist accomplishes an almost incredible amount of work. I was anxious to know his personal dietary, and upon inquiry found it to be as follows: Some whole grain, generally prepared in hard form; a vegetable — preferably baked potatoes; a little fat, possibly cocoanut cream or butter; fruits. For drink, water; or for a warm drink, a little almond cream diluted in hot water. He takes but two meals a day, and adopts generally the same simple menu. He masticates his food until it is reduced to a fluid before swallowing.

It is further interesting to learn that notwithstanding a frail constitution in youth, systematic physical culture has now given Dr. Kellogg the most robust health. I know of no feat of mental activity and endurance so great as that displayed in the writing of his book just published, "The Living Temple" (568 pages), which, with the aid of three stenographers, was accomplished in ten days. Sometimes the sessions of work lasted twenty hours, but never so long that a few hours' sleep would not restore him to full vigor.

Some one remarked to Dr. Kellogg that he worked like a horse. "Perhaps it is because I eat like a horse," said he.

This dietary is not very different from that of another great brain-worker and vegetarian, Count Tolstoi. From an article written by Baroness von

Kettler, in *Physical Culture*, we find that his diet consists principally of oatmeal, fruits and vegetables. He disapproves preserves and rejects poison stimulants of all kinds, including tea and coffee. For these latter beverages he substitutes a warm drink made from barley with the addition of almond cream.

GENERAL COMPARISON OF PHYSICAL STRENGTH AND ENDURANCE

There seems just now for the first time in centuries to be almost everywhere a rapidly increasing interest in the subject of "vegetarianism." Let us, however, enter a protest against the word "vegetarian" as not satisfactorily expressing the food reform that is bound to come. The word comes from the Latin *vegeto*, meaning to be vigorous, but its derivative popularly signifies garden vegetables only. Grains, fruits, and nuts are not vegetables as generally understood. Or if vegetables include in their meaning the products of the earth too generally, there are opium, tea, coffee, tobacco, and other products and perversion of products (alcohol) which are unfit for food. One would indeed starve on a diet of certain vegetables only, as for instance, of white bread, potatoes, cabbage, tea, coffee, wine, or beer. Many without knowledge of proper food proportions have tested "vegetarianism" and pronounced it a failure. We need a new word to express a dietary of pure foods, from whatever source they come, which maintain the body in its state of highest physical development. If meat foods could promote health in its best development, they would

inevitably remain, regardless of the horrors of the transportation ship, the cattle car, and the slaughter-house. The brutalization of the butcher himself would also probably count as nothing. If any of the favorite poisons, now so-called, could make a clean record as pure foods, they would also remain for the delectation of mankind.

Vegetarian societies have felt the need of a new word to express their principles, and long discussions of the subject have ended in nothing decided upon. I found the problem an interesting one, but met with no success in efforts to propose a short word, expressive of the subject. After some searching for synonyms and turning about of the words "pure" and "food" in various languages, I finally selected and now propose the word "sanditarian" for vegetarian, — *san* being an abbreviation of *sanus* (healthy) and *dit* an abbreviation of diet, — a healthy diet. The word "sanditarian" is at least no longer than "vegetarian." "I am a sanditarian" sounds well enough. We will at least try the word in this chapter to see if it answers the purpose.

Owing to latest researches by scientists, neither deceased flesh nor poison stimulants can be included in the diet which we will here call sanditarian. Just what foods may compose it will probably never be fully settled, as individual idiosyncrasies must count for something. Certain foods though free of poisons suit some and not others. For instance, Mr. Eustace Miles finds himself not so well after taking oatmeal, eggs, or sugar. In my own case oatmeal as a diet is most satisfactory, and all peanut foods are unfor-

tunately unwholesome. Through health societies, personal experiences in the use of so-called wholesome foods will be most interesting, all of which will go far to determine the dietaries best suited for the majority of people. So far, sanditarianism has been comparatively little tested. Vegetarians have too often taken tea, coffee, peppers, spices, and other favorite poisons which defeat the best results of an anti-meat dietary. In most cases vegetarians have been broken-down invalids at the start, who have found themselves comparatively well after the abandonment of meat, but still they poorly represent the ideal health aristocrat.

The late tests of sanditarianism by professional athletes are especially valuable. In bicycle contests the record-makers are practically all abstainers from meat and all poison stimulants. We find among cases of great endurance that of Charles Miller of Chicago, who won a six-days' bicycle race at Madison Square Garden in New York. A more severe test of physical strength can scarcely be conceived, for he rode 2,007 miles in six days and nights, having had but nine hours' sleep. He, as well as C. Weller, who came in second, is an abstainer from meat, alcohol, and tobacco.

A couple of years ago a national walking match in Berlin attracted the attention of all the world. The distance to be walked was seventy English miles, to be covered within eighteen hours. There were twenty-two starters, of which eight were vegetarians (so-called). The very interesting climax displayed the fact that the first six to arrive at the goal were the

vegetarians. The last two missed their way and walked five extra miles. Yet all of them in splendid condition reached the goal well within the time limit. Not until an hour after the last sanditarian arrived did the first meat-eater appear, completely exhausted; and he, moreover, was the only one to appear, the others having dropped out of the contest after thirty-five miles.

Another walking match of 361 miles between Berlin and Vienna has become equally famous in that the race was made by thirteen flesh-eaters and two sanditarians. The first flesh-eater arrived at the goal twenty-two hours after the two sanditarians had completed the race; and neither of the latter were trained pedestrians like several of the others.

After these races the medical officers of the German War Department sent for the sanditarians to inquire particularly respecting their diet and habits of life.

Vegetarian restaurants (so-called) are springing up all over Germany as well as in England. It is said that there are forty vegetarian restaurants in Berlin, and over fifty in London. They are beginning to be introduced into several American cities, New York, Chicago, Detroit, San Francisco, Boston, Washington, etc.

The *London Daily Mail* has lately published a large number of letters in answer to the request of Mr. Eustace Miles, concerning experiments in eating.

Dr. Haig wrote as follows:—

“I have no doubt that a properly selected diet of bread and fruit will soon revolutionize athletic records, and I look upon Mr. Miles, Mr. Olley, and others in this country, and

678 The Aristocracy of Health

Karl Mann (the champion walker of the world, Ed.) and others in Germany as the early pioneers of an important diet reform.

“The scientific explanation of their results is quite simple and can be expressed in one line as — diminished friction in the machinery.”

In fact, reports from the athletic world everywhere testify to the superior endurance of sanditarians over flesh-eaters. It has taken us a long time to find out what might have been suggested long ago by the wonderful endurance of anti-meat athletes in other countries. For instance, the meat-abstaining Hindoo runners think nothing of covering a hundred miles a day for several days in succession. In some portions of the Andes, the “vegetarian” porters carry on their backs both travellers and their luggage, for a score of miles without stopping for rest.

We read of other vegetarians — Japanese athletes, and of the Chinese porters of Hong Kong; of the Turkish, Grecian, and South American carriers, who with ease perform great feats of strength and endurance. We read of the superiority, as workers, of the “vegetarian” Arabs and Hindoos over the meat-eating and beer-drinking English who labored together on the Suez Canal. It is most unfortunate that the use of tea, coffee, spices, beer, tobacco, and alcohol has been having an ever-increasing record in polluting not only the pure blood of the wealthy, but of the sturdy yeomanry also.

There is no known animal comparatively so strong as the nut-eating gorilla, or the rhinoceros; nor so

swift as the deer and the hare. There is no small animal so strong and active as the nut-eating squirrel. For long sustained strength, the grain-eating horse and camel can outdo the meat-eating lion, tiger, and hyena, whose strength is comparatively spasmodic, fitful, unintelligent, and unenduring.

The English are naturally great sanitarians in some respects, in that they take naturally to certain hygienic methods. The equable climate of England is especially suited all the year to abundant physical exercise ; besides, the English are punctilious about fresh air, cleanliness, rooms not overheated, and gymnastic training. Were their dietaries free of both flesh foods and poison stimulants what a race would they become !

Statistics show that the English race is degenerating, as the cancerous growth of the poison mania is spreading over them rapidly. The physique of the English at present does not compare with that of the English of old, according to all the ancient chroniclers. In Pinnock's edition of Goldsmith's "History of England," is the following note :—

"It is stated by Plutarch that the ancient Britons were so temperate that they only began to grow old when one hundred and twenty years of age. . . . Their food consisted almost exclusively of acorns, berries, and water."

Goldsmith says ("History of England") :—

"Boadicea, Queen of the ancient Britons, in a speech to her army when about to engage the Romans, said : 'The great advantage we have over them is that they cannot,

like us, bear hunger, thirst, heat, or cold ; they must have fine bread, wine, and warm houses ; to us, every herb and root are food, every juice is our oil, and every stream of water is our wine.' ”

Henry, in speaking of the ancient Britons, says : —

“ They were remarkable for their strength, for their fine athletic forms. They excelled in running, wrestling, and all kinds of bodily exercise ; they were accustomed to fatigue, to bear hunger, cold, and all manner of hardships.”

I also quote from the work of S. Rowbotham : —

“ The ancient gymnosophists of India subsisted entirely upon fruits and vegetables. It was a part of their religious ordinances to eat nothing but what the sun had ripened, and made fit for food without further preparation. . . . It is said that this people were perfectly healthy, and lived to 150 and 200 years.”

“ Do you know,” Cyrus asked the ambassador of a luxurious potentate, “ how invincible are men who can live on herbs and acorns ? ”

This same Cyrus (Rollins' “ Ancient History ”) —

“ raised Persia from an obscure, rude colony to one of the most powerful and splendid empires that the world ever saw ; performed more extraordinary marches, fought more battles, won more extraordinary victories, and exhibited more personal prowess and bodily power of effort and endurance than almost any other general that ever lived ; he subsisted from childhood on the simplest and plainest diet of vegetable food and water ; and the Persian soldiers who went with him through all his career of conquest, and shared with him all his hardships, toils, and dangers, and on whom he always placed his main dependence in battle,

and with whom he was able to march thousands of miles in an incredibly short time, and conquer armies of double the number of his own, were, like himself, trained from childhood on the same simple food, and strictly adhered to the same simplicity of vegetable diet, throughout the whole of their heroic course, without relaxing from the stern severity of their abstemiousness, even in the hour of victory when the luxuries of captured cities lay in profusion around them. . . .

“In the most heroic days of the Grecian army, their food was the plain and simple produce of the soil. The immortal Spartans of Thermopylæ were, from infancy, nourished by the plainest and coarsest vegetable aliment; and the Roman army in the period of their greatest valor and most gigantic achievements subsisted on plain and coarse vegetable food. When the public games of ancient Greece—for the exercise of muscular power and activity in wrestling, boxing, running, etc.,—were first instituted, the athletæ, in accordance with the common dietetic habits of the people, were trained entirely on vegetable food. They were absolutely forbidden to use wine, and required to observe the strictest continence. . . . In later times—after animal food had begun to be common among the people, and flesh-meat was found to be more stimulating and to render their pugilists and gladiators more ferocious—a portion of flesh was introduced into the diet of the Athletæ. But, according to the testimony of early Greek writers, it was soon found that the free use of this kind of aliment made them sluggish and stupid.”

“If the Saracens,” said Felix Oswald, “had persisted in the simple living of their fathers, the nineteenth century might see Moorish kingdoms in southern Europe, and Arabian science and fruit gardens in the place of deserts and monkish besottedness.

"It is singular," again exclaims Oswald, "that our temperance societies direct their efforts only against the fluid part of our vicious diet for reform. . . . The Romans of the ante-Cæsarean era were strangely superior to us as physical beings. Lycurgus, the Spartan, makes the diet of his countrymen the subject of careful legislation. . . . Fruit, bread, cakes, and music, entertained the friends of Plato at those suppers of the gods of three or four hours, which Aristotle preferred to so many years on the throne of Persia; but the very next generation witnessed the drunken riots of Babylon and the general introduction of Persian manners and luxuries."

"The consensus of writers," says Dr. Dinsmore, "from the time of the Greeks to the present day, all unite in saying that the primitive peoples had health and vigor, while it has been reserved for civilization to breed diseases whose name is legion, and to witness imbecility, decrepitude, and premature death go hand in hand with luxury and plenty. The race has strayed far from the path of health and peace, and most likely must return by the route whence it came."

The testimony of Dr. Kellogg is very interesting, having had a large experience in the attempt to introduce sanditarianism in America. He says:—

"The Battle Creek Sanitarium organized in 1866 has supported vegetarian principles from the outset, and now with its large family of one thousand employees, nurses, and students, all vegetarians, and its five or six hundred patients, for none of whom is flesh food ever prescribed, the institution is sending out annually hundreds of converts to the new or rather old and better way of life. The institution has more than twenty-five branch establishments (now 50, Ed.) in different parts of the world, in all of which the same principles are held and practised. These institutions

and their constituency represent at least 25,000 vegetarians, and the number is rapidly increasing.

“The presidents of Battle Creek College, South Lancaster Academy, Walla Walla College, all flourishing schools, in their annual reports the year after the adoption of a vegetarian regimen, reported that the health of the students had never been so excellent; that while disease had previously been rife among students, requiring almost constant attention of trained nurses and physicians, professional services of this sort had been almost wholly dispensed with under the new dietary, there being almost uninterrupted health among the students.”

THE INFLUENCE OF A MEAT DIET ON MENTAL ACTIVITY

Another important point to be considered is the effect produced by the “germ and uric-acid foods” on intelligence.

The carnivorous animals are less intelligent than those whose food supply comes first hand from purer sources. Lions, tigers, hyenas, etc., are scarcely teachable. Their fitful, feverish, unstable reasoning powers are dominated by brutish instincts, and curious enough, notwithstanding their physiological equipment for coping with a germ-infested uric-acid-laden diet, their intelligence develops by a gradual change to a pure food dietary.

A story is told in “Good Health” of a dog sent to a trainer for an education. Along with the dog was sent a note from his master, stating that as Bruno was a vegetarian, he must have no meat. The dog fancier promptly replied that Bruno’s owner need have

no fear about his giving meat to Bruno or any other dog in his charge, as he had long since found that it was far more difficult to teach dogs anything when fed with meat. This calls to recollection the fact that the fine dogs at various kennels are chiefly fed grain foods made in form of dog biscuits, and that dog fanciers tell you that dogs fed on meat have no "wind." We may also remember that without much exercise a meat diet gives fits to puss, and a savage, unreasonable, uncertain, cruel and mangy tendency to Carlo. In the evolution of the dog, he more approaches humanity in intelligence and the deer in activity by abandonment of meat. Experiments to test a gradual change of diet on other carnivorous animals will be most interesting. Were all animals originally vegetarians? Did they adopt flesh foods after the manner of cannibals, because they found by experiment that living creatures, including man, were edible? Because wolves have a voracious appetite for man as food, is that a reason to suppose that God intended man as food for wolves? Singularly enough in the process of evolution the wolf becomes the dog — man's best friend and most faithful protector.

Would several generations of pure food diet transform tigers, lions, hyenas, wolves, and wild cats into comparatively kind and reasonable animals, or would a purely carnivorous diet transform man into a being of brutal and unreasonable instincts? All sanditar-ians testify to clearer mental faculties, after the abandonment of a flesh diet, "less friction in the machinery." In books on uric-acid diathesis, reports are given of microscopic crystals of biurate found in

various parts of the body which cause the sharp pains felt in gout, etc. One writer tells us that in case of an excess of uric acid in the system, these jagged microscopic crystals blockade the free passage of blood through the microscopically fine blood-vessels of the brain, frustrating its working order like clinkers in a furnace.

“If,” says Mr. Eugene Davis, “uric-acid poison can turn awry a finger joint or disable an entire limb by uratic concretions, what havoc may it not create in the delicate convolutions of the brain — in the seat of the will and the intellect ? ”

When studying the results of diet on the mentality of races, it must be remembered that extremes of climate do not favor the highest physical or mental development. The vegetarians of India and other hot, enervating countries suffer climatically as well as the heavy, dull, inactive, meat-eating inhabitants of Arctic regions. Abstaining from meat in India is not, however, a test of sanditarianism. Their foods are very much spiced ; and, by the way, a curious bit of information is given us concerning Dr. Hayes' second journey to the Arctic regions. On his first journey his men were fed fat animal foods, according to the custom of the country. On the second journey grain foods largely replaced animal foods, with the result of far less illness. Every chemist of course knows that there is nothing in blubber that is not contained in vegetable fats, and the use of the former merely proves how human life may be miserably sustained on the worst of foods.

THE RELATION OF MEAT-EATING TO A CRAVING
FOR STIMULANTS

The subject of sanditarianism is again important, when we find that meat-eating fosters the almost universal desire for poison stimulant.¹ A craving for artificial stimulant comes only with fatigued vital power, resulting generally from habitual uric acid or some kind of blood-poisoning. Also, wherever flesh-eating is prevalent, the use of salt (as a preservative), pepper, spices, tobacco, alcohol, etc., exists correspondingly.

It has been shown how any and every poison stimulant acts in the same general way upon the human system, producing at first a stimulation that is not newly acquired strength, but merely "force rendered a little more quickly available," and which is always followed by a corresponding depression; that for relieving the depression some kind of poison is called for, its strength needing ever to be increased.

"Now vegetarians," says Dr. Haig, "cut through this vicious circle at one blow, by making it impossible for any great excess of uric acid in the blood, and so removing the cause of the depression, which leads to the craving for stimulants."

Dr. Paulson says:—

"In our personal experience at the Sanitarium (Battle Creek) we find that when we put an inebriate on a simple

¹ Says Dr. J. C. Jackson ("The Drink Crave, How to Cure"): "It is morally and physically impossible for any man to remain a drunkard who can be induced to forego the use of tobacco, tea, coffee, spicy condiments, common salt, flesh meats, and medicinal drugs."

diet of fruits and grains, his thirst for liquors vanishes almost as if by magic ; and again, others who have been apparently cured of this habit, if they go back to the use of meat, invariably go still further and begin to drink."

Dr. Paulson tells us that the system of cure for inebriates is absolutely simple ; that the keynote of treatment is based on the fact that normal vital organs desire no poisons ; that the aim is to develop normal vital organs ; that those things which make vital organs abnormal are to be cast aside, not only the stronger poisons and meat, but all spices, pickles, and condiments, which proclaim their injurious tendencies by their biting flavor. No drugs as medicines are used. Patients are tided over highly nervous conditions by being placed in baths of water at blood heat (about 96° or 98°), where they can remain from half an hour to several hours, possibly securing refreshing snatches of sleep, and without unpleasant after-effects if the water is not made warmer or colder. The application to the skin of hot fomentations (flannel cloths twisted nearly dry from boiling hot water and covered with dry flannel) are also used for relieving distressing pains. Patients are to become interested in flower and vegetable gardening and in all sports which include sunshine, open air, and physical exercise ; nothing is given to the weak stomach that it cannot naturally digest, nor too much, the mistake of overeating being duly considered ; and so by the simple rules of hygiene, human wrecks are so cured that by a continuance of this simple life they remain cured. This physician believes that

the home table has much to do in the making of inebriates. The natural taste of a child, like that of the lower animals, spurns all spices and poisons, but by the gradual use of peppered, salted, spiced, gingered articles of food, and other dietetical iniquities, possibly tea and coffee themselves, a weakened condition of vital organs is cultivated and developed, and what begins with pepper at the mother's table often ends with whiskey and tobacco. The lower animals continue to eat during their entire lives the simple diet of their youth, free from all poisons; and if the human animal would follow such an example, there would be no inebriates and far greater gustatory pleasure in eating.

THE OBLIGATION OF KINDNESS TO ANIMALS

However sharp was the regret to find the execrable characteristics of several favorite poisons, not a shadow of sadness follows light on the subject of uric acid and other iniquities of a meat diet. May the day soon come when the murder of our fellow-creatures for burial in the human stomach will be regarded with horror! The more one studies the subject, the more atrocious it appears. Coy feathered friends, when the wee peeping ones await your coming, may you not lie helpless and bleeding! Lithe creatures of the forest, many a fleet gambol to you, unhaunted and unpursued! Life is a precious gift granted us all but once.

Would that the Confucian laws of kindness to all living things, and the spread of peace on earth and

good will to all, might be more firmly intrenched among Christians! The humane desire to live and let live is the natural and happy one. The pleasure of killing, along with all brutal instincts, is but the result of unnatural dietetic habits of life, cultivated through many generations. The impulse to kill becomes that of all flesh-eaters. The tame squirrels, free to roam in Central Park, the friendly pigeons of Venice, the happy animals of the Yellowstone Park, all testify to the delightful companionship of man and our dumb fellow-creatures, when man becomes less brutal and the impulse in his heart to kill has been tempered by an education which includes, as a principle, simple kindness to others. Is man alone entitled to the great boon of life? Have animals no rights?

And how revolting, after all, is the sight on a dining-table of a murdered bird, a tiny corpse, laid out on a platter ready for burial, and surrounded by knives and forks! The dissected flesh of a dead animal! a portion of his back! of his thigh! of his neck! of his tongue! of his heart! perhaps the head of a winsome calf, with eyes half closed, mute in death, while the mother is lowing. Such ghoulisn scenes better fit the bone-bedecked den of an ogre, or the feast of a hyena.

And what is more abhorrent than the mission of the cook who handles such foods? Oysters ripped open alive! living lobsters, crabs, terrapins, thrown alive into boiling water or fat! Daily manipulation of deceased animals! Such occupation degrades the profession of cookery. How pleasant is the thought

that the succulent foods of earth, pure and fresh, contain all man's requirements for the table, and that cookery which includes but the humane, the wholesome, and the æsthetic, easily becomes a veritable high art.

The pleasure we may give to animals is purely unselfish. It is not recorded in public print and is repaid by nothing greater than affection, confidence, and gratitude. We are too apt to consider these our fellow-creatures as things, rather than living beings after the order of ourselves. We forget that their flesh is like our flesh; their blood like our blood; that their hearts beat like our hearts; that their nerves thrill with joy or quiver with pain like our nerves; that in short their physical organization is practically like our own. We forget their love and affection is like our love and affection, their sorrows like our sorrows, their happiness like our happiness.

“We forget the wonderful likeness that exists between us and the lower creatures,” says the humane Dr. Kellogg; “that they possess to a wonderful degree the same capacities, the same appetites, and are subject to the same impulses as we. An ox, a sheep, can hear, see, feel, smell, taste, and even think, if not as well as man, at least to some degree after the same fashion. The lamb gambolling in the pasture enjoys life in much the same way as the little child frolicking in the meadow. A horse, a dog, or a cow, can learn, remember, love, hate, mourn, rejoice, and suffer like human beings. Its sphere of life is certainly not so great as man's, but life is none the less real and none the less precious to it; and the fact that the quadruped has little, is not a good and sufficient reason why the biped

who has much should deprive his brother of the little that he hath. For the most part, it must be said that the lower animals have adhered far more closely to the divine order established for them than has man. . . . But although the sheep goes dumb to the slaughter, do not his eloquent eyes appeal for mercy? Do not the bleating of the calf . . . and the cries of hundreds of other creatures that we call dumb, but to each of whom nature has given its characteristic mode of speech, rise in eloquent protest against the savagery to which the instincts of our cannibalistic ancestors lead us?"

I had lately a lesson on the slaughter-house. Answering an advertisement for a footman, a large, fine-looking man about twenty-five years of age appeared, who said he had previously been following the trade of butcher.

"I am sure you did not like that sort of business?"

"One gets accustomed to almost anything if he has it to do," he replied. "The first day I went to the slaughter-house, I backed out, and would not enter, but had to come to it afterwards. I never have gotten quite free of feeling for the smaller animals, the lambs, for instance." In answer to a question for further information, he said they tied all four legs together and laid the little animals on the floor, some twenty or thirty at a time, and then proceeded to cut their throats. "Their bleatings and struggles do make one feel sorry for them when they look so innocent, but they are not so bad as the kids. The kids (sold as lamb) seem to smell the blood and steel when even in sight of a slaughter-house, and the fuss they make up to the last is really astonishing."

Did I employ the man? And yet he was not altogether devoid of humanity. Which is worse, after all, to do the killing one's self, or make others kill, to brutalize one's self or brutalize others. As Plutarch exclaimed, "If, in spite of all this you still affirm that you were intended by nature for such a diet, then to begin, kill you yourself what you wish to eat. . . ."

Count Tolstoy happened to come across a book called the "Ethics of Diet." It was a spark which kindled and set on fire a long train of ideas; for Count Tolstoy turns quickly to all live interests. He especially desires a conduct which may insure the most and best of life.

The result was a book, "Plaisirs Cruels," in which the discussion of vegetarianism versus flesh-eating is treated in its relation especially to morals. The man of big heart and brain could not long pursue the subject without striking the humane side of the question and taking up the championship of the animals. He declares that the subject of proper nourishment has claimed the attention of no one. He explains physiologically the mistake of overeating, and continues:—

"In a struggle against passions, one must commence by those which are the source of others. . . . The gourmand is incapable of struggling against idleness. The gourmand and idler together have never the force to struggle against evil passions; . . . without abstinence there is no moral life. . . . We should struggle against gourmandizing . . . and commence with the young. . . . In our society, abstinence is entirely forgotten. Youth is absolutely *aban-*

doné. . . . Regard the faces and bodies of the men of our society and of our epoch, — the chins and cheeks are hanging and the abdomen is prominent; and the more they eat, the more they not only believe themselves happy, but strong."

The study of a meat diet in its far-reaching effects led him to wish to see personally that animal inquisition — a slaughter-house, and to know all its hideous phases. He met on the public road a butcher on his way to Toula, whose especial duty was to thrust the knife. "I asked him," said Count Tolstoy, "if he pitied the animal when about to strike him." "Why have pity, when it is necessary to be done?" replied he. When I told him that it was not necessary to eat meat, that it was only a luxury, he said, "It is in fact regrettable, but what can one do? one must gain a living; my father would never have killed a chicken in all his life, and formerly I feared killing." Count Tolstoy talked with others, among them a soldier butcher, who, like all the others, expressed astonishment when asked if he had pity for the poor animals. He was finally convinced that it was pitiful. "Above all," exclaimed the butcher, "when the poor beast is tame and willing and walks, poor thing, in all confidence, *c'est grand pitié.*"

Count Tolstoy visited the slaughter-houses, and his descriptions of the frightened and tortured animals are word pictures which wring the heart. He tells us of the brutality which often follows resistance on the part of the animal during the time of immediate death preparations. Of their kicking and struggling while practically skinned alive.

I find in various magazines articles on the horrors of animal slaughter written by English women who have had the courage to investigate the subject. Lady Jeune took it upon herself to inquire into the necessary and unnecessary sufferings of animals in transportation. Lady Paget also writes some admirable articles, one of which, "Vegetable Diet," found its way into the *Popular Science Monthly* of November, 1893.

"I have all my life thought that meat-eating was objectionable from an æsthetic point of view," says she. "The ghastly butcher-shops which one meets at every turn appear to me an incongruity, not to say more, in this civilized age. The fishways . . . persecute one with their pungent odor. Another dread sight which meets our eyes abroad, especially in Germany and Austria, . . . are the slaughtered calves, paraded about the streets, a dozen or two of them hanging over the sides of the cart."

Animals on the way to death, by rail or boat or road, are not carefully considered. "They are to be killed any how." Thirst, hunger, over-crowding, exposure to cold and heat, blows, terror, exhaustion, and wanton barbarity on the part of drovers, who are of all kinds, are matters to be expected. With even great care suffering cannot be prevented. Of course a large, healthy animal dies hard and with excruciating pain, and so does any healthy being. Watch minutely the gasping, the quivering, the agonized expression of the eye of a fish as you lacerate its mouth with the hook and thrust it in the basket.

How absolutely diabolical is the habit of packing

live turtles, lobsters, etc., in barrels, possibly in ice, to be thrust alive at the end of their destination into boiling water or fat !

I once saw a French *chef* throw a dozen of live *écrevisses* (small lobsters) on an almost red-hot saucepan, and without a wince, he immediately threw over them a sprinkling of red pepper and cut-up herbs, placed over a cover and thought no more of it. That ended my liking for soup *à la Bouillabaisse*.

How absolutely abominable is the sight of a market ! the bleating of calves, solid barrels of living creatures, frightened bunches of chickens, rows of dissecting-tables like those of the medical student. We read with horror the details of the murder of man by man. Here we have it in its revolting hideousness — blood, corpses, dissection, bird and beast, and the “timid beasties.”

The ghoulish habit of flesh-eating induces a bluntness and savagery of feeling for the agonies of creatures murdered, but upon the abandonment of that kind of food the human heart softens to our fellow-creatures, and their happiness and sufferings have new interest.

To get animals into cars often requires most merciless beating. Official statistics of railway companies show that thousands arrive at the stations dead, and that thousands more are crippled, bruised, and with broken limbs and horns. The cattle are sometimes kept for several days and nights in hot weather without food or water. Animals with broken limbs are hauled out and driven to the slaughter-houses.

"A story is told in the *London Daily Telegraph* of a vessel arriving at Plymouth having encountered heavy seas for fifteen days, and that of her living freight of cattle, 300 head had been killed by being thrown about on each other in a struggling mass, and that when the wretched beasts were so mutilated as to be doomed, and the movement of the vessel precluded the men from dealing with them, they were made, by means of tortures impossible to describe in a public newspaper, to jump overboard from sheer physical pain.

"The veterinary department Report to the Privy Council ¹ records that in one year 14,024 animals in course of transit to this country (England) were thrown into the sea (by what method you must imagine), 1240 were landed dead, and 455 were slaughtered on the quays to save them from dying from their wounds. You may form some conception of the horrors of a cattle boat, although nothing but seeing it in mid-ocean could make you sufficiently realize what a floating inferno of tortured animal life it is. Let me tell you that during every year, three millions of living animals are exposed to this suffering — nearly 10,000 a day arriving upon our shores to minister to the supposed needs of Christian England."

Next comes the slaughter-house. A journeyman butcher, writing to the *Staffordshire Daily Sentinel*, says:—

"The first lesson a butcher's apprentice generally receives is how to torture the animals which are to be slaughtered, and he is allowed to use the axe before well able to lift it, to the indescribable agony of the poor beasts. This I have seen daily occur where a large amount of work

¹ An address by Sidney H. Beard, "Is Flesh-Eating Morally Defensible?"

had to be done. . . . I have seen slaughter-men make bets as to which would first have five or ten sheep killed, skinned, and dressed, and you may depend upon it, they were not particular about their being dead before skinning them."

Mr. Beard found, through dealers in skins, that one bullock's skin had twenty-seven punctures in the head; another head had ten holes made with a pole-axe, and the dealer stated to him "we receive such by hundreds."

"Now let me tell you that every day, in Christian countries, at least one million cattle, sheep and pigs are put to death—being at the rate of nearly one thousand per minute. This statement is supported by the statistics furnished by Sir Robert Giffen to the Royal Commission on Agriculture.

"Said a rough one day, 'I have been compelled to stop the use of flesh food. A lady said to me, "How can you eat a thing that looks out of the eyes?" That remark haunts me whenever I sit down to the table and see, for example, a piece of mutton; I see a pair of gentle sheep's eyes peering at me, and I cannot touch it.'

"Think of this, reader," says Dr. Kellogg, "when you are tempted to feast on dead ox or cow, or lamb, deer or bird. May the Divine Spirit that dwells and acts and feels in every sentient thing look deep into your soul through the eyes that have been forever put out, and teach you that this slaughter of innocents is not that you may live, for you can live better without slaughter; not that your hunger may be appeased, for there is better food for this purpose; . . . not that you may satisfy any legitimate or normal instinct, but that you may satiate a thirst for blood, a craving for dead flesh, a depraved, cultivated, corpse-eating

instinct born not of heaven, but of ignorance, debasement, and godlessness of savagery."

About the most revolting of all subjects is the pig-killing at Chicago. The pigs are driven into a room and one after the other in quick succession attached to a revolving wheel by means of hooks. They are soon met by a man drenched in blood who thrusts a knife into each throat just before being plunged into a caldron of boiling water. It depends upon the alertness and skill of the butcher if all are deeply pierced with the knife or not, all, however, enter the water while still squealing in terror. One of the butchers said there is comparatively little trouble later in scraping the hair from the bodies, as they kick much of it off each other in the boiling water.

It is tempting to add here a short account of a Thanksgiving dinner taken from *Good Health*. The writer of the article seems particularly offended at the treatment of turkeys:—

"It is a singular fact that it has long been the custom to celebrate a day of thanksgiving by religious exercises and prayers for the extension of life, and its comforts and blessings, by taking other lives which are as God-given as our own and which to the possessors are quite as precious. . . . It is safe to say that every year in the preparation for Thanksgiving, millions of turkeys lose their lives; and the most conspicuous figure upon the table is a turkey corpse. . . . The man and woman who makes a cemetery of his stomach to bury turkeys in on Thanksgiving day, thereby professing to express his gratitude to God that he himself is not buried in the bowels of some leviathan, may be sincerely glad that he is on the outside and not on the inside of some such

animal; but he is certainly laboring under a gross misconception of the fitness of things. . . . Such slaughter of the innocents, as a preparation for a feast of thanksgiving, is certainly one of the most extraordinary and incongruous of proceedings.

“It is noteworthy that the innocent, unperverted mind of childhood quickly recognizes the inconsistency connected with the consumption of the flesh of animals for food. A story is told of the famous Dr. C——, Professor of Comparative Anatomy in Cornell University. Having been brought up a vegetarian, he had never seen upon a table the flesh of a dead animal until at one time, when about six years of age, he was dining away from home. In the centre of the table was a large roasted chicken. The boy eyed this new article of diet with much curiosity, when suddenly the truth dawned upon him, and he exclaimed cautiously to his mother: ‘Say, mama, that looks like a dead hen.’

“He recognized a dead animal as a corpse rather than as food, which is the normal way of looking at it. The ‘dead hen’ to the boy was no more shocking than the rows of animal corpses in different stages of dissection which line our market stalls is to the Hindoo, and no more than a stretched up human figure in New Zealand to our sensitive selves.”

All meat-eating animals have certain cruel and warlike propensities.

“It has been shown (‘Fruits and Farinacea’) that the direct tendency of animal food is to irritate the temper, to inflame the passions, to strengthen the lower propensities, to blunt the moral feelings, to render the heart callous; and as immunity from disease, bodily strength and activity, symmetry and beauty of form, perfection and acuteness of the senses, unalloyed pleasure and enjoyment, mental

exertion and intellectual culture, as well as longevity, are favored by a diet of fruit, roots, and other farinaceous substances, we may conclude that these will constitute the diet of those who live during the second reign of peace and innocence on earth."

This time is charmingly portrayed by that lover of nature, the poet Shelley : —

"No longer now
 He slays the lamb that looks him in the face,
 And horribly devours his mangled flesh ;
 Which, still avenging nature's broken law,
 Kindles all putrid humors in his frame, —
 All evil passions, and all vain belief,
 Hatred, despair, and loathing in his mind, —
 The germs of misery, death, disease and crime.
 No longer now the winged inhabitants,
 That in the woods their sweet lives sing away,
 Flee from the form of man ; but gather round,
 And prune their sunny feathers on the hands
 Which little children stretch, in friendly sport,
 Towards these dreadless partners of their play.
 All things are void of terror : man has lost
 His terrible prerogative, and stands
 An equal amidst equals : happiness
 And science dawn, though late, upon the earth.
 Peace cheers the mind, health renovates the frame :
 Disease and pleasure cease to mingle here ;
 Reason and passion cease to combat there ;
 While each, unfettered, o'er the earth extends
 Its all-subduing energies, and wields
 The sceptre of a vast dominion there ;
 While every shape and mode of matter lends
 Its force to the omnipotence of mind,
 Which from its dark mine drags the gem of truth,
 To decorate its Paradise of Peace."

And again in Pope's "Essay on Man" where the revenge for brutality is touched upon:—

"No murder clothed him, and no murder fed.
In the same temple, the resounding wood,
All vocal beings hymn'd their equal God:
The shrine with gore unstain'd, with gold undress'd,
Unbribed, unbloody, stood the blameless priest:
Heaven's attribute was universal care,
And man's prerogative, to rule, but spare,
Ah ! how unlike the man of times to come !
Of half that live, the butcher and the tomb ;
Who, foe to nature, hears the general groan,
Murders their species, and betrays his own.
But just disease to luxury succeeds,
And every death its own avenger breeds :
The fury — passions, from that blood began,
And turn'd on man a fiercer savage, man."

The meat-eating habit, which seems to develop a propensity for hitting and killing, may be noticed especially in England among the meat-eaters. It is a trait of character which ill accords with other high standards of English characteristics. It is a cruel brutishness, typical of all meat-eating animals everywhere.

"I am sticking to Pythagoras," wrote Lord Byron to a friend during one of his lucid intervals of hygienic living and best thought; "flesh-eating gives one the disposition of a beast."

The highest pleasure of the average English meat-eater is to kill something, and he sets the brutish fashion over all the world. A carnivorous English divine may write a sermon on morals and then rub his hands in glee over the slaughter of a bird

or hare. He has no respect for the mystery of life. The divine gift, the vital spark which mankind may not even attempt to analyze, inspires in him no gratitude. The divine mechanism, however modest and unoffending in its embodiment, inspires in him no awe. In the life of the bird, the beast, the fish, the butterfly, he would wantonly extinguish what centuries of human skill could never reproduce. He would take what he can never return, what does him no good, and what to his victim is his all. Would it not seem to the true lover of nature a transgression of divine law? So it seemed to Buddha when incorporating in his religion five rules of conduct, namely: 1st, not to take life, 2d, to be honest, 3d, to tell the truth, 4th, to abstain from intoxicants, 5th, chastity, he placed love and respect for life at the head. "Sooner," said he, "shall the cleft rock reunite so as to make a whole, than may he who kills any living being be admitted into our society."

How much also is the popularity of wanton war due to the favorite poisons, of which uric acid is one.

"The aggression, the belligerent and blood-thirsty instincts of all nations," said a lecturer, "are exactly equal to the proportion of animal food in their diet. The Loto-phagi of antiquity compromised all differences by arbitration. The Malays, who live in the same climate and have the same advantages, but who make use of animal food, are notoriously cruel and quarrelsome. Among the Indians of North America, who are wholly carnivorous, human nature and native pity seem to have become extinct, to be superseded by an artificial instinct of bloodshed which equals that of the most ferocious animals."

In his report from the Sioux missions, Father de Smet wrote : —

“Alas ! how helpless is theology against a diet of rank flesh.”

Mr. Eustace Miles says : —

“The objection that if we do not kill animals we shall be overrun with animals, and that if we do not need animals for food we shall have no animals at all, practically cancel one another. Both are ridiculous.”

VARIOUS FACTS AND NEW THEORIES ABOUT FOOD

As before stated, man gets in animal food, as in second-hand clothing, original products second-hand, and in a deteriorated form. He dares not take it third-hand when the deterioration is carried still farther, for that would include the ill-odorous scavengers of the buzzard family, the carrion crow, the lion, the tiger, and the hyena, all of which are doubly charged with waste products.

In changing from a meat to a sanditarian diet, one would surely find the experiment a failure if several simple facts be not remembered. The principal one is that no dependence whatever should be placed on foods made of white flour or of certain garden vegetables and fruits alone. But the simplest of diets is sufficient to supply the greatest strength possible, if in place of meat for tissue-building one of several foods is substituted, namely : either of the grains *as a whole*, or nuts, or milk, or eggs ; or something from the bean family (ripe beans, lentils, or peas). Either of these, along with almost any vegetable or fruit,

provides in all their endless and artistic variety of preparation, the most royal of dietaries. Quite enough fat is contained in the nut, milk, and egg foods. When beans or the grains are used in place of meat a very little fat can be supplied by the addition when cooking of olive or other vegetable oil. The use of baking powders is being abandoned by health-culturists.

We are also having a revolution in the choice of fats both for edible use and as a cooking medium. Those fats now obtained from dead flesh are to be superseded by the oils procured from the vegetable kingdom, of which we know both the ancestry and habits of life. We are told that the former will soon be used for carriage wheels and other machinery of the sort, and that the human machinery will be lubricated and propelled from the purer sources which are absolutely free from the germs of tuberculosis and anthrax. The olive already provides fat for a large part of the world. The great world supply will probably come, however, from the cotton seed, the available quantity being enormous. Professor Burmeister tells us that enough fats could be procured from palm trees to make animal fats quite superfluous. Fat taken from the cocoanut is also coming into use as well as from nuts in general. Cocoanut butter is now beginning to be used in England and America.

Another dietetical fault consists in the use of pepper, spices, and condiments. Whatever *bites* is unfit for food. A mustard or a pepper plaster is sometimes beneficial for blistering the outside skin, but never the more delicate membranes of the intes-

tinal canal. In Mexico, India, and various Spanish countries, the natives have trained themselves to the use of much red pepper and curries, but the general history of the condiments is the old story of inebriety. The English who bring back from India a taste for these hot articles of diet, bring back a diseased liver along with it.

In an article on this subject, Dr. Lyman, after stating that pure nutrients, "clean of all the naughty list of excitors," are best, adds:—

"A man living temperately, outdoors, on plain fare has the best chance of enjoying strong and *glowing* sensations. The feeling as if a fire burned brightly inside, as if a live happiness and tingle danced round with the blood, is best manufactured out of just the plain staples, worked up by a keen appetite, and a sound stomach, in fresh air, with abundant muscular life behind. No one can have this feeling all the while. It is the thrill of super-vitality, and is intermittent. But whatever one can get of it—it pays for all it costs; and no inebriety sensation approaches it in completeness of satisfaction produced—not coffee exhilaration, nor cocaine hyperæsthesia, nor opium narcosis. But when people attempt to get this *fire* sensation by putting fiery things inside their bodies, they are doomed to the flattest of disappointments. There is an uneasy excitement period while the fiery *thing* attacks the palpitating nerve; later comes a long period of stale and leaden exhaustion in that nerve; and the sensation of life meanwhile dulls and darkens correspondingly."

A dietetical reform will also probably be made by correcting the habit of taking too much acid food or drink. In a paper read by Dr. English of Pittsburg

before the American Medical Association, we are reminded of the rapidly increasing habit, which is not a normal one in children and the lower animals, but an acquired one. The traffic in lemons, tomatoes, and all acid fruits increases enormously each year and out of all proportion to other foods. Sweet apples are now almost uncultivated, and sweet and neutral vegetables, as cucumbers, beets, cabbage, spinach, etc., are treated to an acid dressing to give them the desired sour flavor. Indeed most fruits are indigestible for many, owing chiefly to their acidity. Dr. English tells us that the trend of therapeutics is forced into the antacid and antifermentative realm; that various modifications of the digestive function, incident to the excessive use of acid foods and drinks, are already with us; that this fostered and gratified acid appetite is contrary to physiological law; that the acids employed are not only unfavorable to proper digestion, but that they directly and indirectly modify the chemic composition of the blood and bodily fluids; that they neutralize the alkalies in the bile and pancreatic juice, thus rendering them of no effect, and similarly destroy the alkalinity of other bodily fluids, including the blood, which, to insure immunity against infection, should be normally alkaline. The digestive juices of the intestinal tract (where starches are digested) are alkaline. Dr. English traces the evil influence of this excess of acids through all the nutritive processes.

Still another revolution is likely to be made in the excessive use of salt in food. In an article, "The

Salt Superstition," in *Health Culture* (April, 1901) Dr. Felix Oswald reminds us that "the history of popular delusions makes it sadly evident that the universality of a belief cannot be accepted as an evidence of its truth," as, for example, the once popular belief in the dietetic value of alcoholic beverages, blood-letting on the part of physicians, witchcraft, etc. "The investigation of the stimulant problem will also explode the belief in the sanitary value of salt," says this medical scientist. The general use of salt by mankind, and by certain animals that will travel miles to reach a "salt lick," has led us to believe that human nature needs this thirsty absorbent of fluids.

"Salt is an 'antiseptic,'" says Dr. Oswald, "a chemical preventing premature decay . . . and as such is distinctly a foe to life. . . . This purpose alone explains the salt hunger of certain quadrupeds, who have to digest their food in the altogether exceptional apparatus of a multiple stomach, the ruminants, who, besides, are chiefly herbivorous and have to draw their nutriment from enormous quantities of vegetable ingesta. A cow eats from twenty to thirty-five pounds of grass a day, and before that load of easily acidulated engorgements passes from the 'pouch' to the 'rennet,' it may undergo changes that impair its nutritive fitness, unless the digestive vigor of the animal can counteract that risk. In such dilemmas ruminants do evince an appreciation of stimulants, and either browse in quest of tonic herbs, or take a stroll to the next salt lick."

The universal habit of eating too much excites the same craving for relief by man, especially when

he indulges in the decomposing "ingesta" of a meat dietary. We are again told, in the same article, that our near relatives of the ape family "reject salted comestibles with every symptom of abhorrence, and when forced upon them, they often rub their tongues for minutes together to get the taste out of their mouths."

Another chemical antiseptic is salicylic acid, which is sometimes used to prevent decay in canned vegetables, etc., and which, like salt and every other chemical antiseptic, is inimical to digestion.

"A physiological callousness," again says Dr. Oswald, "known as a 'state of tolerance,' can be induced by the long continued use of any poison, and salt-eaters thus may come to affront their digestive organs with comparative impunity. In children, however, the stages of the salt habit rarely fail to provoke troublesome skin affections, and the use of salt meat in slight excess of the established state of 'tolerance,' is always apt to result in scorbutic disorders. Sanitarians should avoid salt as well as all inorganic tonics."

The acquired taste for salt soon changes to a dislike for it, when the salt habit is broken, and the fine natural flavors of foods are never fully appreciated when admixed with salt.

Dr. Isaac Jennings, in "Medical Reform," remarks that a man "eating his supper with that best of all known condiments — an appetite earned by outdoor exercise — cannot get the right flavor of an egg unless he eats it unsalted."

Dr. Dodds, who has had great success in the

treatment of dyspepsia (Sanitarium at St. Louis), has for years abandoned all use of salt. To be sure "chloride of sodium (common salt) is found in the blood and tissues," says she. "Whiskey and various drug poisons can also be found in the blood, provided they are taken into the system."

In conclusion, it may said that as one may easily educate the appetite to abnormal tastes — too much of anything good or bad, too much of sweets or sours, of spices, etc. — one may also educate the appetite for what is normal and proper. It is also pleasant to know, as is so often told us, that when the normal appetite is once regained, gustatory pleasures are enhanced, and the natural and diversified flavors of the abundant wholesome things of earth are appreciated as never before.

EATING TOO MUCH AND TOO OFTEN

A great fault of our dietary is in taking too much food. We forget that our equipment for digestion and assimilation is limited in capacity to what is needed by the human system, which is a machine; and that like a milling or a thrashing machine or a steam-engine, it cannot possibly accomplish more than normal work without danger of strain or breakage. We cater usually to vitiated appetite rather than to the needs of the body, forgetting that the normal appetite is but a means to an end, and that the processes of digestion and assimilation are alone concerned in the nutrition of the body. We again forget that it is not what we eat that makes us strong, but

what we digest and assimilate. It is said that more people are starved by too much than too little food. All we eat outside the proper limit is a burden and a source of weakness and danger. How does the system get rid of its surplus food material? Nature is obliged to get rid of it, the same as refuse material outside the body when subjected to moisture and heat, and that is by the destroying germs of putrefaction.

The chemical action of the ordinary digestive ferments is clean and wholesome, while that of germs is poisonous and offensive.

Dr. Abernethy says that "civilized man eats and drinks an enormous deal more than is necessary for his wants or welfare. He fills his stomach and bowels with food which actually putrefies in those organs." He calls a dinner of a dozen courses a dinner of a dozen curses, adding that a fourth of what we eat keeps us, and the other three-fourths we keep at the peril of our lives.

Professor Huxley says :

"But whatever the circumstances, if the quantity of food taken exceeds the demands of the system, evil consequences are sure to follow. Overtaxing the digestive organs soon deranges their functions, and is a common and efficient cause of dyspepsia. If the food is not absorbed from the digestive apparatus into the system, it rapidly undergoes . . . decomposition and . . . putrifies. Large quantities of gas are thus generated. . . . If the digestion be strong and its products are absorbed, an excess of nutriment is thrown into the blood and the circulation is overloaded. If food is not expended in force, the natural

alternative is its accumulation in the system, producing plethora and abnormal increase of tissue (fat). This is accompanied by congestion of important organs, mal-assimilation of nutritive material, and increased proneness to derangement and diseased action."

Mr. Eustace Miles thus speaks of it:—

"Those poor slaves (the internal organs) — they are the unwritten heroes in physiology — are worked far harder during holidays (think of Sunday's meals!) than during business days. We preach 'Peace on Earth, good will towards men,' while we act strife in the body and ill will towards animals."

Disease that is not due to the swallowing of poisons known as such, seems to be generally due to an over-fed, overworked, clogged machine, along with the irritation that is produced by certain poisons resulting from the putrefaction of undigested foods. One naturally feels dull after overeating, and if nothing worse comes of it, — as colds, rheumatism, gout, dyspepsia, etc., — one may at least realize that much energy is wasted in getting rid of surplus material in the system, which might be more profitably spent. There should be, indeed, no feeling of oppression after eating, as is well expressed by Cornaro later on.

The result of a regulated diet, along with regular exercise of all the muscles, is not better illustrated than when a pair of intelligently fed and well groomed horses are let loose to the open fresh air and sunshine. Watch their trim bodies, the spring and power of their free, lithe limbs, the clearness and cleanness of their eyes, the joy with which they bound and

prance up and down hill as if work were a merry play. Fraught with dangers of over-indulgence, they have been denied the freedom of the bin. A simple diet of grain and water, a salad of grass without condiment, has been administered by careful measurement, while physical exercise has not been neglected. Note the contrast with the frequent occupant of the carriage, who also represents an animal, but an animal accustomed to little exercise and much food, and who physically has been the most ignorantly trained of all the animals. Indolent, stiff, possibly corpulent, how few of middle age can walk briskly up a hill without danger of heart disturbance! Blood degraded by the favorite poisons, over-fed, rib compressed and blood blockaded by corsets, weight-bound and limb-tied by heavy and long skirts, one lacks freedom or desire or capacity to walk. "What fools we mortals be!"

In fact, a simple meal consisting of some kind of whole grain made into bread, hard biscuits, or otherwise, one or two vegetables and a little fruit, is quite sufficient for all bodily needs; more is but a luxury. The addition of a few nuts or one or two eggs or a bit of *fresh* cheese or a drink of milk makes a feast for the one of natural appetite. Undoubtedly life would be much longer and sweeter should our diet be reduced to greater simplicity.

Of course the effective and enduring working-force of the human machine depends upon a fine discrimination of its complete necessities and limitations of power — a serious and most important study. In a perfectly sound organism, nature has given the palate

as a guide to physical needs. But the palate can be perverted by artificially acquired tastes, so that it can no longer be trusted. For instance, the use of poisons renders the palate as well as all the bodily functions, diseased, paralyzed, inflamed, fatigued, abnormal; and the gratification of abnormal sensations not only obliterates the pleasures which healthy sensations create, but defeats the true object of both eating and drinking.

Another dietetical mistake is made in eating oftener than three times a day, thus allowing the digestive organs no rest. The digestive organs are not like the organs of the heart and lungs acting without intermission, but, like all the voluntary muscles, need abundant time, and especially during the night, for recuperation and the formation of new digestive juices. They are also organized to act upon their contents *en masse*. One should not eat too late for full digestion before the time of sleeping. This mistake of too frequent feeding is often made with infants, on the assumption that, as comparatively little food is taken and needed at a meal, it should be taken oftener than three times in the twenty-four hours. An interesting book has been written on this subject by Dr. Page. Dr. Dewey, in "The True Science of Living," also contributes a valuable chapter to the subject.¹

¹ Dr. Youmans (Ed. *Pop. Sci. Monthly*) says on the subject of overeating: "Many people, probably the majority of us, eat too much and too frequently, giving rise to a clogging of the system with a superabundance of unusable nutriment and to various disorders of the excretory apparatus, due to the excess of work necessary in handling this surplus. . . . It matters not how perfect a machine

Just the amount of food to take is a question deserving careful study. The amount of fuel necessary to feed the fire-box of a locomotive depends upon its capacity, the number and weight of cars attached, and the elevation of grades to climb. Likewise, we require more or less fuel according to exercise and expenditure. One needs less heat food in hot than in cold weather, more in the growing period of youth than in old age. It is pleasant to contemplate the inevitable results which would follow a proper choice of food and an amount taken to supply needs of the system only. The system would thus be saved the accumulations of waste and putrefying materials, largely the cause of disease; the physiological balance between the constructive and destructive forces of the body would be maintained; the blood, which is the product of good digestion, would be purified; and the old evolutionary system of loading the human machine with weaknesses would be exchanged for an evolution in reverse.

Dr. Kellogg tells us that ordinarily man requires daily about three ounces of albumen, one and a half ounces of fat, and sixteen ounces of starch or its equivalent in sugar; that this amount of albumen may be found in about two pounds of whole-grain bread, or twelve ounces of peas, beans, or nuts, or twenty-one ounces of egg, or seventy-three ounces of milk; that a person taking sufficient bread along with fruit will

we start with, be it iron, steel, or muscle and bone, if the fuel is improper, not only will there be a low percentage of efficiency in the shape of work done, but the life of the machine will be short and much occupied in repairs."

take enough albumen to supply the needs of the body. Bread, however, although supplying albumen and starch in proper proportion, contains too little fat, so that if butter is not used a few nuts to take the place of part of the bread will supply all the fat necessary. When eggs or other highly albuminous foods are used, a portion of the bread should be replaced by potatoes (preferably baked) in which albumen is deficient, thus preserving the natural balance. Dr. Kellogg also tells us that a pound of peas or nuts contains nearly twice the amount of albumen found in an equal weight of fish or eggs, and nearly one half more than in beefsteak.

Some have tried so-called vegetarianism and called it a failure for good reasons: for instance, not enough or too much proteid has been taken;¹ food has been taken with irritants — peppers and other condiments; foods have been taken with tea or coffee, the poison of which is akin to uric acid and inimical to both digestion and absorption of nutritive substances; the starch foods have not been sufficiently masticated; too much food has been taken, which becomes an irritant when in excess of needs of the system; possibly one has eaten too often, giving the digestive organs no time for rest and recuperation, at the same time engendering a seemingly unnatural hunger, hunger following as readily undigested and unassimilated food as no food; again, the physical culturist must abandon whatever foods disagree; if all other conditions are sanitary, perhaps there has been an economy

¹ Mr. Miles advises four and one half ounces of proteid for an active person.

in fresh air and exercise, both of which are necessary for good digestion; possibly the internal organs are compressed or overheated by corsets. Good digestion and assimilation depend upon many things.

CATCHING COLD

An article in the *Popular Science Monthly* on "Catching Cold," by Dr. Page, bears pertinently on the subject of a meat diet, or, in fact, on the habit of any kind of poison-taking. Dr. Page informs us that vegetarians are far less subject to "catching cold" than others, and that if they do become victims of that very annoying germ, they get rid of it far more quickly than meat-eaters. He tells us that there are those of abstemious habits, who pay due reverence to ventilation and fresh air, who absolutely never catch cold, — could not possibly if they tried. He also tells how he had been subject to colds all his life, from the influenzas of infancy to the hay-fever of adult age, along with occasional throat and lung affections, as well as neuralgia and rheumatism.

"I now find it impossible," says he, "to excite any of the well-known symptoms, or, in fact, any disease, through subjecting myself to what many would consider the most suicidal practices in the matter of exposure to the elements, so long as I live upon a frugal diet, chiefly cereals and fruit served plainly — nominally two meals a day; holding myself ready, however, to skip a meal when necessary, *i. e.*, whenever any of the symptoms of indigestion . . . warn

me of having carried the pleasures of the table a trifle beyond the needs of the organism."

Dr. Page made experiments upon himself to test his invulnerability to catching cold when living on his hygienic diet; for instance, he wore low-shoes in "snow and slop" and sat an hour in them; he removed flannel garments in midwinter on the approach of cold weather; slept in currents of air blowing directly on his head; sat writing without clothing in draughts, in midwinter, or with wet shirt and trousers. Indeed he found it impossible to catch cold. He became cold and warm again, and that was all.

"On the other hand," says he, "changing the nature of my experiments and going back to my old habits of diet . . . the universal mixed diet of the people, viz., fish, flesh, fowl, with hot, stimulating . . . condiments, almost invariably associated with this class of food, together with . . . coffee, etc., I have found no difficulty in accumulating a cold . . . the time depending upon the degree of my over-indulgence . . . although now a part of the program consisted in taking the most extreme care to avoid exposure, in keeping the feet dry and warm, paying the utmost attention to wraps, etc. Whenever a patient comes to me with a cold and complaining of a draught, I usually ask, 'A draught of what — pure air or impure food?' The answer, in the absence of certain physiological knowledge, is sure to be a blank stare of helpless ignorance of my meaning."

Dr. Page further tells us that "a cold" is, in fact, a filth disease, arising largely from indigestion, impure air, and uneliminated waste material, and

that it is the first stage of all the filth diseases ; and that but for this depressed condition — this chronic condition of impurity, such ills as diphtheria, pneumonia, measles, scarlet, typhoid, rheumatism, malarial and other fevers, could never, or at least seldom, get a foothold ; that “ colds are fevers, and fevers always indicate blood poison.”

THE NEW DIETARY

Changing the old dietary for the new of hygienic compound reminds me of an article called the “ Wail of the Chefs.” The *Washington Star* correspondent interviewed several of the most noted *chefs* of Paris at the second international salon of the *chefs* held in the Rue de Grenelle. All were distressed at the growing tendency to plain living.

“ Oui, monsieur,” said one of them, “ the culinary art is undergoing a crisis at the present time in Paris. People no longer know how to eat and they do not eat. Formerly dinner was one of the principal events of a well-ordered life. . . . In the greatest houses of Paris it is now as helter-skelter as a clerk’s *pension*.”

“ What characterized the tables of the past,” impressively declared another noted *chef*, “ was the great number of dishes, . . . a great number of ingredients entered into them ; not only spices and perfumes, but rich meat juices. They did not hesitate to use up ten pounds of beef, a capon, four partridges, and half a ham to obtain a consommé for the base of a sauce. Now it is I who tell you that such prodigalities are no longer permitted. Butcher’s meat is so expensive in Paris that even the most opulent families fall into the most regrettable principles of economy. The

great world is willing to spend money, but not on food. It takes its pleasures in other things. There is too much of the open-air life of sport that gives an appetite for simple things. When the families dine alone it is a dinner for boarding-school girls and boys, and when there is a dinner party the guests themselves protest against rich dishes."

Indeed, among the wealthier classes everywhere there is a notable tendency to "plainer living and higher thinking," it having been learned that what has been called high living is indeed low living. The *chefs* of Paris need not worry, however, about the coming dietary of the twentieth century. It will be far more artistic and quite as palatable as the old one of dead flesh and the rank poisons. Because we shall live hygienically, we shall want the careful study of *chefs* all the same. Because we advocate total abstinence from all known poisons from beginning to end, we do not propose to deny ourselves endless dainties.

It is a great comfort to know that notwithstanding the luxury of a competent *chef*, he who lives in a simple manner lives best, and best enjoys his table. It is also a great comfort to know that the elimination of meats and all the favorite poisons from the table will reduce enormously the cost of living. It is said that half the income of nine tenths of the people is expended for food, and that the smaller the income, the greater is the proportion going for food; also that the greater part of this money is probably injudiciously expended. When the physical culturist learns the values of foods and their

right proportions, no table will be better and none cheaper.

A printed notice was sent to me a couple of years ago at Washington, announcing a series of cooking lessons on what was called, "Cooking of the twentieth century," by Miss Bucknum. The notice was welcome in that I had previously read several works on vegetarianism and had concluded to try the experiment of the more æsthetic diet at our family table. The family enjoyed the new experiment, but a difficulty arose in case of guests, who were frequent enough to interfere with a good test of the new dietary. Guests meant renewed killing of our fellow-creatures, the idea of which had become more and more distasteful. If a guest were not especially engaging, I caught myself asking which was worth the most, the visit of the guest or the lives of my friends of the woodland. To invite a guest, must I thrust a knife into a living lamb or hurl an axe at an unoffending calf?

I needed more extensive sanditarian *menus* and enrolled myself as a student full of interest.

The lessons took us into new fields of culinary art. No baking powders were used in the making of fancy breads — breakfast rolls rose to feathery lightness (as gluten is expansive under the action of slow heat). We had filmy wafers of whole-wheat flour, and grain straws of enticing crispness. Miss Bucknum imitated many dishes in which meats and fowls formerly figured — timbales, croquettes, soufflés, meat pies, and salads, by substituting various canned preparations, protose, nuttolene, etc.

There were vegetable soups of many kinds, and "consommé" was imitated to perfection. It was a surprise to find that roasted bran makes a rich stock for soup.

For the last year and a half my very competent French *chef* has turned his entire attention to the study of new sanditarian dishes and his dinners have abundantly proved that neither dead animals nor wine is necessary for the most elaborate dinner entertainments. The "vegetable roast" (as we call it) which takes the place of the meat roast, has appeared in endless variety. To secure a sufficient amount of proteid any one of several articles of diet figured, as nuts of any kind, grains of any kind, lentils (especially good), barley, beans, Italian chestnuts, zwieback, cheese, macaroni, milk, eggs, granola, grape nuts, etc., and these were mixed in many ways, with, possibly, green corn, sweet potatoes, spinach, rice, tomatoes, fresh or dried mushrooms, or any vegetable. As certain extravagances in the way of mushrooms and truffles are permitted in the old cuisine, they are utilized also to good advantage in the new one [why should not mushrooms be cultivated more extensively?]. The roasts, moulded in some form, are sometimes baked and sometimes cooked in a double boiler. They are generally decorated with mashed potatoes, spinach, thickened cranberry, tomato or other sauces, pressed through a bag and fancy tube. Sometimes the substantial dish takes the form of chops with a stick of macaroni to represent the bone; yet why shall one try to imitate the forms of the old dead animal diet? Aspic jelly made of the sanditarian stock (bran, vege-

tables, tomatoes, caramel, etc.) served to decorate cold dishes. Sandwiches made from slices of cold "roasts" and seasoned with mayonnaise or other sauce, or of chopped nuts and lettuce, also appear in endless variety.

Various fruit juices appear as drinks — the favorite one, however, is unfermented grape juice mixed with carbonated water (soda water) and a little sugar syrup.

There need be no anxiety as to an abundant variety of artistic and suitable dishes for all kinds of entertainments and of sanditarian constituents only.

"Such blessings nature pours,
O'er-stocked mankind enjoys but half her stores."

CORNARO

THE great champion of a moderate dietary, Cornaro, an Italian nobleman, lived three and a half centuries ago. His residence was Padua and his age 102. His little books on the subject of an abstemious life struck a chord over all the civilized world and were translated into many languages. To make a long and very interesting story short, Cornaro at the age of manhood found himself loaded with infirmities, — the result of an irregular life. His physician had given him but a short time to live, and he resolved to change his mode of life. Just the new régime is best told by himself in publications made in his 83d, 86th, 92d, and 98th years, from which a few quotations are here given. Another word, however, to say that he died absolutely without pain, sitting in an easy chair,

and that his wife, almost as old as himself, died soon after in the same easy manner.

Cornaro begins his first book by discussing the force of habit:—

“It is an undoubted truth,” says he, “that the fixed and settled habits of men do grow into their very natures, and lay them under a kind of necessity of practising those virtues or those vices to which they have been once habituated. . . . Custom often obtains a far greater ascendent over the minds of men than reason. . . . I am persuaded it is Custom alone which has introduced two very pernicious evils into Italy; . . . the other is an immoderate eating and drinking, robbing the body of its health and vigor. . . . Men look upon profuseness as an act of liberality and true honor; while thriftiness and good husbandry pass in the eyes of the world for avarice and meanness of spirit. Now all this apparent difference in the economy of life is in consequence of custom and habit, whereby a luxurious way of living, the miseries and infirmities of old age are insensibly contracted before one can be able to taste the pleasures of Youth. O wretched, miserable Italy, dost thou not plainly see that gluttony deprives thee of more souls yearly than either a war or a plague itself could have done? . . . It will be prudent and right not to give nature more than she requires, neither to overcharge her, since a very trifle will suffice to satisfy the calls of hunger. The maxims of temperance are derived from those of solid and substantial Reason. Let us learn therefrom to eat no more than may prudently administer to the recruit and maintenance of the body. Whatever exceeds this measure is of fatal consequence, and lays a foundation for infirmities and death itself.”

Cornaro next gives an account of his reckless early life, which found him broken in constitution, melancholy and irritable of temper, and afflicted with dyspepsia, gout, and the usual consequences of high living. He also became impressed with the inadequacy of medical relief. He resolved to study the question of diet and the rules of hygiene, and living strictly by them, he recovered his health. He writes:—

“This happy and surprising recovery made me reflect on the usefulness of a temperate regimen. . . . If sobriety had so much power as to restore me to health, how capable must it be of preserving me from relapsing into the same maladies and disorders! I was resolved to try whether those things which pleased my appetite were really prejudicial or not to my health; and whether that proverbial aphorism, wherewith gluttons are wont to defend themselves, viz., ‘That which favors is good and nourisheth’ be consonant to truth and reason. Upon trial, I found it otherwise; for salads, ice, pork, salt meats, sausages, and the like, notwithstanding they were once very grateful to my palate, yet proved very pernicious to my constitution. Hereupon, trusting more to my own experience, I declined all these noxious things and made choice of those victuals only which best suited my constitution; and moreover took special care never to rise from Table but with still something of an appetite. Thus after I had renounced Intemperance, I was resolutely bent upon continuing it to my life’s end, and O! happy for me, that I had courage and resolution enough to attempt it.”

Cornaro mentions precautions taken by him other than that of improper diet, viz., against late hours, violent fatigues, extreme heat and cold. “I was no

less careful not to give way to angry resentments and melancholy reflections which tended to disturb my peace of mind." He tells us of the importance of conquering what in our day we call "worry."

From his second book I quote as follows:—

"How greatly is thy faithful disciple indebted to thee, thrice holy Sobriety, since by thy assistance he enjoys the visible world, which is really beautiful to such as know how to view it with a philosophical eye, as thou hast enabled me to do; nor could I, at any other time of life, even when I was young, but altogether debauched by an irregular life, perceive its beauties, though spared no pains or expense to enjoy every season of life. But I found that all the pleasures of that age had their alloys; so that I never knew till I grew old that the world is beautiful. O truly happy life, which over and above all these favors conferred on thine old man, hast so improved and perfected his stomach that he has now a better relish for his dry bread than he formerly had in his Youth for the most exquisite dainties; and all this he has compassed by acting rationally, knowing that bread is man's proper food when seasoned by a good appetite; and while man leads a sober life he may be sure of never wanting that native sauce, and therefore my spirits, not oppressed by much food, are always brisk; especially after eating, so that I am accustomed then to sing a song and afterwards to write. Nor do I ever find myself the worse for writing immediately after meals; nor is my understanding ever clearer; nor am I apt to be drowsy.

"O unhappy, wretched life of intemperance, who art good for nothing but to murder those who follow thee! How many of my dearest friends hast thou robbed me of by their not giving credit to me! But thou hast not been able to destroy me according to thy wicked intent and pur-

pose. I am still alive in spite of thee, and have attained to such an age as to see around me eleven grandchildren, all of fine understanding and amiable disposition; all given to learning and virtue; all beautiful in their persons and lovely in their manners; whom had I obeyed thy dictates I should never have beheld, nor should I enjoy those beautiful and convenient apartments which I have built from the ground, with such a variety of gardens as required no small time to attain their present degree of perfection. No, thy nature is to destroy those who follow thee before they can see their houses or gardens so much as finished. But since thou art so pestilential a vice as to poison and destroy the whole world, I am determined to extirpate thee at least in part; my eleven grandchildren take pattern after me and they shall help expose thee for what thou really art, a most wicked, desperate, and mortal enemy of the children of men."

Again : —

"Arrived at 95 and still finding myself sound and hearty, content and cheerful, I never cease thanking the Divine Majesty for so great a blessing; considering the usual fate of other old men. These scarce attain the age of seventy without losing their health and spirits; growing melancholy and peevish."

Cornaro mentions an exasperating lawsuit waged against him, but he enjoyed the satisfaction of overcoming persecution and triumphing over misfortunes. "Whence I infer again," says Cornaro, "that the passions are less furious in bodies free from any malignant qualities.

"But my experience hath taught me another thing also, that where the Rules of Diet have been long

observed, it is dangerous to transgress them." At 78 his physicians advised him as a precautionary measure to increase the amount of his diet, being now what in others was called old. They said that old age could not well be supported with so little food. Cornaro mentioned then a well-known proverb, "He that eats little eats much," — because by eating sparingly a man prolongs his life; yet, "to avoid teasing and the character of obstinacy," he yielded to their importunities and changed the usual measure of his dietary from twelve ounces a day to a little more solid food; he fell ill in a couple of weeks with a violent fever, and from being brisk, active, and cheerful, became melancholy and peevish; but on a return to his old diet recovered his perfect health.

"How great is the power of order and disorder!" exclaimed he, "of temperance and intemperance. The former whereof had preserved me for so many years in perfect health; the latter though it was but slight, had reduced me to the last extremity. If the universe consist of order, if our natural life depend on the Harmony or perfect Agreement of Humors and elements, it is no wonder that order should preserve and disorder destroy. Order is so extensive a Benefit that it behooves every one to strictly observe it. It renders Arts and Sciences easy, and Armies victorious. It establishes Kingdoms, civil corporations, and families in Peace and Concord. Whence I conclude that an orderly life is the most sure Ground of Health and Length of Days." ¹

¹ This is really the soundest and profoundest of philosophy, — the key-note to success and to life itself. Order accomplishes; disorder destroys. Man has not yet comprehended the value of order in the conduct of the human system which is under his control. — ED.

Cornaro again says : —

“ The sensual are so entirely devoted to the gratification of their Taste and Appetite that they hold it is better to live through several years less or even enjoy the Pleasures of Sin for a season than to be put to the torment of laying a Restraint upon their Appetites. Foolish men ; they little think of what Importance ten years of life are to a man, more especially at that adult Period of an healthful Life wherein it is in its highest Pitch of Perfection, and the understanding, wisdom, and every kind of virtue are most vigorous . . . were not almost all the learned Books which are extant, composed by their authors in their riper age and in those last ten years which the intemperate set as nought ? ”

Again : —

“ Your libertines further object that it is a thing impossible to lead a regular life. To this I reply that Galen kept it and held it for the best Physic. So did Plato, Socrates, Cicero, and many of the ancients ; and in our own age Pope Paul, Cardinal Bembo, Doges Lando, Donato, etc., and thereby reached a very advanced age ; but my own experience, I think, without producing any authorities, is an undeniable demonstration of the easy possibility of observing a Regimen ; and that the almost only difficulty therein is the setting out well at first, viz., with courage and resolution. . . . It is in every one’s power to eat and drink what is wholesome and avoid overfeeding. He that is wise enough to observe this will suffer little from other inconveniences. The diseases of repletion which infallibly destroy the best natural capacities . . . would be happily avoided ; the man who pursues a temperate life with all possible exactness, will seldom if ever be

seized with a disease ; there can be no effect of distemper, where the productive cause is removed.

“Since, then, an orderly life is so beneficial, so amiable, so agreeable and easily attainable, ought not all men to embrace it with eager affection? No man need be discouraged or conceive an aversion to it from the method I pursue. No man is confined to that exact measure or particular sort of food, nor yet prohibited the use of many kinds of victuals. . . .

“Let no man object to me because there are instances of persons who, although they have been prone to sensual gratifications, yet are arrived to the utmost length of mortality. It is by no means safe or proper to venture upon a trial of it. Such an issue befalls very few. It is much more certain that a sober old man of an infirm habit of Body is secured in regard of his health and life than the most robust, sprightly, vigorous Youth who daily lives without Rule or Measure. . . . Sobriety supplies our Bodies with sound Blood and sweet juices, and prevents the emission of those noxious Fumes and vapors to the Head, which are perpetually steaming from a filthy and polluted carcass. It is this which gives perfect use of all one's Faculties. It is by this that one may taste rapturous delights, —delights of which the voluptuous and intemperate can have no notion, no experience at all. Infinitely agreeable indeed and no less various are the Reflections of a sober mind, which that man can never be truly capable of whose brain is bewildered in the Fumes of Drunkenness or Gluttony. But when once their evil effects vanish and the understanding comes to itself again, the man then begins clearly to see and comprehend from the works both of God and nature which are impossible to be discovered or comprehended in a state less pure or with faculties less refined.

“I come now to address myself to those sensualists

those stupid and dull Souls who object that a man's life when once he shall have reached seventy is not worth the having. That the Residue of his Days are (as they foolishly conclude) rather death than life, and overburdened with Miseries and infirmities, anxiety and discontent. But give me leave to say that they are mightily mistaken, I myself being an Instance sufficient to confute their false ideas. I am at present 83, and the pleasures and recreations I take account me happy. First, I am continually in health, and so nimble, brisk, and active that I can get on horseback with all the ease imaginable, off any rising ground. I am able also and often to ascend steep and high hills on foot without lassitude. Besides I am ever cheerful and merry and well pleased, uninterrupted by any anxious apprehensions or violent perturbations of mind; in whose place joy and peace and love have taken up their residence in my soul. I am so far from being weary of my life that no man in the world can enjoy the pleasures of it in fuller perfection or with more sensible delight. Sometimes (as occasion serves) I converse with men of literature, ingenuity, and good morals; at other times, when I choose rather to be alone, I apply myself to the reading of some of the choicest books I can get. When I lay these aside, I fall to writing, ever studying, as much as in me lies to promote the good and happiness of my fellow-creatures. All this I do at my leisure at stated times and without the least inconvenience offered to myself or my other concerns."

Cornaro gives a charming account of his beautiful residence in the learned city of Padua, also of two country places surrounded by wonderful gardens, generally fashioned under his supervision.

"Once a year I make a visit to some one or other of the neighboring cities, where I enjoy the sight and communica-

tion of my friends and acquaintances, as also of excellent artificers in architecture, painting, sculpture, music, and agriculture, whereof in this age there is a great plenty. I carefully inspect their pieces, compare them with those of antiquity, am continually learning something that is new and worthy of my notice. I survey palaces, gardens, antiquities, public fabrics, temples, fortifications; neither, in short, omit I anything which may serve either to gratify my curiosity or advance my knowledge. I am infinitely delighted also with the charming prospect of the various places and their beautiful situations, in my travels backwards and forwards; the verdant plains, the lofty hills, the crystal fountains, the antique structures and melodious groves, all conspiring to form the most agreeable appearance to the eye and captivate the sight. Neither is this pleasure of mine made less by the least decay of my senses; I see and hear and enjoy them all in as full perfection as ever I did in my Youth; especially my taste, which my simple fare suits better now than heretofore, when I was a slave to my sensual appetite.

“The changing of beds creates me no inconvenience; I sleep sound and quietly anywhere, and when I dream, my dreams are pleasant. But one satisfaction, which pleases me above all the rest, is to reflect how instrumental my suggestions and advice have been towards the reducing of many rude and uncultivated places to good husbandry, a work of so great importance to this state; I was one of those persons who were deputed for the direction and furtherance of that undertaking. I resided two twelvemonths together in those marshy places even in the heat of summer which in Italy is excessive, and yet, thanks to the powerful efficacy of my regimen, I received no hurt thereby. These are the solaces, these the substantial pleasures of my old age, which are superlatively preferable to the joys

and delights of a vicious and intemperate youth. I am perfectly free from those manifold anxieties of mind, those tormenting maladies of Body under which a multitude of indiscreet persons both young and old do labor.

“As an addition to my perfect happiness I daily behold a kind of immortality in the succession of my posterity. When I come home, I find eleven grandchildren of mine ; all, as far as I can perceive, in perfect health, and of sober, virtuous dispositions. I am pleased with the innocent mirth, harmless sports, and inoffensive prattle of these youngsters. Some of the elder understand music, often play to me on the harp and sing to it melodiously, and I myself, who have now as strong and clear a voice as ever, often join in concert with them. The life I lead at these years is not a languishing, melancholy one, but really a life of the utmost cheerfulness, mirth, and pleasure. I solemnly aver that (were the option in my power) I would not exchange age and condition with those youths though ever so robust and flourishing, who are slaves to their appetites.

“I am freed from alarms of Death. I am certain I shall not be seized with a disease so long as the cause which must produce it is prevented by that sacred and powerful medicine, sobriety, which I ever make use of. . . . Although I am sensible I must die, yet I am persuaded it will be a considerable time first ere I shall. For I know (setting aside casualties) I cannot die by a pure dissolution, my regularity having left death no other way of destroying me. And that is an honorable and desirable death which comes upon us by no other means than by a total natural dissolution. Nature herself who has linked the bonds of our life together can loose them again without the least violence ; and give men a longer respite than diseases usually do, which forcibly rend those chains asunder. An end so painful or a death so violent can only be the effect of foreign

causes, since nothing is more opposite to nature than that which has a tendency to weaken and destroy us. In a word, I am confident that I shall live many years longer in perfect health, and the full enjoyment of the pleasures of this world; which indeed is very comfortable to me and might be to others too, would they, like me, but make a proper use of it. . . .

“O most sacred and powerful sobriety; the sure protection of human nature, the tender Guardian of our lives, the infallible medicine of both soul and body; how ought men to praise thee, and with hearts full of gratitude acknowledge thy benefits; thou who affordest them means of arriving at the joys of Heaven here upon earth.”

A FEW REMARKS OF L. LESSIUS

A FEW quotations are also here given from a little book written on the same subject in 1749 by L. Lessius, called “Health and Long Life”:—

“A second advantage frugal and simple diet affords the body is this, that besides its prevention of bodily diseases (bred through crudities and the internal corruption of humors) it doth also arm and fortify against outward causes and accidents. For those whose bodies are untainted . . . are not so susceptible of the injuries of the winds or weather; nor yet so liable to receive any hurt or impression from immoderate heats and colds, actions or labors, as other men are, who abound in foreign and noxious mixtures from the sensual or inordinate gratifications of their appetites; and if attacked by inconveniences, or external accidents, their cure is much more easily effected; in respect

that there is very little, or no flux of morbid matter falling on the part affected . . . the cause of inflammation. In confirmation whereof we have a very remarkable instance in the history of the life of Cornaro ; wherein we are informed that as he was one day riding in his chariot for the air, he had the misfortune to be overturned and to be dragged by the fury of the horses several yards ; whereby one of each of his arms and legs were broken and his head and body bruised in a very terrible manner. . . . Upon the nice examination and narrow inspection of the surgeons of his torn and tortured carcass, they unanimously judged him irrecoverable, but at a venture agreed to his being let Blood and purged, in order to prevent the fluxion of humors, inflammation and fever so much feared and expected. But Cornaro, reflecting on his wonted abstemiousness and regularity of life for so many years altogether, whereby his blood and juices could not but be tolerably sound and clean, rejected their advice and complied only in having his limbs set and his body anointed with some proper fomentation. Thus relying on nature as his sole physician, and temperance as his only physic, he miraculously recovered in a short time, though at the age of seventy. . . .

“ Another advantage of a sober diet is, that it renders the body lightsome and agile, fresh and expedite to all the motions and services belonging to it. For heaviness, oppression of nature and dulness do all proceed from the abundance of humors which do obstruct the passages of the animal spirits, and clog and stiffen the joints, by filling them too full of fizy or gluey moistures.”

L. Lessius also abhorred spices : —

“ The sense of tasting is chiefly vitiated by evil humors that infect its organs ; as, supposing cholerick tart or saline

humors to possess the tongue and throat . . . everything will then go down bitter, tart, or saltish. . . . It is brought about that the most coarse and ordinary food is more palatable and agreeable to a sober man's taste and affords him treble the ease and pleasure and advantage than can possibly accrue from the richest and most delicious provision a racked invention can contrive to those of vitiated palate."

From the moral point of view Lessius thus writes :

"Another commodity which a sober diet communicates to the soul is that it has a very great and happy influence on the affections and passions of men, — especially on those of anger and melancholy ; effectually moderating their inordinate and excessive violence. It also works the same most agreeable effects on those other affections which are conversant about the taste and touch of delectable things, so that even in this regard, it deservedly merits our utmost esteem and veneration ; for how shameful and abominable a thing it is, not to be able to suppress or subdue choler ; to be obnoxious to melancholy and cruel cares of the fancy ; to be enthralled to gluttony ; and to be continually hungering and thirsting after wantonness and debauchery ; nor is it only highly shameful and contrary to virtue and goodness, to be thus miserably disposed, but very pernicious also in regard of a man's own health. . . . But sobriety easily remedies all these evils by correcting the bodily humors which are the causes of them. . . . It also comes to pass when humors are predominant, that men are presented in their dreams with various illusions . . . more or less terrifying and amazing. . . . Whereupon it follows that as in Sleep so likewise in Waking the Fancy for the most part apprehends Things according to the humor and quality then prevalent. . . . The consequences of sobriety are so amiable as well as profitable in themselves that it is

a wonder how a man can help being captivated with its attracting beauties and agreeable qualities. What calmness of mind ; what affability ; what cheerfulness ; what tractableness ; what prudent moderation are all its followers possessors of ! . . . The malignant juice produces a kind of savageness and cruelty. . . . Persons given to abstinence are watchful, circumspect, provident, able in counsel and sound in judgment. They quickly and easily arrive at an eminent proficiency in their studies."

THE GOSPEL OF PYTHAGORAS

(Lived 600 years before Christ)

THE Gospel of Pythagoras taught abstinence from all animal food and wine. It abhorred the shedding of blood, and recommended the use of "food which needs no cooking," — nuts, fruits, honey, and the like.

Pythagoras, aside from being the exponent of a diet known as "the Pythagorean Diet," was a great philosopher, astronomer, and mathematician. He was also learned in natural history and physics.

In a discourse by Antonio Cocchi, delivered at Florence in 1743, he says : —

"We learn in the writings, especially of Pliny and Plutarch and also of Cicero and Livy, of the public decree of the Senate of Rome whereby Pythagoras was adjudged to be the wisest of all the Greeks, and that in consequence of that title, a statue was erected to him in the Forum. Pliny wondered that he should be preferred to Socrates. But if

it is considered that Pythagoras was also a great naturalist, and that he taught those things which Socrates, being but little versed in them, had neglected, we shall the more admire the wise judgment of the Romans.

“Not alone as the greatest philosopher of his age and the founder of the philosophical school of Italy, but as *the greatest authority on the preservation of the health of the people*, was he honored. It was in prevention of illness that the physicians of the Pythagorean school were the most exact; measuring the quantity of victuals and of drink, of exercise and of rest by rule; determining the choice and manner of preparing what they allowed, and making use more of external than other medicines.

“But what shall we say,” continues Cocchi, “of that other noble invention which we owe to Pythagoras and which is one of the most powerful, the most safe, and most universal medicines that human wisdom has ever, to this day, been able to discover? However, it remained neglected for so many ages through a fatal inadvertency, till in this happy age it has again been brought into use. I mean the Pythagorean diet, which consisted in the free and universal use of vegetables, such as roots, leaves, fruits, and grains, and a general abstinence from everything animal, whether bird, beast, or fish. Milk and honey also belonged to this diet. . . . Their drink was the purest water, neither wine nor any vinous liquor being allowed.

“Laertius says, ‘Such a diet (the Pythagorean diet) was everywhere to be found with ease (which they might eat without dressing) and with drinking only of pure water; all of which is highly conducive both to the health of the body and the alacrity of the mind.’

“The Pythagoreans also claimed that one who restrained himself from meat, spices, and wines, acquires a most exquisite delicacy and distinguishing sense of taste.

“The Romans were at this time so persuaded of the superior goodness of vegetable diet that, besides the private examples of most of their greatest men, they established it by their laws concerning food. A great physician, Antonius Musa, had a statue in Rome, given him for having cured the Emperor Augustus by a reform of diet which he afterwards continued.” Says Cocchi, “By his advice this great Prince came into the sparing and simple Pythagorean diet.”

He tells us that “Horace made use of the Pythagorean diet, as he himself often tells us in his judicious and most excellent poems.”

“We find the same preference given to vegetable food by all the other ancient Latin writers who had any understanding of the nature of things, and by Galen and Plutarch, who has showed more particularly perhaps than any one the danger of animal diet, in his precepts of health and various discourses on eating flesh.”

The discourses on the Pythagorean diet by Cocchi closed as follows : —

“From all which it appears how well those among us would deserve for promoting the Health of Mankind to whom Fortune has given Estates and bestowed the choicest Gifts in the magnificent Seats that so beautifully adorn the Plains and the Hills of our native Tuscany ; if after the example of some of the greatest of the Romans, they would place part of their glory in introducing among us new Fruits and Herbage, and in a more diligent culture of their delicious gardens, from whence the rest of the people also might enjoy the valuable effects of their learned Oppulency.”

THE ADVICE OF HASSAR IMMA

FROM the old times comes again advice on living from Hassar Imma, great of his country and time, who lived to an extreme old age, practising the precepts of his philosophy :—

“Children of the Sun,” writes he, “listen to the dying advice of your faithful and affectionate instructor, who hastens to the great Allah to give an account of his services.

“The use of reason is to restrain the irregular impulses of nature. . . . Nature is a glutton in nothing ; moderation is the only medium in which she is happy and contented.

“Imitate not the dress of the Europeans, which is invariably connected with stiffness, awkwardness, and deformity. Your first concern is the use, and the next the beauty of all your members.

“Your regimen ought to be simple and inartificial. Drink only the simple water. It is the beverage of nature, and not by any means or in any way to be improved by art.

“Eat only products of the ground (fruits, grains, nuts, and vegetables). Let the predaceous animals prey on carnage and blood. Stain not the divine gentleness of your natures by one spark of cruelty to the creatures beneath you. Heaven to protect them hath placed you at their head. Be not treacherous to the important trust by murdering those you ought to preserve ; nor defile your bodies by filling them with putrefaction. There is enough of vegetables and fruit to supply your appetites without oppressing them with carrion or debauching them with blood.”

A FEW ANECDOTES AND FUGITIVE
EXTRACTS

THE OPEN SPIGOT

A CLEVER story was told by Mr. Beauchamp, while lecturing on alcohol, as follows: A housekeeper found her newly emigrated cook on her knees in great exhaustion and distress; perspiration dripped from her brow. The floor of the kitchen was deluged with an ever-increasing supply of water, and poor bedraggled and dishevelled Bridget was frantically attempting to dip it up and throw it away.

"Why do you not turn off the spigot?" asked the mistress.

Mr. Beauchamp suggested that until the spigots of the liquor traffic are turned off, frantic humanity will still continue to be dipping up the consequences.

An amusing story from "Tid-Bits" tells of a man visiting a lunatic asylum who asked an attendant how they knew an idiot to be sufficiently restored to sanity to be discharged.

"Oh," said the attendant, "it is easily managed. We take them into a yard where there are several troughs. We turn on the taps and then give the idiots buckets to bail out the water and empty the troughs. Many of them keep bailing away while the taps keep running, but them that is n't idiots stops the taps."

THE WITCH-HUNTER'S WARRANT

The story of the Witch-Hunter's Warrant is told by Dr. Felix Oswald (*North American Review*).

“‘A witch-hunter's warrant,’ dated Cologne, 1387, was recently offered for sale by a Leipsic bibliopole, who, in spite of his honorable reputation, had to secure the signatures of three learned antiquarians to clear himself from the suspicion of having forged the preposterous document.

“In A. D. 1987 a similar endorsement may be needed to establish the authenticity of a Government certificate to the effect that ‘In consideration of a prepaid percentage of his probable profits the holder of this license is hereby authorized to poison his fellowmen.’”

DR. BEECHER'S SIX TEMPERANCE SERMONS

Strong and vigorous as an old oak tree, keen of intellect as a polished sword-blade, the sturdy Rev. Lyman Beecher, father of Henry Ward Beecher and Harriet Beecher Stowe, had his tilt with King Poison. It was a thunder-storm and a rich affair. The outburst found vent in six sermons preached in 1825, which stirred to its depths, first, his town of Litchfield, Conn., then the whole of our country, and afterwards through the medium of several languages, other parts of the world. Those sermons reverberate still, and will last, along with Temperance literature, fresh forever. For many years they composed the leading standard document of the “Temperance Reformation.” Those were dark days of intoxication lying between 1800 and 1823. The *Boston Recorder* in 1823 thus speaks of it:—

“It is an evil of wide extent, and it still spreads. No check is given or scarcely attempted. Philanthropists, statesmen, and Christians witness and deplore it. As a destroying angel it lifts its pallid front and ghastly look in our cities, towns, and scattered settlements. It reels and wears rags in every street, and mouths the heavens with drunken blasphemies under every hedge; nor does it lay its polluted hand on the rabble merely; it may be seen in milder and more fashionable forms. . . . Fifty millions lost is but a trifle compared with the moral influence of intemperance. This immense sum has poured down the throats of ten millions of people, seventy-five million gallons of liquid fire, mingling and flowing with their life-blood.”

Preliminary to the six sermons, Dr. Beecher describes two ordinations in Plymouth, Conn., soon after his settlement in Litchfield in 1810:—

“At one of these ordinations,” he says, “the preparation for our creature comforts, . . . besides food, was a broad sideboard covered with decanters, bottles, sugar, and pitchers of water. There we found all the kinds of liquors then in vogue. The drinking was apparently universal. This preparation was made by the society as a matter of course. When the association arrived, they always took something to drink, also before public services, and always on their return. As they could not all drink at once they were obliged to stand and wait as people at mill. . . . When they had all done drinking and taken pipes and tobacco, in less than fifteen minutes there was such a smoke you could not see. The noise I cannot describe; it was the maximum of hilarity.”

After the description of the second ordination, Dr. Beecher proceeds:—

"These meetings were near together, and in both, my alarm and shame and indignation were intense. *'Twas that that woke me up to war.* And silently I took an oath before God that I would never attend another ordination of that kind. I was full. My heart kindles at the thought of it now."

He never did; and possibly owing a little to the fact that the custom itself soon changed.

To this experience of the ordinations was added a painful case of intemperance in his own parish.

The six sermons were preached on six successive Sundays, and although the country is still in chains, who can compute how many were saved by them, and what was accomplished by the Temperance associations which sprang up everywhere after this stormy period? In these famous sermons Lyman Beecher called for "the banishment of ardent spirits from the list of articles of commerce by a correct and efficient public sentiment." We are told that

"churches and religious associations awoke. Drunken men were in no condition to tinker creeds and lay on holy hands. The whole business was rank blasphemy. The conscience and intellect of the whole nation were excited and concentrated upon the situation. There was need of a change, and the change came."

THE STORY OF A HOD-CARRIER

From James Parton's "*Smoking and Drinking*," illustrating two new phases of smoking:—

"I have sometimes thought," says Mr. Parton, "that there are people whom it does pay to smoke; that aged

hod-carrier across the street, for example. He lives two miles from his work, and must be astir by half-past five to reach his building by seven o'clock. His homely meal from his dinner-pail being completed at noon, our friend takes out his short black pipe for his noontide smoke. How he enjoys it! How it seems to rest him! It is a kind of conscious sleep, from which he awakes refreshed for another five hours of the heavy hod.

"Who could wish to deny a poor man a luxury so cheap and so dear? It does not cost him more than ten cents a week; but so long as he has his pipe he has a sort of refuge to which he can fly from trouble. Especially consoling to him is it in the evening, when he is in his own crowded and most uninviting room. The smoke that is supposed to 'poison the air' of some apartments seems to correct the foulness of this. . . . Besides, this single luxury of smoke is the full equivalent of all the luxuries which wealth can buy. None but a smoker, or one who has been a smoker, can realize this truth; but it is the truth. . . . If there is a man in the world who ought to smoke that ancient hod-carrier is the man. . . . Does it pay him? After an attentive and sympathetic consideration of the case, I am compelled reluctantly to conclude that it does not.

"The very fact that it tends to make him contented with his lot is a point against his pipe. It is a shame to him to be contented. To a young man the carrying of the hod is no dishonor; but the hod is not for gray hairs. Whenever, in this free and spacious America, we see a man past fifty carrying heavy loads upon his shoulders . . . we know that there must have been some great defect or waste in that man's life. The first dollar that George Law ever earned after leaving his father's house was earned by carrying the hod at Albany. But with that dollar he bought an arithmetic and spelling-book, which, when winter closed in

and put a stop to hod-carrying, he mastered, and thus began to prepare to build the 'High Bridge' over the Harlem River, where he made a million dollars by using steam hod-carriers. . . .

"The pipe is one of the points of difference between the hod-carrier's content with his lot and the hod-carrier who means to get into bricklaying next spring. Yonder is one of the latter reading his newspaper after dinner, instead of steeping his senses in forgetfulness over his pipe. He, perhaps, will be taking a contract to build a bridge over the East River about the time when his elderly comrade is buried in a corporation coffin.

"Of course there are vigorous and triumphant men who smoke, and there are dull, contented men who do not. It is only of the general tendency of the pipe that I wish to speak. . . .

"One of the worst effects of smoking is that it deadens susceptibility, and enables us to keep on enduring what we ought to war against and overcome.

"Henry Ward Beecher has told us how he earned his first ten dollars and what he did with it. While he was a student in Amherst he was invited to deliver a Fourth of July temperance address in Brattleboro, forty miles distant. His travelling expenses were to be paid; but the brilliant scheme occurred to him to walk the eighty miles and earn the stage-fare by saving it. He did so, and afterwards received a ten-dollar bill, — the first ten dollars he had ever earned or possessed. He instantly gave proof that the test of civilization is the use one makes of his surplus money. He spent the whole of it upon an edition of books . . . and carried the volumes to his room, a happy youth. . . .

"Suppose he had invested that sum (and we all know students who would make just that use of an unexpected

ten-dollar bill) in a new meerschaum and a bag of Lone-Jack tobacco. At the end of his college course he would have had probably a finely colored pipe, — perhaps the prettiest pipe of the year; but he would not have had that library, the solace of his coming years of struggle, always doing its part towards expanding him from a sectarian into a man of the world, and lifting him from the slavery of a country parish towards the mastership of a metropolitan congregation. If he had bought a pipe that day instead of books he might have been a petty D.D., preaching safe inanity in some obscure corner of the world, and going to Europe every five years for his health."

This idea touching the expenditure of surplus capital is admirable. Mr. Parton again mentions this suggestion as applicable to the whole country, after having given the statistics of tobacco: —

"All this inconceivable expenditure, this five hundred millions per annum, comes out of the world's surplus, that precious fund which must pay all the cost, both of improving and extending civilization. Knowledge, art, literature have to be supported out of what is left after food, clothes, fire, shelter, and defence have all been paid for. If the surest test of civilization — whether of an individual or of a community — is the use made of surplus revenue, what can we say of the civilization of a race that expends five hundred millions of dollars every year for an indulgence which is . . . an unmitigated injury?"

ADVICE

"My dear man," said a clergyman, with an expression benign of pity, "I feel it my duty to warn you of the habit of drink. It is a sinful habit."

"All right," said the man; "when you take that poison weed from your mouth I will consider the idea of tapering off on my glass of whiskey."

"How can I hear what you say," said Emerson, "when what you are is thundering in my ears?"

Another extract from Emerson:—

"Who can tell the limits of organized nature? It is for man to tame the chaos; on every side, whilst he lives, to scatter the seeds of science and of song, that animals, men, may be milder, and the germs of love and benefit may be multiplied.

"In every solitude are those who succor our genius and stimulate us in wonderful manners. . . . What has friendship so signal as its sublime attraction to whatever virtue is in us? We will never more think cheaply of ourselves or of life. We are piqued to some purpose.

"True genius will not impoverish, but will liberate and add new senses. If a wise man shall appear in our village, he would create in those who conversed with him a new consciousness of wealth by opening their eyes to unobserved advantages. . . . The rich would see their mistakes and poverty, the poor their escapes and their resources."

Statesmen pass laws to punish the offenders and not the offence.

ABRAHAM LINCOLN'S PROPHECY

From Speech at Springfield, Ill., Feb. 22, 1842

"Turn now to the temperance revolution. In it we shall find a stronger bondage broken, a viler slavery manumitted, a greater tyrant deposed—in it, more of want supplied, more disease healed, more sorrow assuaged. By it, no orphan starving, no widows weeping; by it,

none wounded in feeling, none injured in interest. Even the dram-maker and dram-seller will have glided into other occupations so gradually as never to have felt the change, and will stand ready to join all others in a universal song of gladness. And what a noble ally this to the cause of political freedom! With such an aid, its march cannot fail to be on and on, till every son of earth shall drink in rich fruition the sorrow-quenching draughts of perfect liberty! Happy day, when, all appetites controlled, all passions subdued, all matter subjugated, mind — all conquering mind — shall live and move, the monarch of the world! Glorious consummation! Hail, fall of fury! Reign of reason, all hail!

“And when the victory shall be complete — when there shall be neither a slave nor a drunkard on the earth — how proud the title of that LAND which may truly claim to be the birthplace and the cradle of both those revolutions that shall have ended in that victory! How nobly distinguished that people who shall have planted and nurtured to maturity both the political and moral freedom of their species!”

FROM THE SERMON OF THE THREE TAVERNS, BY
REV. T. DE WITT TALMAGE

They came to meet us as far as Appii Forum and the Three Taverns. — Acts xxviii. 15.

“One of the worst things about these Three Taverns was that they had especial temptation for those who had just come ashore. People who had just landed at Actium were soon tempted by these three hotels, which were only a little way up from the beach. . . . Of the one million sailors now on the sea, how few of them coming ashore will escape

the Three Taverns! After surviving hurricanes, cyclones, icebergs, collisions, many of them are wrecked in harbor. I warrant that if a calculation were made of the comparative number of sailors lost at sea and lost ashore, those drowned by the crimson wave of dissipation would far outnumber those drowned by the salt water.

“Alas! that the large majority of those who go down to the sea in ships should have twice to pass the Three Taverns, namely, before they go out and after they come in. That fact was what aroused Father Taylor, the great sailors’ preacher, at the Sailors’ Bethel, Boston, and at a public meeting at Charlestown he said: ‘All the machinery of the drunkard-making, soul-destroying business is in perfect running order, from the low grog holes on the docks, kept open to ruin my poor sailor boys, to the great establishments in Still House square, and when we ask men what is to be done about it they say, “You can’t help it.” And yet there is Bunker Hill! and you say you can’t stop it; and up there are Lexington and Concord.’ We might answer Father Taylor’s remark by saying: ‘The trouble is not that we can’t stop it, but that we won’t stop it.’ We must have more generations slain before the world will fully wake up to the evil. That which tempted the travellers of old who came up from the seaport of Actium is now the ruin of seafaring men as they come up from the coasts of all the continents — namely, the Three Taverns.

“The fact is, there are in another sense three taverns now: the gorgeous tavern for the affluent, the medium tavern for the working classes, and the tavern of the slums; and they stand in line, and many people beginning with the first come down through the second and come out at the third. At the first of the three taverns, the wines are of celebrated vintage, and the whiskeys are said to be pure, and they are quaffed from cut glass, at marble side-tables,

under pictures approaching masterpieces. The patrons pull off their kid gloves, and hand their silk hats to the waiter. . . . But those patrons are apt to stop visiting at that place. It is not the money that a man pays for drinks, for what are a few hundred or a few thousand dollars to a man of large income — but their brains get touched, and that unbalances their judgment, and they can see fortunes in enterprises surcharged with disaster. In longer or shorter time they change taverns, and they come down to tavern the second, where the pictures are not quite so scrupulous of suggestion, and the small table is rougher, and the caster standing on it is of German silver, and the air has been kept over from the night before, and that which they sip has a larger percentage of benzine, ambergris, creosote, henbane, strychnine, prussic acid, coculus indicus, plaster of paris, copperas, and nightshade. The patron may be seen almost every day, and perhaps many times the same day, at this tavern the second, but he is preparing to graduate. Brain, liver, heart, nerves, are rapidly giving way. The tavern the second has its dismal echo in his business destroyed and family scattered, and woes that choke one's vocabulary. Time passes on, and he enters tavern the third; a red light outside; a hiccoughing and besotted group inside. He will be dragged out of doors about two o'clock in the morning and left on the sidewalk, because the bartender wants to shut up. The poor victim has taken the regular course in the college of degradation. He has his diploma written on his swollen, bruised, and blotched physiognomy. He is a regular graduate of the three taverns. As the police take him and put him in the ambulance the wheels seem to rumble with a roll of thunder, which says: 'Look not upon the wine, for at the last it biteth like a serpent and stingeth like an adder.'

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“Notice that a profound mystery is attached to these Italian hostelries. No hotel register tells the names of those who stopped at those taverns ; there is no old account book as to how many drank there ; there is no broken chalice or jug to suggest what was the style of liquid which these customers consumed. So an awful mystery hangs about the bar-rooms of the modern taverns. Oh ! if they would only keep a book upon the counter, or a scroll that could be unrolled from the wall, telling how many homesteads they have desolated, and how many immortal souls they have blasted. You say that would spoil your business. Well, I suppose it would, but a business that cannot plainly tell its effects upon its customers is a business that ought to be spoiled. Ah ! you mysterious bar-rooms, speak out and tell how many suicides went out from you to halter, or pistol, or knife, or deadly leap from fourth-story window ; how many young men, started well in life, were halted by you and turned on the wrong road, dragging after them bleeding parental hearts ; how many people who promised at the marriage altar fidelity until death did them part, were brought by you to an early and ghastly separation ; how many mad houses have you filled with maniacs ; how many graves have you dug and filled in the cemeteries ; how many ragged and hungry children have you beggared through the fathers whom you destroyed ? If the skeletons of those whom you have slain were piled up on top of each other, how high would the mountain be ? If the tears of all the orphanage and widowhood that you have pressed out were gathered together, how wide would be the lake, or how long the river ? Ah, they make no answer.

“But what a glad time when the world comes to its last three taverns for the sale of intoxicants ! Now, there are so many of them that statistics are only a more or less accu-

rate guess as to their number. We sit with half-closed eyes and undisturbed nerves and hear that in 1872 in the United States there were 1,964 breweries, 4,349 distilleries, and 171,669 retail dealers, and that possibly by this time these figures may be truthfully doubled. The fact is that these establishments are innumerable, and the discussion is always disheartening, and the impression is abroad that the plague is so mighty and universal it can never be cured, and the most of sermons on this subject close with the book of lamentations, and not with the Book of Revelation. Excuse me from adopting any such infidel theory. The Bible reiterates it until there is no more power in inspiration to make it plainer, that the earth is to be, not half, or three-quarters, but wholly redeemed. On that rock I take my triumphant stand, and join in the chorus of hosannahs."

THE SITUATION

THE success and failures of brave soldiers in the long war with the poison vice are full of interest and pathos. They had to fight ignorance, prejudice, fashion, appetite, and avarice.

Senator Blair thus writes of the work:—

"Until lately, the forces of the temperance reform have been a God-inspired mob. Many a Bastile has been taken, but hardly one has been destroyed, and we almost invariably have lost them again to the inferior but regular troops of the enemy. . . . The attention and effort of the past have been principally given to the reclaiming of the habitual consumers of poison, whose wounds and bruises are constantly on exhibition.

“It is all important that we comprehend what we are to do. We are to capture the world, to accomplish new and universal emancipation for fifteen hundred millions who now are . . . and for billions who are yet to be. Under the slavery which our century has abolished, it was only necessary to release the body and the whole man went free. But here is a thralldom which, while it is destructive of the body, yet interpenetrates the whole physical nature, and by a horrible process of mental and moral, as well as physical dissolution and degradation, eliminates every quality of nobility in man. . . . The man is at last absorbed in his own chains; there is no man. . . . Both body and soul are destroyed in Hell, yet the Hell is upon earth. . . . And is there no escape? Are these chains perpetual? Shall there be no new emancipation? . . . It is hardly worth while to prolong society unless there is hope of its elevation and happiness here. . . . We are entering upon a great war. . . . The battle is over the face of the whole earth. It is personal, social, national, international. It involves both hemispheres and all races. . . . It has already lasted more than a hundred years. Let us fight a good fight. How shall we win this fight?”

The way to success would seem to be at last opening; first, on account of investigations and discoveries of scientists, who have done more in the last thirty years to solve the problem of health than in all history before; and second, on account of the new interest in physical culture which is everywhere manifesting itself.

Advantages for physical culture are greater in America than elsewhere. Knowledge in regard to the poison mania is here more widespread, owing

to scientific educational advantages, which have a long start over such possible reforms elsewhere. Compulsory education of the children in our public schools includes study of the laws of health, with special reference to the effects of stimulants and narcotics on the human body. For this let us give thanks to the Women's Christian Temperance Union, and the good sense of State legislators. This teaching already exists in all our States and territories, in our national, military, and naval academies, and in the Indian and colored schools established by the federal government.

In the history of the wars against King Poison, one organized army after another has been vanquished, and at times human deliverance has seemed well-nigh hopeless. We now see coming in glad array, like Blucher's army at Waterloo, these fresh forces from the public schools. They are coming to the front in the strength and vigor of manhood, and there is cause indeed for rejoicing.

It would take more than all this poor volume to speak adequately of the work of Mrs. Mary H. Hunt, who has had charge of the department of scientific instruction for the W. C. T. U. The work accomplished in securing legislative enactment (local, State, national and international) for making the study of physiological science obligatory throughout the entire system of public instruction is largely due to her personal exertions.

American children have found that poisons, however seductive, are simply poisons, which at last bite like a serpent. The impression, being well-

grounded, makes it impossible for King Poison to tempt an uncontaminated appetite. The child in health, knowing the real nature of any poison, would as soon enter a chamber infested with pestilential disease, or sip from a glass containing arsenic or strychnine, as to take alcohol, nicotine, or morphine. The natural and overmastering impulse revolts against it.

The present armies of inebriates will probably continue to limp or fall by the way, as failure after failure of energetic and noble work in their behalf has repeatedly demonstrated. They seem almost hopeless, yet in the circulation of petitions to legislators asking the passage of these educational laws, be it said, with hats off, that these poor victims of the poison habit were the first and most pressing to sign them, uttering almost unanimously, "Yes! save the children." And so, in our country, fifteen million children, constantly giving place to new recruits, are being taught the true effects of poisons on the human system. Indeed, two generations of our youth thus enlightened have now grown to manhood and womanhood.

Mrs. Hunt's efforts abroad have also awakened an active interest in twenty other countries in the great work of educating the young.

America has an advantage, however, as the following table of statistics made by Leon Donnat, the Belgian statistician, will show. The table was made to give the relative amount per capita of public money devoted to war and education:—

	War.		Educa- tion.			War.		Educa- tion.	
	s.	d.	s.	d.		s.	d.	s.	d.
France . . .	20	0	1	5	Russia . . .	10	2	0	11
England . . .	18	3	3	1	Denmark .	8	8	4	7
Holland . . .	17	9	3	2	Italy . . .	7	6	0	8
Saxony . . .	11	9	3	4	Belgium .	6	9	2	3
Wurtemberg	11	9	1	9	Austria .	6	8	1	6
Bavaria . . .	11	9	2	6	Switzerland	4	10	4	2
Prussia . . .	10	11	2	5					

From foreign soil, Gustafson says concerning this table: —

“As a consequence, there is neither the inducement nor the effort on the part of the State to engage the best minds and characters in the education of the growing generation.

“An effort was made in London in 1888 at a meeting in Exeter Hall to awaken an interest in the direction of temperance education. The Lord Bishop of Exeter, in a powerful and eloquent speech, said, ‘Long before this, we ought to have made it one of the ordinary lessons in our elementary schools that one of the most awful evils that ever afflicted the country is to be found in the use of intoxicating liquors.’”

Again says Gustafson, speaking on the same subject for the people of England: —

“We have the steadily growing tendency to level all barriers interfering with the universal mental development; and in the struggle for progress, in the sturdy investigation of the causes of the inequalities which constitute all the difference between worth and worthlessness, between happiness and misery, the students of humanity have discovered that intemperance produces, is often produced by, is

associated with, and gathers to itself, all other kinds of vice and degradation.

"Hence the modern temperance is based on knowledge, conviction, and aspiration, and on sentiment of fellowship and fraternity much deeper and stronger than has ever been felt before."

Returning to America, we find again a great organized army full of youth and vigor already marching in the field for a higher humanity. It comes from the Young Men's Christian Associations springing up like beacon lights in all our cities.

Are they in part a possible product of the great educational movement just considered? These associations comprise a stalwart body of practical workers of which the country scarcely appreciates the value. Their buildings are palaces of comfort, and their aims are the highest. They are the vigorous young business men of the country, whose blood is red and conscience clear. They represent the best of our natural bone and sinew, and when they choose to put a united shoulder to the wheel of progress, something is likely to move.

There are organizations of men and women whose key-note of work is patriotism. Will the sons and daughters of the American Revolution find how their object of work may practically be best accomplished?

There are also new organizations springing up everywhere whose object alone is physical culture. Their studies necessarily lead them to abhor what most produces physical degradation.

As for organizations, philanthropic societies of every

kind are of course legion, whose object is to prevent or alleviate the misfortunes of mankind.

To mention last what of all is really the most potent factor of success, let us appreciate what is of the greatest national value, — the almost universal communication by means of a free and independent press, alive and alert to all questions of reform. The armies have but little longer to fight against ignorance.

A SUGGESTION FOR A NATIONAL AND AN INTERNATIONAL LEAGUE FOR THE AD- VANCEMENT OF PHYSICAL CULTURE

THIS WORLD IS MADE FOR HEALTH AND HAPPINESS

To bewail our weakness is right, but not remedial. — HENRY DRUMMOND.

When it becomes the joy of our lives to render service, we are near realization. — SIDNEY H. BEARD.

Let us boldly move on ; we can make life a series of great conquests. — J. TODD FERRIER.

THE work of a society for the advancement of physical culture would aim especially to cultivate respect for sound health and all that promotes it, and to cultivate contempt for unnecessary ill health, and what contributes to it.

Let us first believe in royalty — the royalty of health. Let us believe that every man is a viceroy and every woman a vicereine on earth, endowed with

superior reason and a naturally superb physical equipment to carry out the mission of the Great Creator. Let us believe that this mission is to protect, to develop and to save, rather than to pervert and to destroy.

A single snow-flake flutters and perishes. It represents in combination a force which may blockade the commerce of a great city. A tiny dew-drop glistens and vanishes in the sunshine, to represent in combination the power and majesty of the ocean. Could not the great power of united conscience and truth in the interest of public health be utilized in solving the problem of human regeneration?

It would seem as if the present time were more propitious than ever before for the great work. The spirit of physical reform is everywhere. The air is full of it. The brave and splendid work heretofore accomplished is ripening into fruit. Whatever thwarts the physical regeneration of mankind is doomed.

Full as our country is of organizations composed of the best of our people, whose object is the uplifting of humanity, and great as has been the work, they have still touched but the edges of the national conscience and the national strength. The country is full of conscience. It is full of courage. By what means may we propitiate and crystallize forces already existing? Does it not seem that a great national and international organization in the name of "Health" is to be the next movement for reform and growth? Does it not seem that the time is ripe for the greatest war in the history of the world? Does it not seem that the strong current which has dragged

the human race backward can be met and stemmed? Would not such a conquest mark an era of new national vigor, a new and universal prosperity? Would it not solve the problem of happiness? Could not the dawn of the twentieth century see a country and a world successfully freeing itself from the in-harmonies of human existence?

Without the aid of the strong arm of the State, great public questions of hygiene can never be successfully grappled. We must remember, however, that the State is chiefly public opinion, and that public opinion and effort are but the combined opinion and effort of the individual. So at last is not the great victory, the work of each individual — you and me and all?

Let us not find too much fault with legislators when they are but the rivers and not the sources. Sources control rivers, and you and I are the sources. In time, when backed by public sentiment, affairs pertaining to public health should be controlled by boards of health and taken as far as possible out of party politics.

In studying the practical side of a new organization one must consider what has been advantageous and disadvantageous in the workings of the old ones. They have too often represented but the snow-flakes and dew-drops of conscience, truth, and bravery. They have lacked combination and unity of purpose.

Like dew-drops, local organizations have dissolved. They have represented but a town, a State, a social clique, a fraction of public sentiment. They have had too little of the dual strength imparted by both

national and local organization. National or parent strength has been too much neglected for local strength. To carry a succession of fortresses requires the combined onslaught of a national army. In the way of pecuniary support what is needed is a separate and great national or parent strength composed of half the financial pittances of all the local strength, a financial backing which could be chiefly used for the purpose of new organizations everywhere. From national headquarters the machinery of organization could spread branches into every part of the country.

Organizations for the best of purposes have generally been hampered by too great expense of membership. What entails financial burdens is not enduring; and too much money in old organizations has been spent for sentimental purposes aside from the legitimate work of the society. The rule should be to spend for what is practical only.

Individual members should be freed from all pecuniary exactions beyond a pittance — say two dollars a year, one dollar for local and one dollar for national work.

The friend at my side says, "Make it three dollars." Do we not want all the world to join? If well managed, need the affair be very expensive? The officers of the League would serve without salaries. In new chapters, rooms that can be loaned (churches, school-houses, etc.) might be temporarily utilized. Of course there would be no law of the society to prevent giving to any extent. We see indeed (in imagination) extra and unsolicited money pouring in as from the mines of Golconda, through pittances, *en gros*, or by

bequests. But no begging. Begging is the unmitigated nuisance of all societies. If extra money worth the mention flows in for a worthy purpose, it comes as rain falls from the clouds—the natural surcharge of gathering vapors which bring to life and flower the gardens of the earth. The world is full of people of means, anxious to know how best to give in the interest of human advancement and happiness. In course of time why should we not see the glimmering minarets of a great national temple built by the government itself for the furtherance of the nation's health? Possibly the United States medical library, the third finest in the world, and now contained in a combustible building, might be placed in it; possibly departments consecrated to sanitary scientific research might be there! In its long halls possibly the eloquent language of brush and chisel might tell of perfect types of manhood and womanhood for the education of the people; possibly a new cabinet officer might be a Secretary of Health, who would turn his special attention to what best builds a strong, powerful, and happy nation.

Asking pardon for looking so far ahead, and returning to a less rosy state of affairs, what again may be learned from old organizations? They have generally been composed exclusively of one sex. Why should not the father and mother, brother and sister, boys and girls join in the work whose object is to raise the health standard of the people? And why pledges, when, along with active work, the dominating purpose of the new federation would be to study physical culture and all that pertains to it. Let us say that first

of all, the members of the contemplated League for Physical Culture would be *students* who welcome and further as far as possible both scientific research and practical experience in all matters relating to health.

We are to gain the co-operation of those powerful forces, the masses, the industrial element of the country, the element which turns more quickly to study and reform than the idle element. To secure any large and popular membership, the study and work must be attractive and entertaining. What attracts to the concert hall, the theatre, the social club, to the jingling college song, all of which at present tend to popularize the poison vices, must attract in the interest of health, good government, and true happiness. Let us have everywhere health-club meetings, where respect for health and what enhances it is glorified, and contempt for ill health and what promotes it is ridiculed in popular tunes and grand choruses. All the world likes to sing. Let amateur orchestras composed of men and women lead the singing!

Again, from the national headquarters, prizes could be given, not only for songs, but for short and well written theses touching the various phases of physical culture, one of which could be read on the same date at all branch club-meetings, to be afterwards given to the press for publication. Whatever other entertainments might be provided, as short lectures, debates, amateur theatricals, etc., the meetings could thus always be assured of interest in the theses and the singing.

The chief means for arousing popular interest in physical culture which the Grecians adopted at their

time of physical splendor, might well be imitated. "Probably no institution exercised a greater influence in moulding the national character and producing that unique type of physical and mental beauty which we see reflected in Greek art and literature than the public contests of Greece."

A great influence in the cause of reform lies undoubtedly in well-directed amusements, and the popular mind readily takes to athletic games. Athletic contests and popular songs are surely pleasanter pastimes than the idleness of the street-corner, and furnish happier stimulants than the death-dealing potions and noxious fumes of the dram-shop. Moderate prizes or decorations can set a whole community training and transform numberless boy anæmics into athletes. "A well-managed foot-race track," says Dr. Oswald, "would enable multitudes of sinners to run away from their besetting sins as well as their physical ailments." Moderate fees on occasions of tournaments could pay expenses. Athletics on a magnificent scale would undoubtedly lend an incalculable influence to national character. Let us at our National Capital have permanent grounds and paraphernalia for national and international games and tournaments, after the manner of the Olympic games. Let us have contests which will test the physical vigor and manliness of sons of the several States of the Union, of different colleges, and schools; let us challenge the votaries of different diets, and see how they compare in physical endurance at our great tournaments. We want experiences, practical proofs, and statistics.

Let us also challenge friendly competition, and exchange experiences with the vigorous of other countries.

Again, let our proposed society interest itself in the direction of public amusements in general, realizing that in absence of proper amusement, improper ones are sure to grow like rank weeds and poison the public taste. The direction of public amusements that recreate rather than destroy, that confer benefits rather than curses, is worthy the careful consideration of legislators and those behind them. He who knows best how to play, knows best how to work.

As far as practicable in our suggested league, let there be established attractive club-rooms, containing large halls for public meetings, gymnasiums, and reading rooms.

In the interest of securing a large membership of the league, each member might have a special duty to perform in securing two new members. It is little for each member, yet if carried out would soon produce results enormous in the aggregate.

Let us also understand that we have fashion to conquer and to hold. Fashion is an incalculable power. Much as we dislike to admit it, we are all, *more or less*, contemptible slaves to fashion. Of all forces for retarding or advancing reforms, fashion is the most potent. Pernicious fashion has largely brought about devitalizing habits, and penitent fashion now owes it to the world to come to the rescue.

One of the greatest interests of mankind should be conducted with dignity. True dignity commands respect. For the sake of their influence as well as

their skill the most illustrious names of those occupying the very highest social, political, and royal positions must be selected to accept the highest offices of the league. This should be a rule *de rigueur*. Let us believe in success. Let us utilize that ability which has already accomplished success. Success begets success. As certain officers of the proposed League could be appointed, the most influential names could thus be more readily controlled. To secure illustrious personages, as well as for other reasons, the tenure of office should be short and the president should be ineligible for two consecutive terms.

An annual parliament held at national capitals should bring together representatives selected from the most competent and eloquent of local membership. Along with affairs of business they would undoubtedly enjoy the receptions and entertainments which are usually accorded to important assemblies and also the athletic games and tournaments contemplated.

To make this castle in the air — this dream of empire — more materialistic, the following draft of constitution is chiefly written by my friend, Mrs. Ellen Hardin Walworth, who prepared that constitution which has been so successful in the organization of the Daughters of the American Revolution, and again the one used by the War Relief Association at the time of the Cuban war, of which she was the very successful manager.

PROPOSED CONSTITUTION

FOR

The United States National League for Physical Culture.

ARTICLE I

NAME

The name of this proposed organization shall be the National League for Physical Culture.

ARTICLE II

OBJECTS

Section 1. The promotion of a higher standard of individual and public health.

Sect. 2. The organization of departments especially devoted to the above objects, as follows :

- (a) For the study of all questions relating to health.
- (b) For the direction of amusements in the interest of health, including those of an athletic character.
- (c) For securing suitable legislation for the purposes herein named.
- (d) For popularizing and emphasizing the power of health and promoting a knowledge of the need of good health for the attainment of individual happiness and universal good citizenship.

ARTICLE III

MEMBERSHIP

Section 1. The membership of this League shall consist of all persons who desire to promote its objects, and shall be divided into Active, Associate, Junior, and Life Members and Benefactors.

Sect. 2. Active members shall be over the age of 18 years, and may vote in the election of delegates to the National Parliament and in the transaction of other matters relating to the business affairs of the league.

Sect. 3. Persons may become associate members, life members or benefactors by the payment of the sums hereinafter provided. Junior members shall comprise all under 18 years of age.

Sect. 4. Each member of the League shall be entitled to a certificate of membership duly attested by the President, the recording secretary, and the seal of the National Society, which shall entitle him or her to representation in the Annual Parliament of the League through a regent or delegate.

ARTICLE IV

OFFICERS

Section 1. The officers of this federation shall be a president, a national vice-president, a second national vice-president, one national recording secretary, one national corresponding secretary, one national treasurer, two national auditors, one national librarian, nine trustees, one vice-president for each State and territory, State regents, and such other local officers as shall be found necessary.

Sect. 2. All the above-named officers except the vice-presidents of States and territories, the trustees, the regents, and the local officers shall be elected by the board of trus-

tees for a term of two years. The president shall not be eligible for two consecutive terms and shall be ex-officio the presiding officer of the Annual Parliament. All other officers except the trustees shall also serve for a term of two years and shall not be eligible for two consecutive terms.

Sect. 3. The first vice-president shall be an active and organizing officer, and shall, subject to the approval of the president, appoint a vice-president for each State and territory of the country, and shall also superintend the organization of chapters. The second vice-president shall, when called upon, assist the president and vice-president, and in absence of both, perform their duties.

Sect. 4. Each State vice-president shall be an ex-officio officer of the National League. He or she shall appoint regents in various localities in his or her State or territory, whose first duty shall be to organize each a chapter. Regents to take the places of those whose terms of office have expired shall also be appointed by the State vice-president.

No State vice-president or regent shall be appointed who is not a resident of the State or territory he or she represents, and no one shall hold more than one active office at a time in this proposed League.

ARTICLE V

TRUSTEES AND DIRECTORS

Section 1. Nine trustees shall be elected by the Board of Directors; at the first election, three shall be elected for one year, three for two years, and three for three years, and after the first election, three shall be elected each year for a term of three years.

Sect. 2. The Board of Directors shall consist of the officers of the National Association, nine trustees, and the vice-

presidents of States. They shall manage the affairs of the National Society subject to its constitution and by-laws. They shall make by-laws for the National Association.

Sect. 3. Seven shall be a quorum in the Board of Directors for the transaction of business.

Sect. 4. The trustees shall be a standing executive committee for the board of directors, and administer the affairs of the Association in the intervals of the meetings of the board of directors. Three shall be a quorum.

ARTICLE VI

CHAPTERS

Section 1. When a regent, who has been appointed by the State vice-president and approved and commissioned by the National Board of Management, shall have brought together twenty persons, all residents of one locality, he or she may organize a chapter which shall be entitled to a Charter. The regent shall be the presiding officer. The members of the chapters shall elect a secretary, treasurer, auditors, and such other officers as may be required. They shall also make their own by-laws which must conform to the constitution of the general League.

Sect. 2. After a local board of management shall have been established all applications for membership shall be passed upon by the local board, and when the application shall receive the endorsements of the regent and secretary they shall be forwarded to the National Board of Management for final action.

Sect. 3. A chapter consisting of twenty members shall be entitled to send its delegate to the annual Parliament to represent it; an increase to seventy-five members shall entitle it to a delegate in addition to the regent, and every additional seventy-five members shall allow it an additional delegate elected by the local board.

ARTICLE VII

FEES AND DUES

Section 1. All members with the exception of life members and benefactors shall pay annual dues of two dollars each.

Sect. 2. The payment of fifty dollars shall constitute the contributor a life member of this Association, and exempt him from other fees and dues.

Sect. 3. The payment of one thousand dollars shall constitute the contributor a benefactor of this organization, exempt from any other fees and dues.

Sect. 4. Half of all dues of members, life members, and benefactors shall be sent to the National Treasurer of the Association, by the chapter treasurer, and half may be retained by the chapter.

ARTICLE VIII

MEETINGS

Section 1. The headquarters of the National League for Physical Culture shall be at Washington, D. C. The annual meeting or Health Parliament shall be held in the city of Washington on the second Tuesday in April of each year and shall consist of all National officers, trustees, State vice-presidents, regents, and delegates of chapters.

Sect. 2. During the session of this parliament reports from the National Board of officers and also from the officers of local societies shall be in order, as well as recommendations and discussions relating to general interests of the Association. Plans for work shall be determined by the three-fourths vote of the Parliament and shall become law when signed by the President and Secretary of the National League.

Sect. 3. Ex-officers may take part in the deliberations, but may not vote.

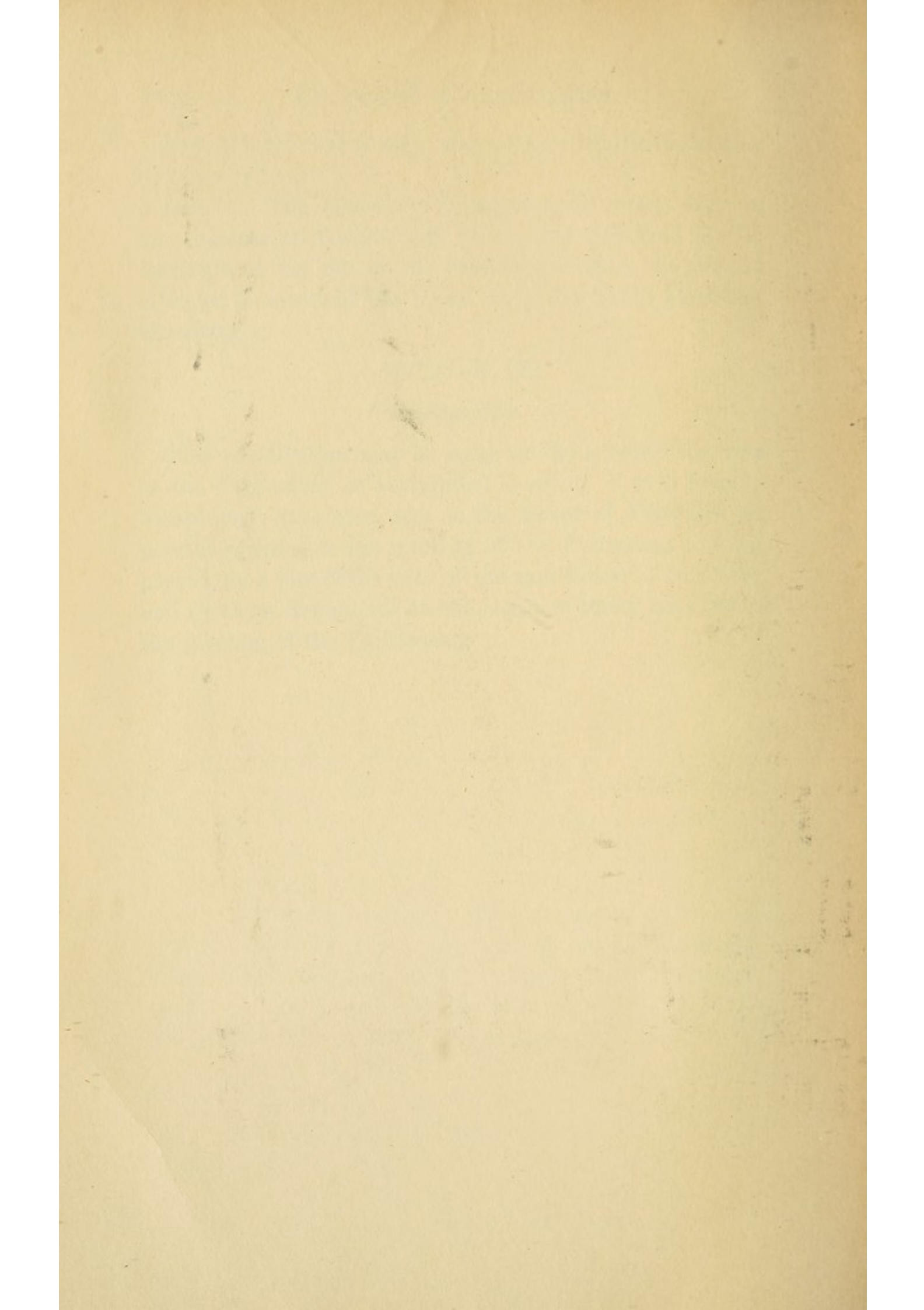
Sect. 4. The Board of Directors shall meet once in four months at Washington, D. C., and may hold special meetings at the call of the President or upon the request of seven members of the Board addressed to the President in writing.

ARTICLE IX

AMENDMENTS

This constitution may be amended by a four-fifths vote of the Parliament at any annual meeting, if such amendments shall have been sent to the Board of Directors six months previous to the meeting of the Parliament and approved by a four-fifths vote of the said Board of Directors, and by them distributed to the chapters thirty days before the meeting of the Parliament.









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