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Digestion and Dyspepsia.

DR. TRALL.

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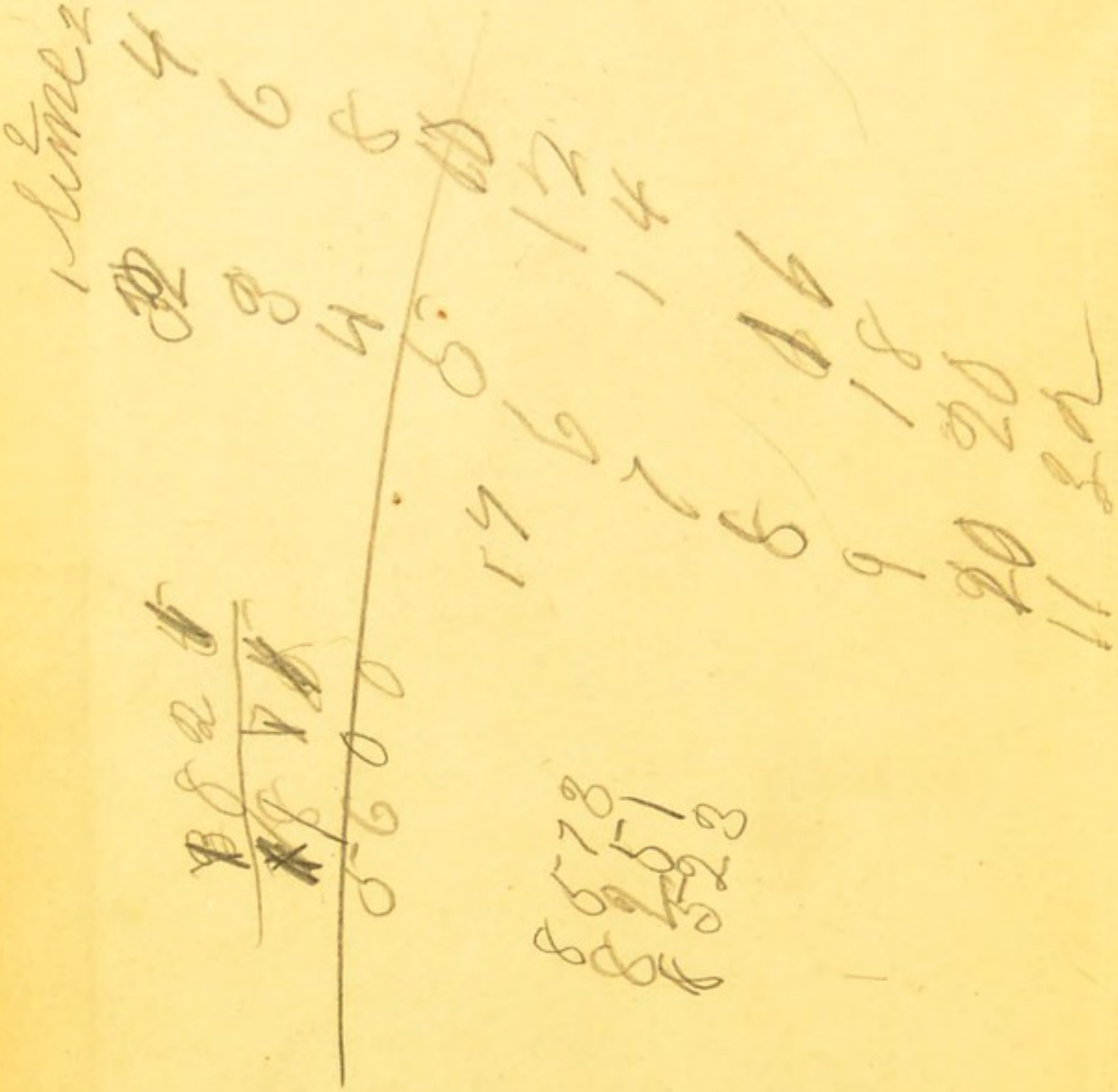

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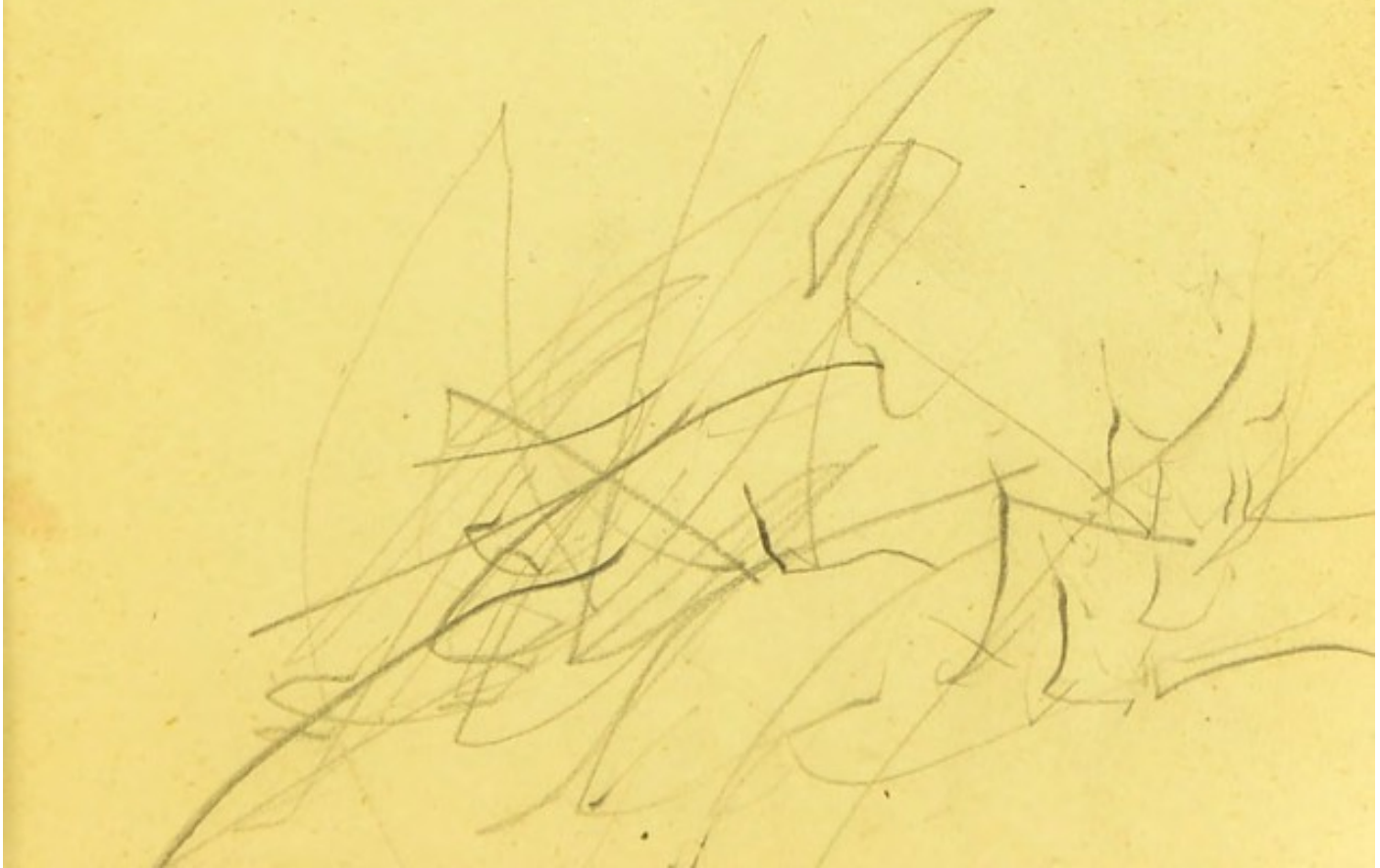

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DIGESTION AND DYSPEPSIA

A

COMPLETE EXPLANATION

OF THE

PHYSIOLOGY OF THE DIGESTIVE PROCESSES,

WITH THE SYMPTOMS AND TREATMENT OF

DYSPEPSIA

AND OTHER

DISORDERS OF THE DIGESTIVE ORGANS.

ILLUSTRATED.

BY R. T. TRALL, M. D.,

AUTHOR OF "THE HYDROPATHIC ENCYCLOPŒDIA," "HYGIENIC HAND-BOOK," "THE TRUE HEALING ART," "THE BATH, ITS HISTORY AND USES," "HYDROPATHIC COOK-BOOK," ETC.

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PREFACE.

THIS work, now offered to the public, is a Summary of the data which I have been collecting for more than a quarter of a century, with regard to the nature, causes, complications, and proper treatment of the diseases of the digestive organs; and an experience of more than thirty years, during which time I have had the professional management of several thousands of invalids (besides hundreds which I have treated through correspondence), a large proportion of whom were dyspeptics, has convinced me that the theories advanced and the practice recommended in this volume, are true and successful. I have only to add, that I have not in any case administered medicine, but have relied exclusively on Hygienic agencies as remedial resources.

R. T. T.

HYGEIAN HOME.
Florence Hights, N. J.

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INTRODUCTION.

We are a nation of dyspeptics; and if we can believe the evidences of our senses and the testimony of physicians, we are growing worse continually. Where is this devitalizing tendency to end? There are writers and book-makers enough on this subject, but, unfortunately, our anti-dyspeptic literature, like the remedy it recommends, is more extensive than useful. Many books have been written by physicians, regular and irregular, to advocate some favorite theory or hobby, or commend some plan of medication in which the author had a professional or pecuniary interest. And a still greater number of both have flooded the country with no other motive on the part of their proprietors, than to enhance the sale of some nostrum in the shape of some "Nervous Antidote;" "Blood Food;" "Bitters;" "Tonic;" "Hypophosphite," or *Anti-disease Mixture.* All of the literature extant calculated to instruct the people in the proper methods for preventing dyspepsia, and enabling them to treat themselves when sick, without employing the doctor or patronizing the drug shop, is exceedingly limited; and even that little has an extremely limited demand.

The public mind has been so long accustomed to rely on medicine to remove the penalties of transgression, when persistent disobedience to the laws of health has resulted in disease, that remedy and "apothecary stuff" have come to be regarded as "one and inseparable." It is a delusion, however, which has ruined more than one of the nations of the earth, and which is now insidiously but not the less surely undermining the stamina of the American people.

"Every one is more or less dyspeptic now-a-days," is a common saying; and because every one is ailing in this particular manner, it seems to be nobody's business, except those who make opportunity of misfortune. It should be the first business of all. It should be the first business of the

Christian, the philanthropist, the statesman, the legislator, the schoolteacher and especially the physician ; for a dyspeptic race never did and never will permanently maintain any progressive government, or liberal institutions, or reformatory measures, if indeed they can do anything except relapse into barbarism or slavery, as have the nations of old.

The mortality of dyspepsia makes no alarming exhibit in our "vital statistics." So much the worse ; for the causes of constitutional decline are overlooked. The dyspeptic person has an ever present predisposition to almost all forms of chronic disease. Indeed the dyspeptic condition is usually regarded as a mere symptom of some other malady, which receives the nosological name, and to which the death is accredited.

In the mortuary statistics of the city of New York, for the last year, dyspepsia is not mentioned as the cause of the death of a single one of the 32,647 deaths. But the fearful record appears under other names. The fact that the increased mortality of 1872 over that of 1871 reaches the enormous figures of 5,500, is conclusive that something is operating among us like a continual pestilence, predisposing to a multitude of diseases, and rendering the system powerless to overcome their special causes.

Dyspepsia is the condition that almost always precedes consumption ; indeed, it may be said to constitute its strongest and most prevalent predisposition. Dyspepsia in early life, and consumption in middle life, stand to each other in the relation of cause and consequence. More than three-fourths, and probably seven-eighths, of all the consumptives in adult life, were dyspeptics in youth.

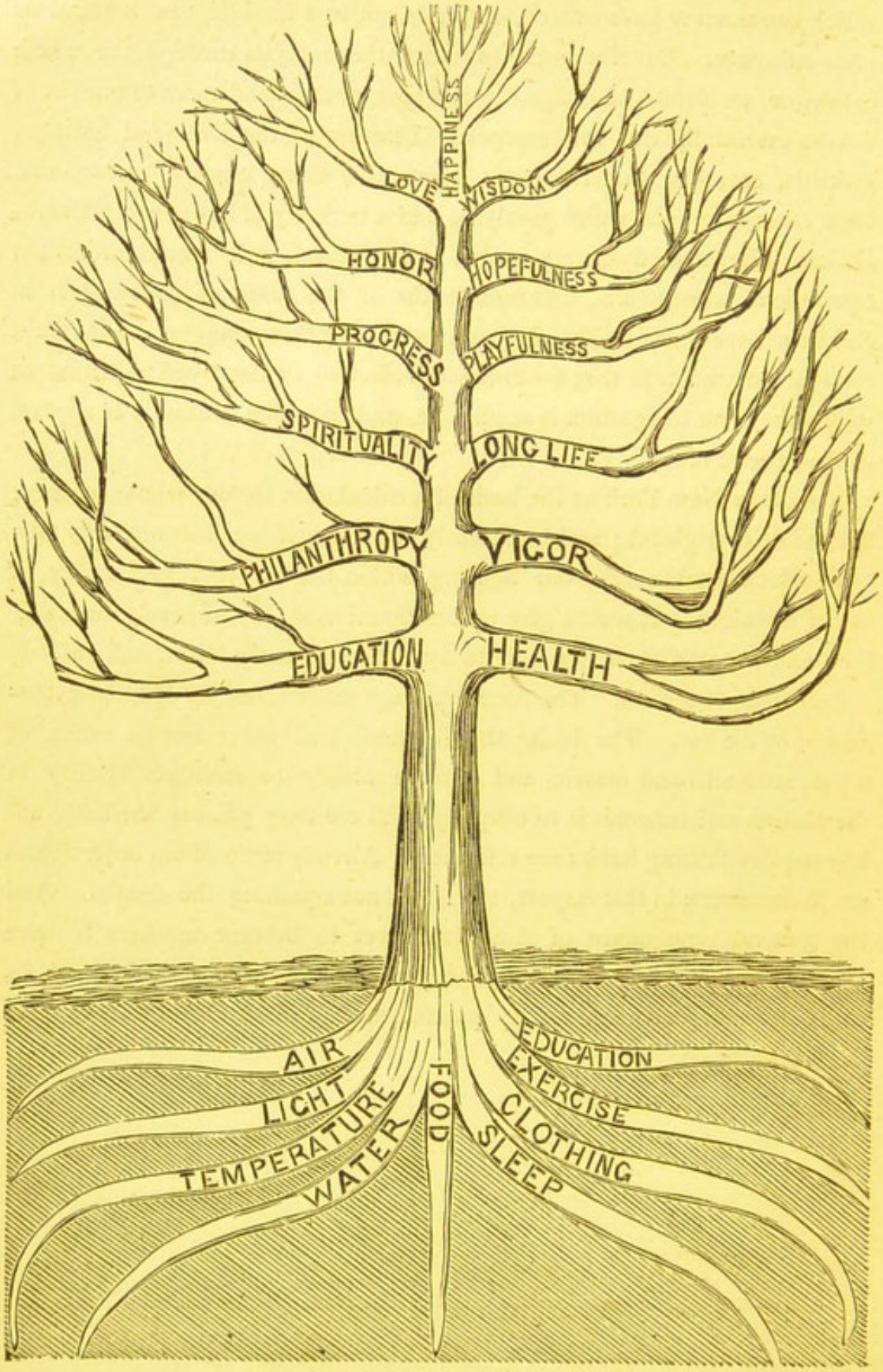
It is an important fact that nearly all affections termed scrofulous and tuberculous are due essentially to that kind of Cachexia whose more prominent manifestations are symptoms of indigestion. Imperfect nutrition is the very essence of the long catalogue of chronic diseases which are said to consist in a "depraved habit of body," "plethora," "anæmia," scrofula, scurvy, and other morbid diatheses.

The deaths in New York, in 1872, of scrofulous and tuberculous affections, are put down at 6,023 ; consumption alone gives us the fearful figures of 4,274. Then there are 3,479 deaths credited to that mythical phrase, "disorders of the nervous system," nearly all of which are the sequelæ of impaired digestion. We have here a record of nearly fourteen thousand deaths attributable to diseases intimately connected with indigestion, and

which could never have existed, certainly not to a fatal degree, without its prior existence. But if we were to pursue the analysis through the whole catalogue, we should be obliged to add several thousand more to our list of deaths essentially due to dyspepsia. Diseases of the liver and kidneys, gastritis, enteritis, heart-diseases, bronchitis, many cases of pneumonia, most cases of apoplexy and paralysis, and a majority of bowel complaints—cholera, diarrhœa, dysentery, colic, constipation, gall stones, intestinal concretions, worms, &c., and nine-tenths of the cases of convulsions in children, have their predisposing causes and all their dangers, aside from medical treatment, in that condition of defective or depraved nutrition to which the term indigestion is applicable, and to which it usually is applied in the generic sense.

If we take New York as the basis of a calculation for our whole country, the result is frightful ; and sufficiently alarming if we discount fifty per-cent, which would render our figuring within the range of probability, if not of certainty. It would give us a national mortality of nearly one million, and a mortality attributable to dyspepsia of nearly half a million.

One thing is certain. The American race must arrest its dyspeptic tendency, or die out. The Irish, the German, and other foreign races, of nerve, stomachs and muscle, and of more ability to maintain vitality in themselves and transmit it to offspring, will ere long possess the land, unless our devitalizing habits are reformed. Already some of our older States are in decadence in this respect, the births not equalling the deaths. And the general repugnance of American wives to become mothers is more attributable to the general dyspeptic condition which unfits them to be mothers, and renders maternity painful and perilous, than to all other causes combined.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LOVE
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HOPEFULNESS
PROGRESS
PLAYFULNESS
SPIRITUALITY
LONG LIFE
PHILANTHROPY
VIGOR
EDUCATION
HEALTH
AIR
LIGHT
TEMPERATURE
WATER
FOOD
EDUCATION
EXERCISE
CLOTHING
SLEEP

Arbor Vitæ.

PART I.

DIGESTION.

CHAPTER I.

NUTRITION.

Nutrition is the aggregate of all the organic processes. It may be distinguishable into digestion and assimilation. Disintegration is the separation and expulsion of the *debris*, or waste matters of the structures. Digestion, in the proper sense of the word, means the preparation of the food for assimilation. It comprehends insalivation, solution, chymification, chylification, and aeration. A brief exposition of the Physiology of Nutrition, in the order of the digestive processes, will the better enable us to understand the disorder of the same processes, which constitutes indigestion or dyspepsia. And to make the subject more intelligible to the non-professional reader, let us take an article of food, an apple, if you please, and trace it through all of its changes from the tree which produces it, to the tissue which assimilates it.

But, in order to understand the illustrations, the reader must steadily keep in mind a few propositions which are fundamental, and which, except the last three, are in direct antagonism with the doctrines taught in the text-books of our medical colleges. These are :

1. All the actions and changes of living organisms are vital, not chemical. *There is no chemistry in living structure.* Hence all attempts to explain the problems of life by chemical data must forever be fallacious.

2. In the relations between dead and living matter, the living acts on the dead. Hence medicines do not act on the living organs or structure in virtue of inherent or elective affinities, as is taught in the works on Materia Medica and Therapeutics, but, on the contrary, are resisted and rejected by the living organs and structures. Nor do poisons act on the living system, as is taught in the works on Toxicology and Medical Jurisprudence, but contrariwise, the living system acts in relation to them.

3. Diseases are not entities, nor processes necessarily inimical to vitality, nor materials nor forces at war with the *vis medicatrix naturæ*, as taught in the works on Pathology, but, on the contrary, all diseases are *remedial efforts*, whose object is the defence and purification of the vital organism, and the reparation of the deranged structures.

4. Food, drink, air, and other "Hygienic agencies," are in no sense "stimulants," as taught in the standard works on Dietetics; nor do they in any sense act on or do anything to the living organs, as taught by the chemico-physiologists · but, on the contrary, they are acted on by living structures.

5. Neither medicines nor foods possess any "properties" which they impart to the living structures, as is taught in all of our medical schools, with a single exception; but on the contrary, they possess inorganic elements and organic compounds which are rejected or appropriated by living structures.

6. Poisons are those agents which are rejected from the vital domain (emetics, cathartics, tonics, stimulants, narcotics, etc.), and foods are those substances which are usable in the formation of the bodily structures.

7. The vegetable kingdom feeds only on inorganic or chemical elements in a state of solution, transforming them into organic products, or proximate elements, which proximate elements, as combined in the processes of vegetable growth, constitute food for animals and man.

8. Animals and men cannot feed on inorganic or chemical elements, these invariably being to them in the relation of poi-

sons, nor can any organism, except that of the vegetable, produce food of any kind. Hence animals that eat other animals can only get such aliment as they have received from the vegetable kingdom.

CHAPTER II.

INSALIVATION.

The first act of digestion, after prehension, or taking the food into the mouth, is *mastication*. The object of mastication is *insalivation*. Every particle of food should be mingled with saliva, or digestion cannot be properly performed. And here, in the outset, we see one of the most prolific sources of disease in "high civilization"—imperfect mastication. As meals are presented at ordinary tables, and in all hotels and boarding-houses (except a few of those which are called Hygienic), very few dishes are in a condition to secure mastication, or that even admit of chewing; while the few which might be masticated more or less, are hurried into the stomach, or washed down with milk, tea, coffee, water, or some kind of alcoholized or otherwise medicated fluid. Those who would have perfect digestion should not drink anything at meals. Drinking should always be done before, after, or between meals.

Many physicians, and some Hygienists of loud pretensions, are very fond of milk themselves, and very fond of recommending it as a leading article of food for all enfeebled conditions of the digestive organs—dyspepsia, liver complaints, nervous debility, consumption, etc.—and even in fevers. And some of them seem to be "obsessed" with the chemico-physiological phantasy that milk, like fish, is a peculiarly phosphorizing aliment, and hence marvellously conducive to brain-tissue and mental power.

But such advice is always bad. Many patients can survive it, and many will improve in spite of it, provided the sum total of all their other habits have been changed for the better.

Milk cannot be among the better articles of the dietary for adults in any case. Why? *They do not masticate it.*

It is true that milk, when pure and normally produced (I do not mean the commercial article), contains all the nutrient elements that the various structures require; but, unless insalivated, it cannot be properly elaborated and assimilated. How well it can be used depends, of course, on the more or less healthy condition of the digestive organs. With some it seems to agree very well; and the same may be said of much worse things. With others it disagrees very decidedly, and in all bad cases of dyspepsia, consumption, or biliousness, it invariably aggravates. It is also especially pernicious in all of those complicated and obscure cases of indigestion to which the phrase, nervous debility, is usually applied, as I have demonstrated in many hundreds of cases.

It is said in reply to these objections to milk as an article of diet for persons after the period of infancy, that nursing children, and the young of all *mammalia* thrive on it, that they eat almost nothing else until near the "weaning-time." Admitted. But infants take it "the natural way." They masticate it. *They eat it.* They do not *drink* it. They take it drop by drop and insalivate it particle by particle, as it flows from the mother's breast, or from the nursing bottle when this is properly adjusted. If the milk is swallowed too fast, as will be the case if the mother uses too much slop-food, or drinks largely of tea or coffee at her meals, or if the nursing bottle has too copious a delivery, or if rapidly fed with a spoon, the child will throw it up; and if this habit is long persisted in, the milk will ferment more or less, the child have a sour stomach, flatulence, acrid eructations, canker in the mouth, etc. In a word, "the dear little fellow" will be a miserable little dyspeptic. The same things will occur if the child inherits, because of the erroneous dietetic habits of one or both parents, a debilitated or imperfect condition of the digestive organs, rendering the secretion of the saliva and gastric juice deficient in quantity or depraved in quality. Obstinate constipation, chronic diarrhœa, erysipelatous eruptions, bilious humors, scalled head, etc.,

are among the affections which are frequently congenital and constitutional, because of the dietetic errors of those whose sacred duty it was to transmit to them a sound organization—or none.

I would have no objection to pure milk as an article of food for adults, provided they masticate it. But this is never done. The adult always drinks it, and never eats it. If he takes it with solid food, bread and milk, for example, the fluid or milk is swallowed (drunk) before the bread is masticated (eaten), or the whole is bolted down unmasticated together. It would be impossible, or at the least very awkward for "children of a larger growth," to take milk as infants do. What young lady or gentleman would not regard it as a huge joke, or a downright insult to be presented, at a restaurant, with a glass of milk and a straw or glass tube through which to suck it, as though it were a "brandy smasher," or a *rumified* glass of soda water? Nearly all adults who use milk at meals, sip or drink it as they do water or other liquids.

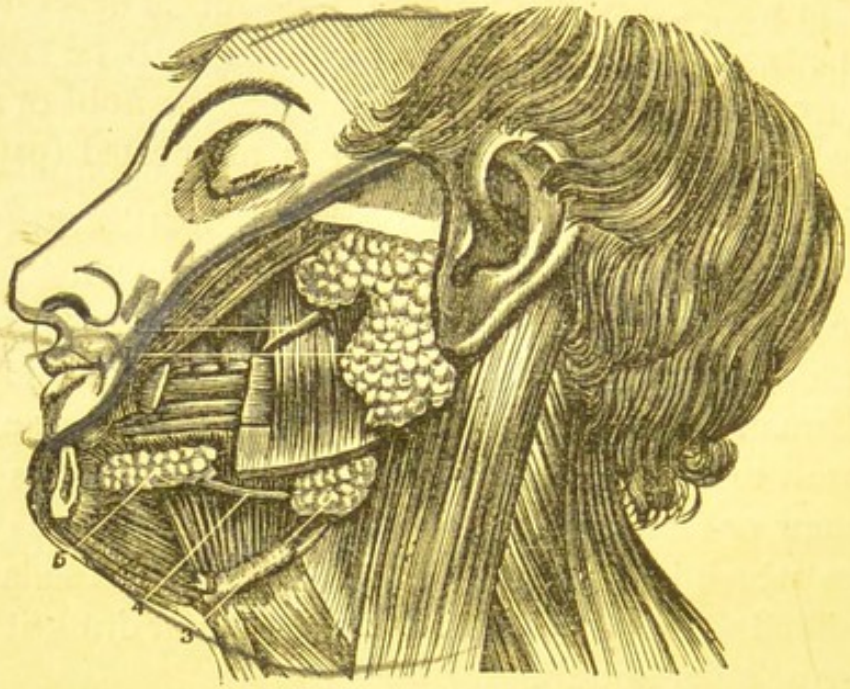
The practical rule deducible from these considerations is, that all kinds of food which are only semi-solid, or composed of solid particles diffused in water, as puddings, stews, mushes, gruels, soups, etc., should always be taken with dry bread, hard cracker, green apples, or something similar, and eaten very slowly. The common practice is the reverse; the more fluid dishes are spooned down as rapidly as the process of deglutition can be performed, and the solid material, more or less masticated, hurried after it.

The disease termed Mumps (*Parotitis*) is an inflammation of the parotid glands; and when both are affected at the same time, the mouth is very dry; mastication cannot be performed without pain, nor can the "sensible properties" of food be recognized as in the normal state. If strong acids are then taken into the mouth, as vinegar, a peculiar benumbing sensation is experienced. Those who use tobacco, alcohol, or condiments excessively, have a condition of the salivary glands not unlike chronic *parotitis*.

We will the better appreciate the importance of the insali-

vation of our food if we notice the ample provision that nature has made to ensure it.

FIG. 1.



In Fig. 1. all of the salivary glands are represented in their natural situation.
1. The Parotid gland, extending from the zygomatic arch of the cheek-bone to the angle of the jaw below. 2. Its duct, termed the duct of Steno.
3. The Sub-maxillary gland. 4. Its duct. 5. Sub-Lingual gland.

There are no less than six glands appropriated to the work of secreting from the blood the indispensable digestive fluid termed saliva; two parotids, situated one on each side of the head, above the articulation of the lower jaw and near the phrenological organ of alimentiveness; two sublinguals under the tongue, and two submaxillary, between the others. One of each of these glands is represented in the illustration, Fig. 1.

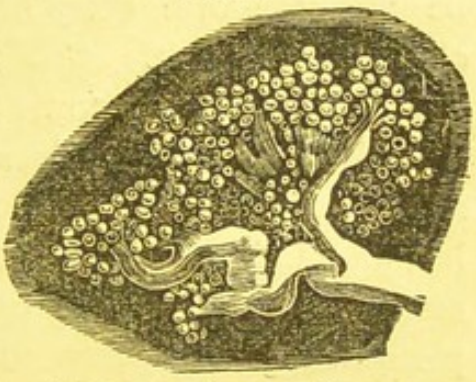
The location of the salivary glands shows their intimate relation to mastication, as well as to the perception or recognition of alimentary substances. The proximity of the two large parotid glands to the organs of alimentiveness explains why the "mouth waters" instantly when a luscious peach, or a basket of ripe strawberries (with or without the cream) comes within the range of vision; and the near proximity of the other salivary glands to the tip of the tongue, explains why savory substances in contact with that organ, so readily excite a flow of saliva. Again, they are all so distributed as to be

excited to action by all the motions of the tongue and jaws, when in the act of mastication.

That the salivary secretion is sufficient for moistening all food that it is proper to swallow, is proved by the fact that no true Hygienist ever experiences any thirst while eating; and no one who has a normal secretion of saliva, and who thoroughly masticates his food, will ever desire to drink at meals, provided the food is of proper material, properly cooked, and not improperly seasoned. It is true, however, that high seasoning of all kinds, all indigestible admixtures, and all thirst-provoking condiments, necessitate a corresponding degree of water-drinking while eating. But this is only on the principle of the lesser of two evils.

The provision for moistening and insalivating the milk on which children may properly subsist, is well shown in Fig. 2, which is a representative of a single lobule of the parotid gland of an infant, injected with mercury, and magnified fifty diameters.

FIG. 2.



LOBULE OF PAROTID GLAND.

One of the great and increasing evils of imperfect mastication is decaying teeth. It is a law of all vital organisms that every structure or part must do its own work or die. If a hand or an arm was not exercised it would soon perish. Every organ and structure pertaining to individual life, that is not duly exercised, will be correspondingly enfeebled. Do we not have a sufficient, as well as a sad illustration of this subject in the tens of thousands of dentists; in several dental colleges, and in the immense establishment in Philadelphia for the manufacture of artificial teeth, to say nothing of the instruments for pulling the rotting teeth out, which are a part of every country physician's outfit?

In a majority of cases, the teeth of our fast-living Americans begin to decay in childhood. A young lady or gentleman with a sound set of teeth is an exception to the general rule. In

thousands of instances the young man or young woman needs a set of artificial teeth before he or she is ready for the marriage relation. And if both parents are teethless in early life, the *prospectus dentatus* is bad for the rising generation.

If the teeth were properly treated they would never decay. There is no more reason, except abuse, why the teeth should ulcerate or become loose, than there is for the fingers or toes, or the ears or nose, to rot and fall off. The teeth are the densest, firmest of all organic structures, and should be the very last, instead of the first, to decay.

Domestic animals that are permitted to live normally never have decaying teeth. No matter to what age the animal lives, its teeth will be found perfect in the skeleton. And such would be the case with every human being if the teeth were not abused by non-use.

It ought to be known to all, as it is known to those who have lost their teeth, or a part of them, that a whole set of sound teeth is as essential to comfort as it is to health. Nothing but thorough mastication, and complete insalivation can enable one fully to realize the properties of food. All proper food is pleasant to the unperverted taste, and the palate relishes it with a zest proportioned to its own integrity, and the fineness to which chewing reduces it into molecular particles. Those whose teeth are too tender to masticate solid food well, or have not teeth enough remaining to do it, have little idea of the taste of an apple, a potato, or even a piece of bread, made of nothing but wheat-meal and water. They require salt, vinegar, pepper, sugar, butter, or something else, to make their victuals "taste good." But no amount of salines, acids, or pungents can render it so delicious and satisfactory as natural appetite and proper mastication; nor is there any remedy for decaying teeth, rotting jaws, bleeding gums, and tartareous excrescences, except exercising the teeth in mastication.

This whole subject is so well explained and illustrated in the *Science of Health* for August, 1872, that, with the permission of the publisher, I transcribe the entire article.

CHAPTER III.—THE TEETH—THEIR USE AND CARE.

PERSONS who have any pretensions to culture and refinement, regard the teeth as ornamental, as well as useful. Before

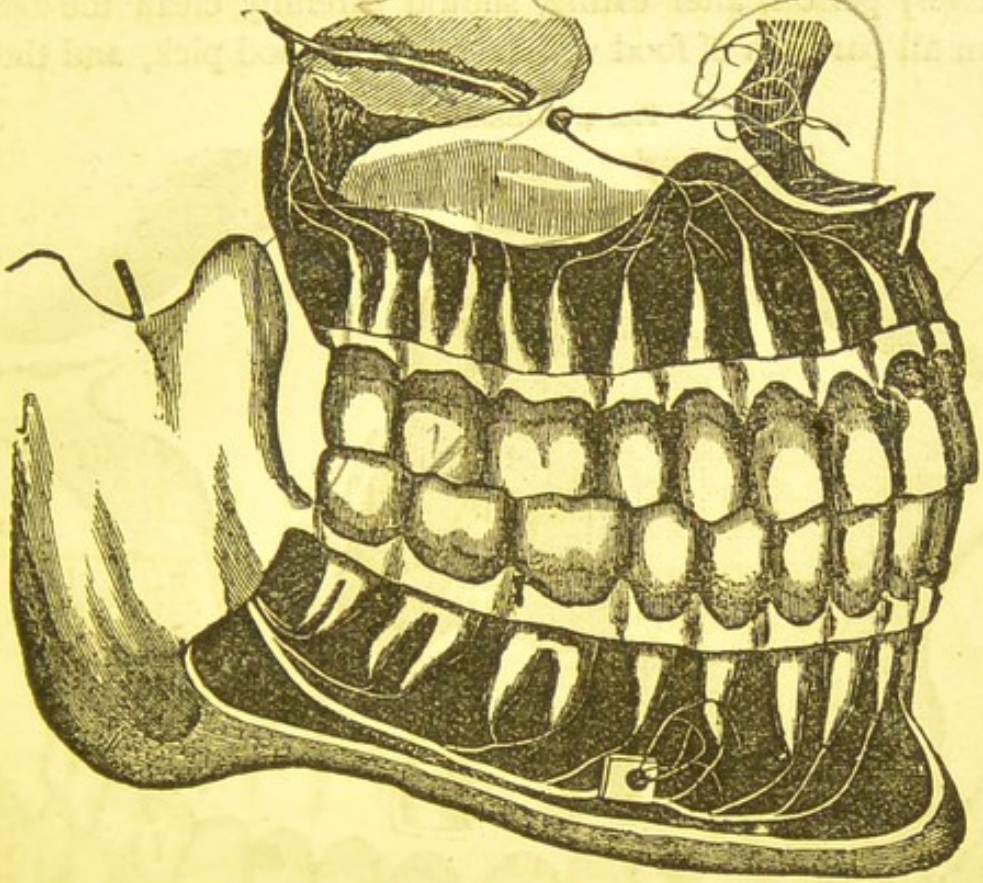


FIG. 3.—COMPLETE SET OF PERMANENT TEETH, SHOWING THE NERVOUS CONNECTIONS. In this illustration the bony matter has been carefully cut away to show the roots of the teeth and the nerves which connect them with the brain.

the age of dentistry, the loss of a tooth by decay was a life-long misfortune. Now, if one or more of the teeth decay or by accident are broken and lost, skilful dentistry supplies by artificial means those which match the original, and the mouth is kept shapely and beautiful.

Within the last thirty years, the science and art of dentistry has made very great progress. Not only can the teeth be treated in such a way as generally to preserve them, but when they commence to decay, the cavities can be so prepared and filled that they last or promise to last a lifetime; whereas, half a century ago, decay once commencing would go on, causing intense suffering to the patient and an early loss of the tooth.

We often regret to see persons with excellent sets of teeth permit them to remain without being cleaned, the particles of

food being allowed to lodge between them and decay, creating corrosive acid, which destroys the enamel, besides greatly depraving the odor of the mouth.

Every person, after eating, should carefully clean the teeth from all particles of food with a quill or wood pick, and then,

FIG. 4.—DISEASED TEETH.

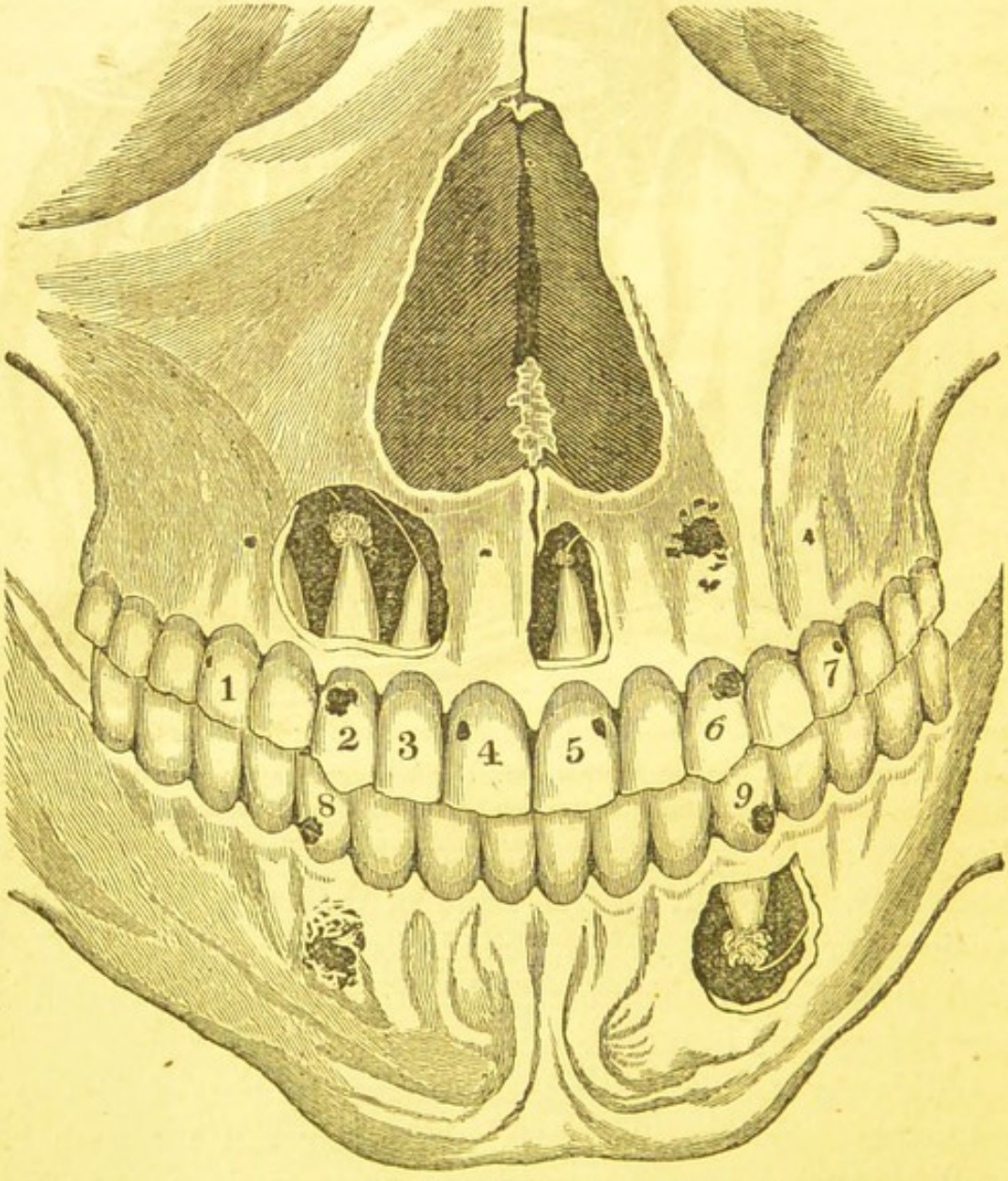


FIG. 4—Represents the jaws, with several of the teeth in a diseased state. Some portions of the bony matter have been removed in order to exhibit the parts affected. All the teeth which are numbered, except No. 3, which is entirely sound, are carious, the disease having penetrated to the nerve. Nos. 1, 4 and 7 show the jaw and teeth in an early stage of disease. Nos. 2, 5, 6, 8 and 9 are ulcerated at the roots. Nos. 2, 5 and 9 having the bony matter removed to show the ulceration at the roots. No. 5 shows the ulcer in an early stage.

with water, not very cold, and a brush, clean them carefully. In this way many a set of teeth could be kept sound and handsome through life, which by being neglected become diseased and decay early. Some people pick the teeth with a penknife or with a pin, which we think an erroneous practice. The use of hot drinks, and on the contrary, ice-water in hot weather, tends to the decay of the teeth, because it produces a fever, and sudden changes in the system, which seriously affect them.

Disease of the teeth appears in several forms. One is by caries or decay from the surface. Another is by ulceration at the root, and a third is by tartar, which displaces the gum and leads to the decay or absorption of the bony matter. constituting the sockets of the teeth, called alveolar process.

The remedy for tartar is to have a skilful dentist remove it as soon as it is observed. Indeed an examination should be made by him occasionally to detect its presence. Proper care of the teeth by the use of a brush after every meal would generally prevent all accumulation of tartar.

These conditions we illustrate by means of several engravings.

The Indians are proverbial for their good teeth. We have examined many Indian skulls and have frequently found the teeth worn down to the gums with not a speck or decayed spot to be found on them. Besides, we do not find on Indian teeth tartar, or salivary calculus, as is too often the case with civilized men's. There may be many reasons why the teeth of Indians are in better condition than the white man's. The chief one perhaps is, that they give their teeth ample exercise. If a cow is fed on food that requires no mastication, her teeth become decayed. If she crops the grass with her incisors, and grinds it with the molars, they will last her life-time in good condition; but let her be put into a stable and fed on still-slops, and the teeth at once begin to decay, as also the bony structure in which they stand. The Indian eats parched corn. Having no grist mill, he grinds his food with his teeth, and the result

is, every tooth is exercised. If we eat porridge, broth, stews, and everything else cooked softly, and get no exercise for the teeth, they become to us almost useless; the gums become unhealthy, the teeth decay, and give us a world of trouble.

Moreover the Indian sleeps with his mouth shut, breathes through his nostrils, and does not draw the cold air rapidly over his teeth. This is true of all animals. The canine and feline tribes, that pant when they exercise violently, open their mouths and breathe through the mouth; but they sleep with their mouths shut. White men sometimes breathe the live-long night chiefly through the mouth. The celebrated Mr. Catlin, who writes on Indian habits, attributes bad teeth to the white man, in consequences of sleeping with his mouth open.

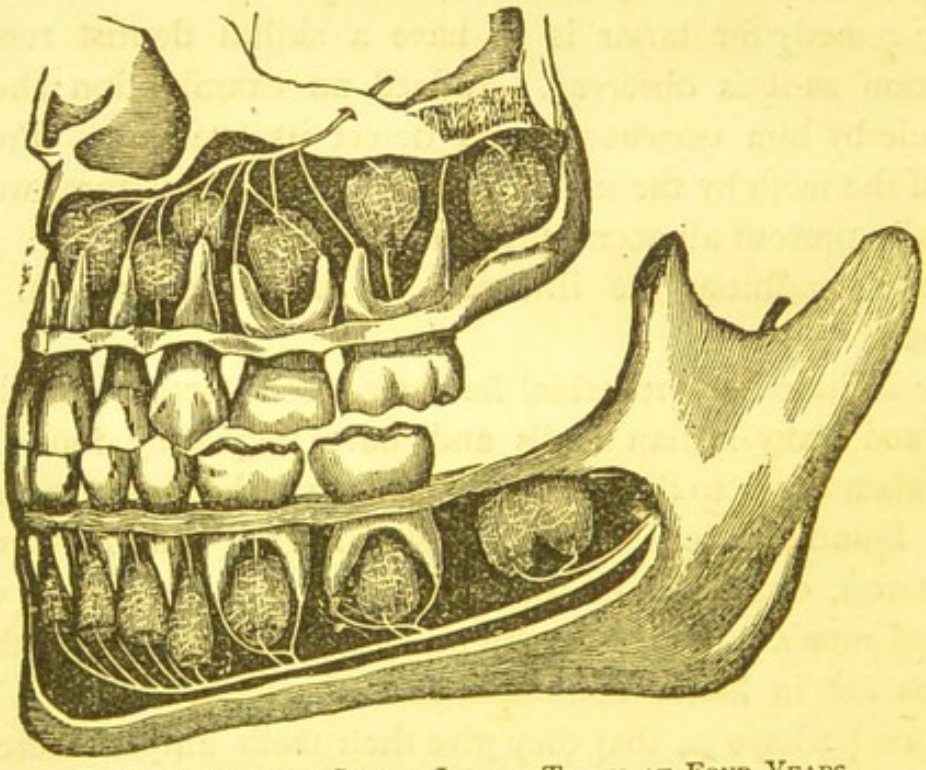


FIG. 5.—COMPLETE SET OF INFANT TEETH AT FOUR YEARS.

Always beware of using scouring material on the teeth. A little fine soap on the tooth-brush, to make a pleasant lather in the mouth, is believed to be favorable to the health of both mouth and teeth. One half of the tooth-powder have acids in them which injures the enamel of the teeth. Any gritty substance which tends to wear off the enamel is bad.

In cities, quack peddlers of tooth-powders may be found at

the corners of the streets. They will get some dirty boy's mouth open and with strong acid make his teeth shine like ivory. This they do as an advertisement. We never fail on seeing a crowd of ignoramuses gathered around such a quack to speak frankly to them, and advise them to avoid it altogether. One of these men once overheard our remark, and said "What is it to you?" Our reply was, "We wouldn't put such acid on our teeth for five hundred dollars." His crowd of customers vanished.

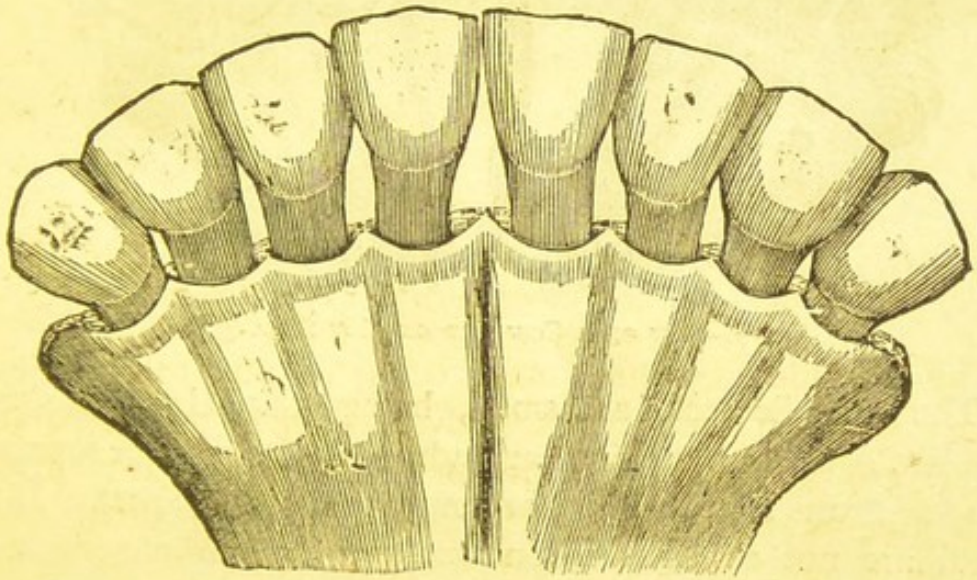


FIG. 6.—TEETH OF A COW FED ON NATURAL FOOD.

Having exhibited the anatomical situation of a complete set of permanent teeth, showing their nervous connections, and also a permanent set of teeth in a condition of disease in various stages, we come now to consider infantile teeth, and introduce an engraving for that purpose. The bony structure is cut away on the jaws to show the roots of the milk teeth, as they are called, and also to show the ultimate teeth or the permanent set behind the milk teeth.

Before birth the teeth are organized rudimentally, two sets of them, one above the other; and at birth, existing in the jaw entirely below its service, there is a set of teeth, and under this set there is a little sack, which is to be, when developed, a permanent tooth.

In the engraving one half of twenty teeth are represented.

In the adult mouth there are thirty-two teeth. In the rear of the mouth of this engraving there will be seen the rudiments of the permanent teeth, over which no milk teeth are developed. In the child's mouth then there are twenty teeth, and in the adult mouth thirty-two, including the wisdom teeth, which come late, at from twenty to fifty years of age.

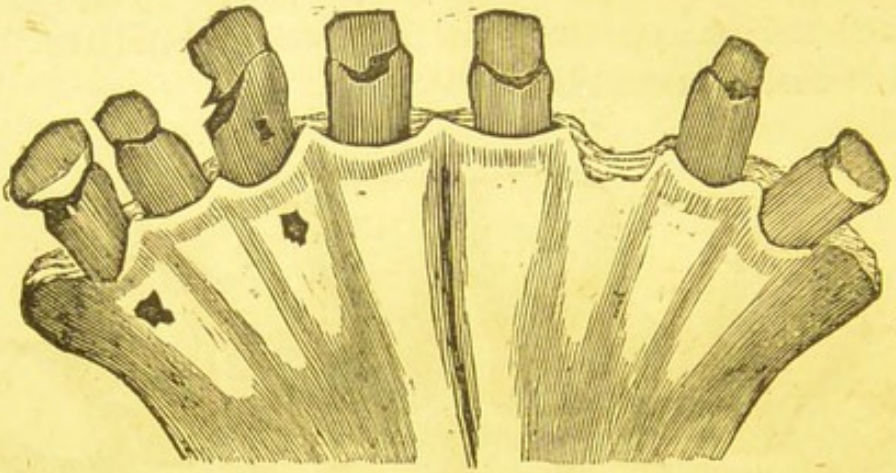


FIG. 7.—JAW OF A COW FED ON HOT STILL-SLOPS.

The infantile teeth are small, being adapted to the size of the jaw. When the child's age advances these teeth separate, the jaw grows and the teeth are rendered further apart. If the teeth are not extracted soon enough, the permanent teeth sometimes push out at the side. This often happens in the case of the eye-tooth; but generally the teeth are lost one after another, first on the lower jaw; the jaw expands and the cavity of the mouth increases so as to make sufficient room for the large permanent teeth.

The process of cutting teeth is not an unnatural one, and ought not to be painful or dangerous. In the present state of things, however, children often suffer severely from it, and not unfrequently life is destroyed in this way. This, of course, is induced by irritation and feverish excitement, which is connected with the brain by means of the nerves of the teeth; the same amount of pain might be sustained by the patient without injury, if related to the foot or hand and farther away from the brain.

The bad habit of feeding children cake, sugar and candy,

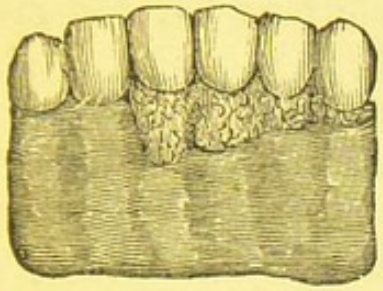
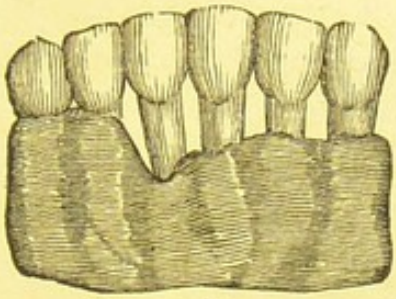


FIG. 8.—TARTAR ON FOUL TEETH



TARTAR REMOVED.

is often the cause which tends to produce much trouble relative to the teeth, especially early decay, which is at present so common. Our artificial modes of living greatly destroy the natural order of development in children, hence it is supposed that the trouble with the teeth is the result of ages of wrong courses of living. The death of one half of all the children that are born before they come to maturity is a sad commentary on the creative wisdom that established the natural laws and punishes the bad habits and usages of civilized society. Nature is perfect. God the Creator is all-wise and beneficent. If we were but wise enough and good enough to obey the laws of our being, this great mortality of children, this falling off of human fruit before it is ripe, would be done away with. Mr. Catlin asserts that nearly all the infants among the Indians, unless they died of accident, came to maturity. Though he saw as many as four thousand Indian skulls in a depository of the dead, there was not an infant's skull among them. The death of infants and children was so rare, that the oldest inhabitants had to study to recall the death of children, except of accident. But our children inherit, with the abuses of civilization, bad conditions of the teeth generally from parents who have lived in an abnormal way; hence the great trouble with cutting the teeth, and with their early decay after they are cut.

A full set of false teeth, in the upper jaw at least, is very common among women of twenty-five and among men of thirty-five in our own country to-day. Occasionally we find one of the old stock who retains a healthy and vigorous set of teeth until he is seventy years old, without a speck of decay, with the ranks all full. This law of temperance and health, of

sound constitution and sound teeth with long life, pertains to the animal kingdom as well as to men.

The cow's jaw, (Fig. 6,) shows every tooth in its place and order, with a fine enamel, adapted to do the work for which they are designed; and when these teeth are used in the natural way they are healthy, and we may safely conclude the animal is throughout in like healthy condition. But when we turn to the under jaw of the cow that has been fed on warm still-slops and kept housed up—even as women and children often are—secluded from wholesome air, we find the teeth decayed and the bone of the jaw unhealthy, and we have a right to infer that the whole animal is in a similar unhealthy condition.

The illustrations of tartar which we present, show a very common neglect in taking care of the teeth, and though the teeth themselves may not be decayed, the bony socket which contains them decays, and sometimes the teeth, lacking support, fall out and are lost.

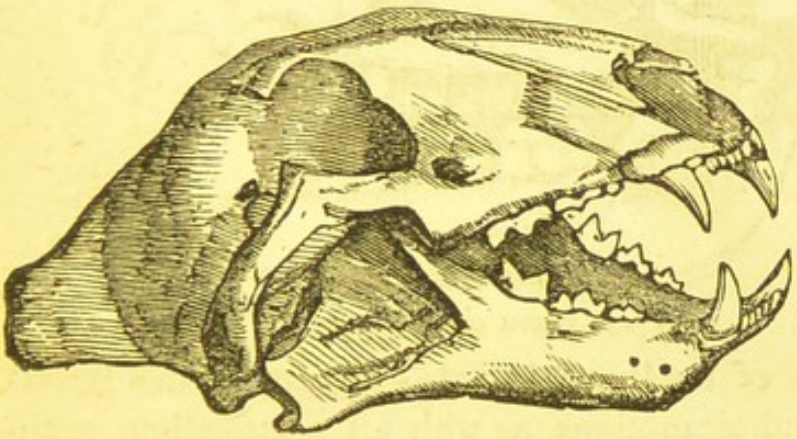
One of the best evidences of good culture and proper care of one's self, is a tidy mouth and nicely kept teeth. Every reader knows some person who, when he laughs, presents teeth that are covered with tartar, or blackened by smoking, and whose mouth is a disgust to every beholder. Such people should go to a mirror, where they can take a view of their open sepulchre, full of dead or unclean bones.

The lowest forms of animal life have the simplest digestive apparatus, and subsist on such kinds of food as require little elaboration. The very lowest animals that we can trace seem to be all stomach, all the processes of digestion being performed in a single canal or cavity. No animal ever manifests two organs or structures, or parts, without one of them being analogous to a stomach. The *monera*, the lowest form of animal life yet recognized, has, apparently, no organs, parts nor structures. When it needs food it projects an instrument and takes it into its substance. Yet it has a digestive apparatus, or it would not live, develop, grow, nor divide into parts, nor differ-

ential into organs. The digestive organs of fishes and reptiles are comparatively simple. Birds macerate the grains and seeds in their crops, and then masticate them in the stomach. The gizzard, a tough muscular substance, lined with an exceedingly dense membrane, capable of grinding stones, metals, and even glass to impalpable powder, performs the office of teeth.

In the carnivorous quadrupeds the stomach is much smaller and the alimentary canal much shorter than in the herbivorous, while the omnivora have an intermediate size of stomach and length of intestines. The lower jaw of the carnivora has only the up-and-down, or cutting motion, while the teeth are adapted to tearing the flesh on which they subsist, as seen in the cut, Fig. 9.

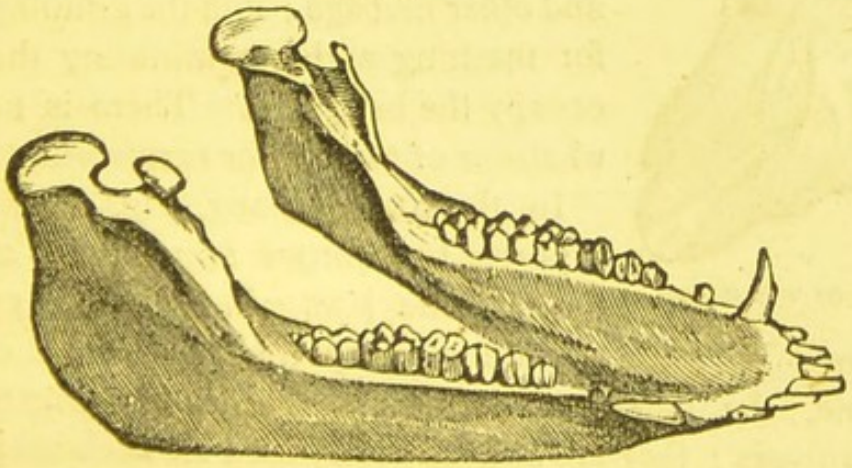
FIG. 9.



JAWS AND TEETH OF A PANTHER.

In the omnivora, of which the hog is unfortunately our most familiar example, the back teeth have a close resemblance to those of herbivorous animals, while the front teeth exactly resemble the tearing and dagger-like teeth of the carnivora, as represented in the cut, Fig. 10.

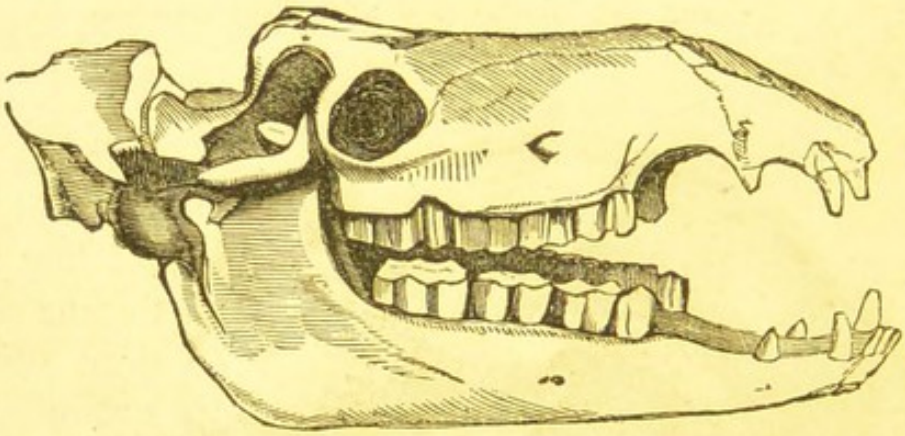
FIG. 10.



UNDER JAW AND TEETH OF THE HOG.

The masticating organs of the camel, which subsists on the coarsest herbage, show a much stronger resemblance to those of carnivorous animals than do those of the human being; and hence, if we are to judge the natural dietetic character of man from the standpoint of comparative anatomy alone, we must place him at a farther remove from flesh-eaters than is the camel. It can hardly fail to be noticed by the attentive reader that the irregular arrangement of the teeth peculiarly fit the animal for munching and breaking up the branches, sprouts, stalks, etc., which constitute a large proportion of its food.

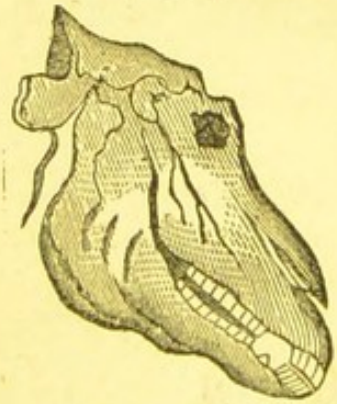
FIG. 11.



JAW AND TEETH OF THE CAMEL.

The articulation of the lower jaw also admits of the lateral, rotary, and grinding motions, as with all grass-eating, grain-eating, and fruit-eating animals.

FIG. 12.



SKULL OF THE HORSE.

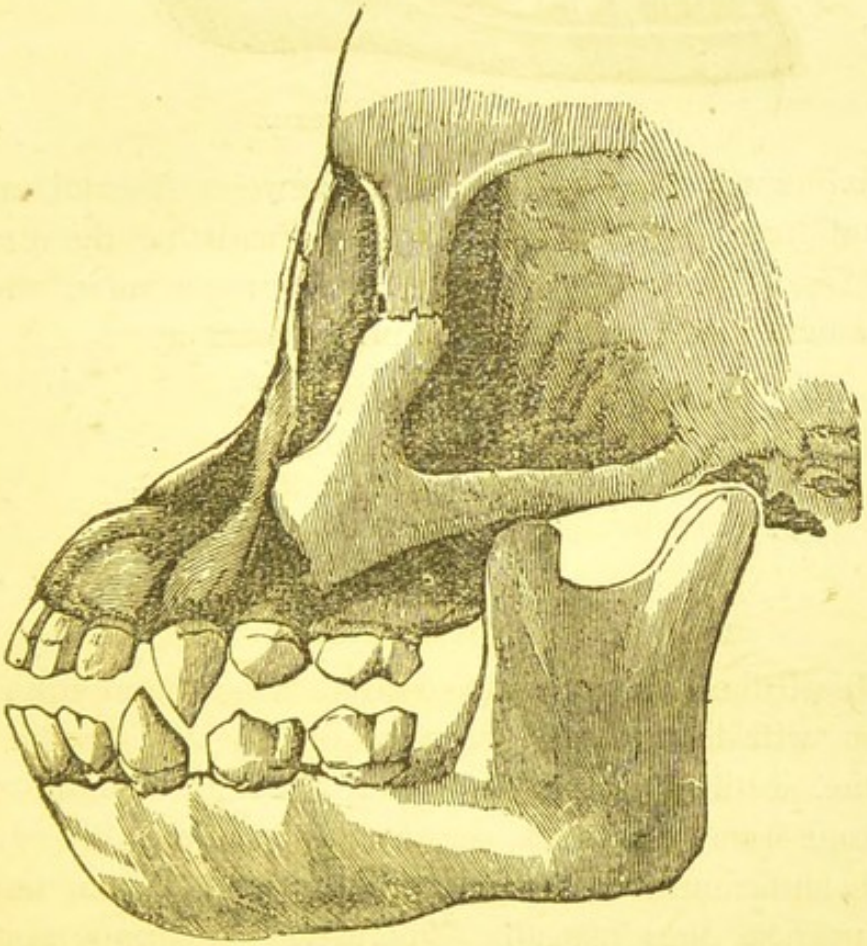
In the jaw of the horse, Fig. 12, the incisors, or cutting-teeth, are placed in front, to enable it conveniently to crop the grass and other herbage; and the grinding-teeth, for mashing and comminuting the food, occupy the back part. There is no trace whatever of tearing, or carnivorous teeth.

In the orang-outang, Fig. 13, which is a purely frugivorous animal, the articulation of the jaws admits of the grinding motion. In some of the monkey tribes, the baboon for example, the cuspids do resemble the corresponding teeth of the carnivora; they are not, however, used for flesh-eating, but

seem to be an arrangement which serves them for weapons of offence or defence.

The distinctions of the human teeth are seen in the illustration, Fig. 14. The incisors (I) are intended for biting and cutting the fruits, nuts, grains, or whatever may be his proper food; the cuspid or corner-tooth (C), sometimes called canine

FIG. 13.

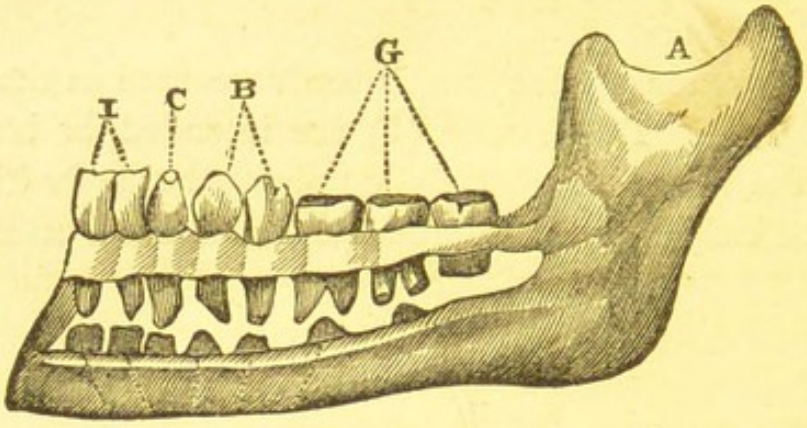


JAWS AND TEETH OF AN ORANG-OUTANG.

from its resemblance to the corresponding tooth of the dog, enables him to grasp more firmly and retain more securely the alimentary substance; and the bicuspids (B) and molares (G) which are the small and large grinders, are fitted to mash and comminute all solid kinds of food.

The following communication to the *Science of Health*, by Mrs. Fannie R. Fendye of Baltimore, Md., may fittingly conclude this branch of our subject, premising, however, that it is not "betel-eating" but better mastication and fewer unhygi-

FIG. 14.



HUMAN JAW AND TEETH.

enic habits which make the contrast between Oriental and Occidental teeth so unfavorable to us—realizing the dream of Giles Corey, who was *pressed to death* for the crime of witchcraft in "Salem Town" some two hundred years ago:

"I saw a man pull all his teeth—
It took him but a minute;
He oped his mouth and put them back—
I thought ye deuce was in it."

THE TEETH AMONG DIFFERENT NATIONS.

"In all the cities of south-eastern Asia I found not a single dentist, with the solitary exception of one in Calcutta. And even he, I think, has since retired for want of employment, and gone home in disgust—resolved, henceforth, to live among people sufficiently 'civilized' to destroy their own teeth and wear artificial ones instead. This paucity of supply must indicate a want of demand; as it is unquestionably true that the ranks of the dental profession are ever increasing—the colleges of our own country alone sending out regularly graduates enough, it is said, to supply the world. In India there are merchants, lawyers, clergymen, physicians, druggists, soldiers, sailors, teachers, and mechanics, both native and foreign. Only *dentists* are lacking, and the reason is because they are not needed.

"Everybody has fine teeth in the East. I have seen both men and women, at *ninety*, with perfect teeth, and seldom one

under fifty who had lost a single incisor or cuspid, and perhaps not even a molar.

"Two European gentlemen, aged respectively twenty-six and thirty, were one day conversing with a young Siamese noble, who remarked that he could never guess the age of *foreigners*, as they looked so different from natives. The younger of the two then said, 'What do you imagine my age to be?' 'About nineteen or twenty, I suppose,' was the reply. 'But really, I think you look even younger.' 'Well, but see here,' said the foreigner; 'I have lost a tooth,' pointing far back in his mouth to the place from which one of his 'wisdom-teeth' had recently been extracted. 'Have you, indeed?' asked the noble, manifesting great concern—'then you must be eighty or ninety. I did not think you were so old.'

"The late king of Siam, who died at the age of sixty-five, had a set of teeth that our proudest belle would have gloried in—except the *color*, for he always had them *painted black*—the Siamese, in common with most oriental nations, deeming *white teeth a vulgarity*. Paint for the teeth is in the *East* as indispensable an article of the toilet, as powder and rouge for that of a French woman. Even young ladies with pearly teeth so exquisitely beautiful that it would seem sacrilege to mar their gleaming whiteness, will, as soon as they become of age, —that is, *ten years old*, after which they are considered marriageable—commence staining the teeth, *first red*, and afterwards *jet black*, and so they are worn through life. But this is by no means to avoid the trouble of keeping the teeth in neat condition; for, as a general rule, orientals take far more care of the teeth than do most western nations.

"Toothache is, I think, utterly unknown in the East, except among *white foreigners*, as I do not remember to have found a single case among the natives. Certainly there must be some *cause* for this marked exemption from diseases of the teeth. It may be due, *in part*, to the constant use of the *betel* or *arica-nut*, which all classes and both sexes, in nearly every part of India, chew all day long. They combine with the *betel*, chunam,

pepper-leaves, and fine-cut tobacco—little trays containing these various ingredients of the popular quid, standing about in every apartment, ready to be offered to *honored* or *welcome* guests, the moment they are seated. *Not to offer it,* is deemed a lack of hospitality, or an intimation that the visitor is not received as an *equal* or *friend.* Eating *betel* is in Southern and Eastern Asia, just what eating salt is in Western Asiatic countries—a token and bond of perpetual friendship, that not even a rogue or a murderer would violate. Those who have once partaken *together* of the 'betel quid,' are thenceforth sworn friends, till death sunders the compact. The *arica* is highly astringent, like the nut-gall; and from this quality may tend, in some measure, to the preservation of the teeth. Another cause is, probably, found in the extremely regular habits of all classes in regard to meals, with which nothing is allowed to interfere. When dinner-time comes, an oriental *dines,* whether he is at leisure or not; and he would do so, I think, if a beleaguering foe were thundering at his gates. But *between meals they never eat.* Such habits in regard to eating, cannot fail to be promotive of the general health, and, of course, the teeth share the benefit. A still more potent cause is, I think, the fact that orientals never take either food or drink, *very hot* or *very cold.* Ice is unknown in most parts of the East, and none but foreigners, or those who have learned it from them, make any attempt to find a substitute for ice, by artificial cooling processes. Tea and fruit juices are the beverages most in favor; the former taken without cream or sugar, and only moderately warm; while the latter are used just as they are expressed from the fresh, ripe fruit. How absolutely opposite to the habits of nearly every American, at home or abroad! It is said by those who have taken pains to inform themselves on the subject, that there is no country in the world, civilized or savage, where bad teeth are so generally the rule, and good ones so rare an exception, as the United States. And there is probably no other nation who so generally swallow tea and coffee hot enough to scald the throat, and then 'cool off' by an immediate draught of iced-water. An Englishman would regard such a habit as

absolutely suicidal, and he is amazed that *sensible* Americans so recklessly jeopardize health and life. At English *hotels*, people can, of course, have whatever they demand and pay for, as at *public houses* elsewhere; but in private families in England, even the wealthy, the use of ice is only moderate and occasional —not by any means the constant, every-day, excessive affair it is with us; and *there* it is never taken *immediately after hot drinks*, as at breakfast and supper among Americans. Neither do English people eat irregularly, and at all hours between meals, as do many of our countrymen—a practice by which the digestive organs must become impaired and the general health suffer, even if the *teeth* did not.

"Another deleterious practice, common in our large cities especially, is the excessive use of ice-cream and soda-water. Nothing is more common on summer evenings, than for young people to swallow, at their boarding-houses, a cup or two of coffee *boiling* hot, and as rapidly as if they were drinking for a wager, and then to rush out for an ice-cream or glass of soda, "to cool off with"—the "fruit syrups" of the soda water often containing "fusil oil" and other poisons, apart from the deleterious effects on the teeth of these extremes of heat and cold following each other in quick succession. A distinguished dentist told me recently, that it was difficult to conceive of anything *more absolutely destructive to the teeth than the simultaneous* use of cold and hot drinks. And he added that he had known scores of Europeans, who came to the United States with teeth, that, with the habits of living to which they had been accustomed at home, would probably have lasted to extreme old age—glad, in less than five years after they came amongst us, to avail themselves of the services of a dentist to manufacture an artificial 'set.'

"Surely *something* may be done, to avert this wide-spread curse of toothache and discolored, uncomely teeth, or the only alternative that remains of wearing those *not* 'to the manor born;' so that Americans of *future* generations, at least, may cease to enjoy the enviable distinction of belonging to a *toothless nation.*"

CHAPTER IV.

DEGLUTITION.

FIG. 15.—A VIEW OF THE ROOF OF THE MOUTH AND OF THE SOFT PALATE.

1. The Roof of the Mouth, bounded by the Superior Dental Arch.
2. The Soft Palate.
3. The Velum Pendulum Palati.
4. The Ridges seen on the Roof of the Mouth.
5. The Tubercle behind the Incisor Teeth.
6. The Middle Line of the Hard Palate.
7. Orifices of some of the Mucous Follicles.
8. The Tonsil.
9. The Pharynx.

AFTER the food has been properly masticated, it is to be swallowed. The next process, therefore, is *deglutition.* And it is worth a moment's delay to consider the ample, if not wonderful contrivances for effecting the passage of the food from the mouth to the stomach, without the artificial aid of drink.

On each side of the mouth, at the commencement of the *Pharynx* (back part of the mouth), is a glandular organ, termed Tonsil, whose office is to furnish a lubricating fluid. This is shown in the cut, Fig. 15, 8. In addition to these glands, the whole mucous surface exhales a moistening and lubricating fluid, more refined than any oleaginous matter ever produced by artificial means, that used in sewing machines not excepted. This secretion is formed in tubes, called *Mucous Follicles,* the orifices of some of which are shown at 7. Persons who use very hot drinks, and irritating condiments, or strong alkalies, sometimes have a thickening of the mucous membrane of the œsophagus, which renders deglutition difficult.

CHAPTER V.

CHYMIFICATION.

THE second stage of digestion, in the processes of the transformation of the food elements into living structure, is termed *chymification.* This is performed in the stomach. The older physiologists regarded digestion in the stomach as analogous to fermentation; modern authors are very discordant in their opinions of the nature of the process, some regarding it as mainly mechanical, and others as purely chemical. The simple truth is, it is a *vital* process, as are all other processes pertaining to living organisms.

In the stomach the food is mingled with a solvent, called the gastric juice, whose wonderful properties have thus far eluded all chemical and microscopical investigations. It is known to be slightly acid, and to have a power of transforming organic elements unlike that of any other known substance. It is said, also, to "digest" inorganic, and even metallic substances, which have been purposely or accidentally swallowed; but this opinion is certainly an error, for oxidation, or decomposition, which is all that can happen to them in the gastric cavity, is a very different process from digestion.

A general view of the abdominal organs is represented in Fig. 16. The adipose matter in the chest has been removed, as has the *Greater Omentum,* which covers the viscera in front. The liver also has been turned back to exhibit its under surface and the *Lesser Omentum.*

It will be noticed that the stomach is nearly semicircular in shape, concave above and toward the liver on the right side, convex toward the spleen on the left side, and that its main bulk is on the left of the median line. The stomach, heart, and spleen are all chiefly on the left side, a provision which seems necessary to counterbalance the largest glandular organ of the body, the liver, which is situated on the right side. A knowledge of this arrangement of the organs enables us to understand many of the complicated and obscure pathological

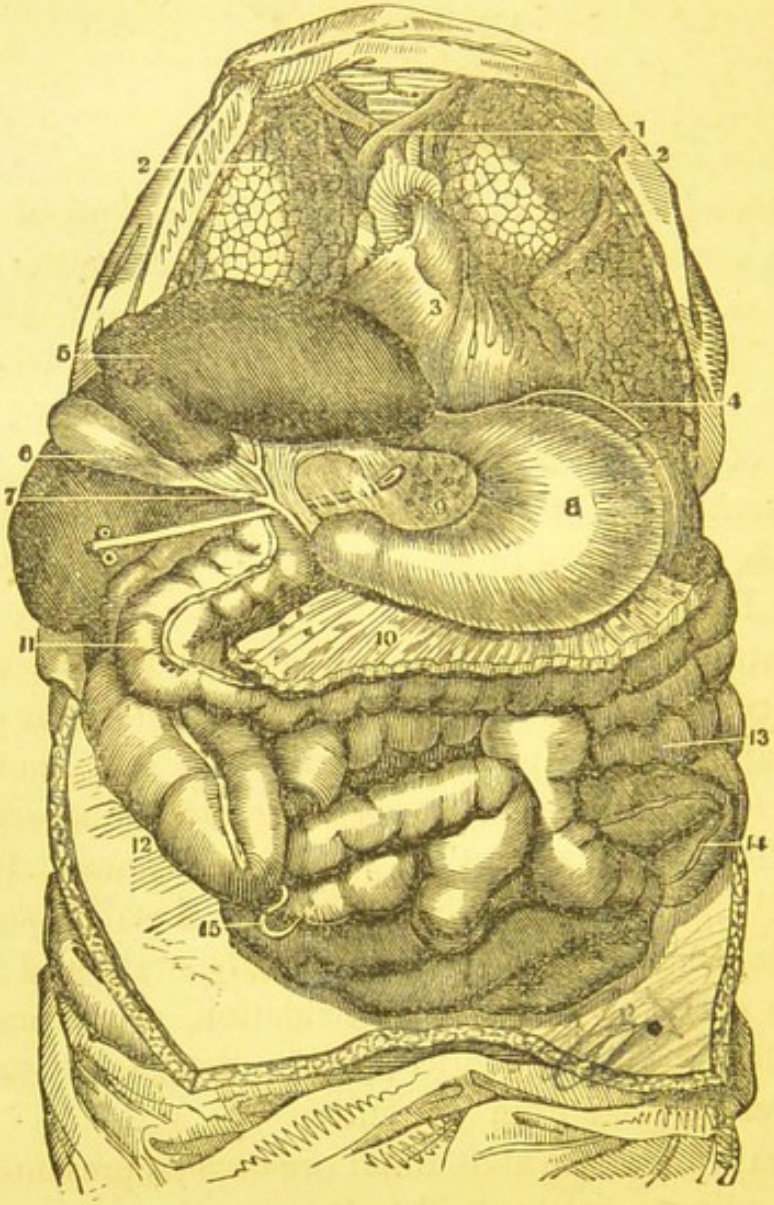


FIG. 16.

1. The gread Blood-vessels. 2. The Lungs of each side. 3. The Heart. 4. The Diaphragm. 5. Under surface of the Liver. 6. The Gall-Bladder. 7. Union of the Cystic and Hepatic Ducts to form the Ductus Choledochus, which empties the bile into the Duodenum immediately below the pit of the stomach. 8. Anterior Face of the Stomach. 9. The Gastro-Hepatic, or Lesser Omentum. 10. Gastro-Colic, or Greater Omentum, cut off to show the small intestines. 11. Transverse Colon, pushed a little downwards. 12. Its ascending portion, also pushed down. 13. Small Intestines. 14. The Sigmoid Flexure of the Colon. 15. Appendicula Vermiformis.

conditions resulting from congestion and enlargement of the liver. When congested, its very weight causes a painful, dragging sensation in the vicinity of the stomach, and when very much enlarged it causes the body to bend to one side, especially in young persons, often resulting in double curvature of the

spine. I have known several children who were badly incurvated, attended in some instances with partial or complete paralysis of one of the lower extremities. And I have known such patients treated for months with tonics, showering, electricity, "movements," and some worse things, without benefit, and without any suspicion on the part of the attending physicians of the real nature of the difficulty. In other cases its pressure against the stomach would cause much distress in that organ, especially after meals. In still other cases its upward pressure against the diaphragm would cause continual difficulty of breathing, occasioning short breath, coughing, and palpitation, whenever the patient would step hurriedly, or walk up-stairs, often resulting in severe asthmatic paroxysms. These patients can never be cured, as the reader will readily understand, until the diseased condition of the liver is properly attended to.

The relation of the stomach to the great blood-vessels below the heart, enables us to explain many strange and often frightful sensations with which all dyspeptics are more or less familiar.

The illustration, FIG. 17, represents the stomach and œsophagus in their natural position, and shows the proximity of the stomach to the descending aorta and other large blood vessels of the abdominal cavity. The thoracic viscera, nearly all of the diaphragm, and the intestines, have been removed; the peritoneum (lining membrane of the cavity of the abdomen) has been detached from the kidneys, and the duodenum is left.

One of the most distressing symptoms of many dyspeptics is a hard beating or throbbing behind the stomach. It is generally worse soon after lying down, and the throbbing is sometimes so violent as to jar the whole body and shake the bedstead. Many persons in this condition have apprehended "organic disease of the heart," and not unfrequently their physicians, unable to account for these occasional tumults of the central organ of the circulation on any other hypothesis, have diagnosticated "heart disease."

A reference to the illustration will make the matter plain enough. All dyspeptics have one of four conditions, and

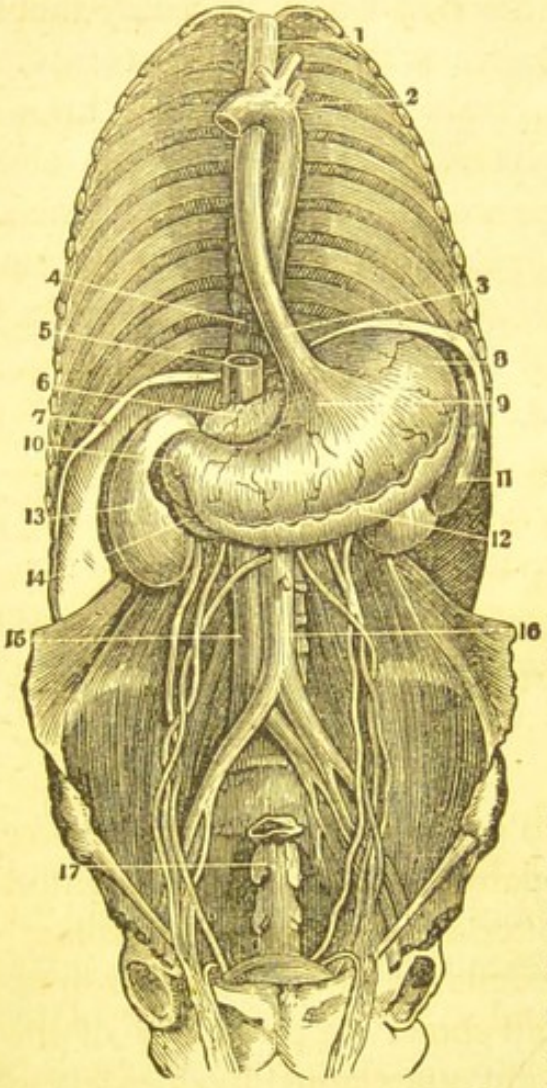


FIG. 17.

STOMACH AND GREAT BLOOD-VESSELS.

1. Upper portion of the Œsophagus.
2. Arch of the Aorta.
3. Lower portion of the Œsophagus.
4. Vertebral Column.
5. Vena Cava Ascendens.
6. Pancreas.
7. The cut edge of the Diaphragm.
8. Great Cul-de-Sac of the Stomach.
9. Cardiac orifice of the Stomach.
10. Pyloric orifice of the Stomach.
11. Spleen.
12. The Peritoneal Coat of the Stomach partially turned off.
13. Right Kidney.
14. Lower curvature of the Duodenum.
15. Ascending Vena Cava.
16. Abdominal Aorta.
17. A section of the lower bowel (Rectum).

many all of them. 1. Constipation. 2. Enlargement of the liver. 3. A contracted and rigid state of the abdominal muscles. 4. Congestion of the adjacent organs — lungs, spleen, kidneys and pancreas. Either condition causes obstruction to the free passage of the current of blood down the descending aorta, and when all co-operate, the effect is extreme. The swollen organs and unyielding muscles press the stomach directly against the large blood-vessel, so that every contraction of the left ventricle of the heart propels a column of blood through the arteries on which the stomach presses, not only causing the jarring or throbbing sensation, but actually lifting the lower side of the stomach to some extent. The effect is exactly analogous to that of moderate blows or rappings against the under side of the stomach. If the region around the stomach is contracted, as is the case with many "confirmed dyspeptics," or "caved in," as is the case with all women who have laced tightly in early life, this pounding symptom is greatly aggravated. In such cases the patient, on retiring to rest and assuming the

horizontal position, will often experience noises in the ears like the "sound of many waters," or the rushing of a cataract. This symptom is also always worse soon after taking a full meal; and if such a person take a "hearty supper," and retire immediately to bed, his sensations will be more forcible than agreeable; and his unquiet slumbers will alternate with paroxysms of incubus, preceded by frightful spectres, fantastic situations, impossible adventures, and all the goblins of air, earth, and sea.

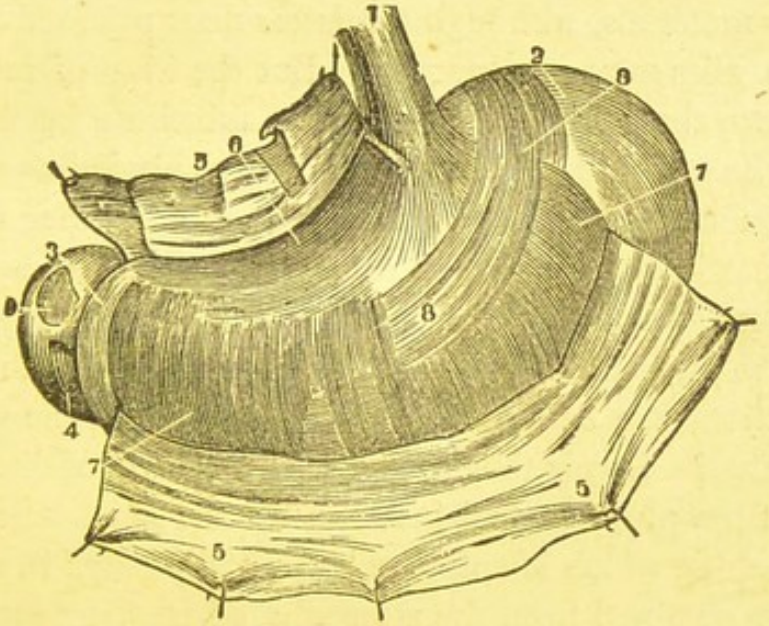


FIG. 18.—FRONT VIEW OF THE STOMACH.

1. Anterior Face of the Œsophagus. 2. The Cul-de-Sac, or greater Extremity. 3. The lesser or Pyloric Extremity. 4. The Duodenum. 5. A portion of the Peritoneal Coat, turned back. 6. A portion of the Longitudinal Fibres of the Muscular Coat. 7. The Circular Fibres of the Muscular Coat. 8. Oblique Muscular Fibres. 9. Portion of the Muscular Coat of the Duodenum, shown by removing the Peritoneal Coat.

The process of chymification means simply the formation of the food material into a homogenous, pulpy mass. For this purpose it is mixed with the gastric juice and compressed and kneaded by the muscles which constitute the middle coat of the stomach. The fibres of this muscular coat are so arranged as to do their work admirably, as is shown in the illustration, Fig. 18, which represents a front view of the stomach, distended with air, the peritoneal coat being turned back.

It will readily be seen that this arrangement of longitudinal, circular and oblique muscular fibres allows the stomach to

compress and knead the ingesta in all possible directions, as the varied motions of the tongue enable it to move the food in the mouth, during mastication, in every direction.

The active principle, or solvent, of the gastric juice, is evidently corpuscular, as is, probably, that of all organic secretions. A something analogous to this has been obtained from the analysis of the gastric juice, and termed pepine; but pepine in the living organism, just as nature produces it, and pepine out of the living organism, as the chemist prepares it, are very different materials, although the latter does produce a solvent effect on alimentary substances. But the idea of introducing pepine into the materia medica as a substitute for the gastric juice, or as a remedy for indigestion, is as absurd as would be the notion of preparing our food in such a manner as not to require mastication. Indeed, this latter practice is very general, for, do not learned physicians tell us, and eminent physiologists explain to us, that bread, for example, when made light by fermentation, can be more readily permeated by the saliva and gastric juice? Surely they forget, when treating of dietetics, the nature of the physiological function termed mastication.

The pepine which is employed as a "digester" in medicine, is usually obtained from the stomachs of pigs, by scraping the mucous membrane with a blunt instrument. In order to produce it in large quantities the animals are kept without food until their appetites become keen, and then placed where they can smell the food without getting hold of it. The smell of the savory viands provokes a flow of gastric juice, or of something analogous, which is then obtained pure, as is supposed, by killing the animal. But, as all organic secretions are modified by and partake of the dietetic character of the animal, it seems to me that the omnivorous swine, always filthy and scrofulous in its domesticated condition, is the worst possible source from which to obtain pepine for the human stomach. The peptic corpuscles of a scrofulous pig may infect the human being with malignant disease, as readily as the vaccine virus from a diseased animal produces the worst forms of confluent small-pox.

The corpuscles of the gastric juice are very tenacious of life, as are all similar secretions. In *rennet*, the dried stomach of the calf, they may retain their organic properties for years. One of the peculiar properties of gastric juice, is that of coagulating milk. Dr. Fordyce long ago ascertained that six grains of the mucous coat of the stomach, infused in water, will produce a liquid that will coagulate one hundred ounces of milk, or 6,857 times its bulk.

It has been ascertained that a single drop of gastric juice contains not less than half a million of corpuscles, and that the quantity necessary for the proper digestion of a single meal may be reckoned in figures at not less than 130,000,000,000 ; a number that need not surprise us when we recollect that modern scientists have estimated the constituent molecules of a drop of water at several billions.

In a prize essay on Cheese-making, by S. R. Arnold, of Lansing, Michigan, published in 1870, the author claims that, in the ordinary process of cheese-making, the corpuscles, or cells, obtained from rennet, are not destroyed in the cheese, but are transferred to the stomachs of those who eat the cheese, and may there assist digestion !

But this is pushing nature quite out of the universe. If cheese, or anything else that contains gastric corpuscles, is necessary or useful in the digestive processes of the human stomach, how are those human beings going to digest their victuals who have not cheese or something similar ? And how are the animals that never use any pepine except the home-made article, to get along ? Old cheese is well known to be one of the most indigestible articles that was ever swallowed in the name of food ; occasioning constipation of the bowels, canker in the mouth, dryness of the mucous surfaces, and deficiency in both the gastric and salivary secretions. Says the old distich :

> "Cheese is a surly elf,
> Digesting all things but itself."

Perhaps Mr. Arnold derived his philosophy from this couplet of the muse. But it is not truth, whatever may be said of the

poetry. It is an unnatural and very unwholesome food; indeed, it is not food at all in the proper sense of the word, though containing certain alimentary proximate principles in an altered and degenerated form. Because cheese is a dry food, that is, contains little water, some English medical writers, in view of the scarcity and high prices of flesh-food, consequent on the "rinderpest," "pleuro-pneumonia," and "rot," among so many of the cattle and sheep brought to the London market, have recommended cheese as a substitute. They will find a much better article of diet in that king of the cereals, wheat, provided they know how to cook it hygienically, or in any one of twenty grains, fruits, and roots that could be named.

FIG. 19.
GASTRIC GLANDS.

Another peculiar property of the gastric secretion has been called antiseptic. This term is not strictly correct, for antiseptic applies properly only to dead matter. It is true, however, that partially decayed vegetables and semi-putrescent flesh, lose all offensive odor soon after coming in contact with the gastric juice. But this effect results from the transforming power of the solvent, by which the molecular atoms are re-arranged and the fetid gases decomposed and dissipated. All that an antiseptic can do is to prevent decay by rendering the organic elements fixed and unchangeable, as with salt, vinegar, alcohol, arsenic, etc. This is why all salted aliments are more indigestible and less nutritious than those which are fresh.

FIG. 20.
SECRETING TUBES.

In Fig. 20, the entrance to the secreting follicles are shown, in the cells upon the surface of the mucous membrane of the stomach.

The mucous membrane is so completely studded with glands for the secretion of the gastric juice that its surface has a velvety or napped appearance, as represented in Fig. 19, which is a section of the coats of the stomach near

the pylorus, showing the gastric glands magnified twenty diameters.

The immediate consequences of a deficient supply of gastric juice—a condition that exists with all dyspeptics—are, acidity, flatulence, eructations, water-brash, heart-burn, etc.

After the food has been duly prepared in the stomach in the manner we have seen, it is passed through the pylorus (lower orifice of the stomach) into the duodenum, the first portion of the small intestines. The pyloric portion of the stomach and the upper portion of the duodenum are liable to become ulcerated, indurated, tuberculated, and even cancerous in persons who have much abused their digestive organs with strong condiments, indigestible aliments, alcoholic liquors, or other poisons.

CHAPTER VI.

CHYLIFICATION.

In the duodenum the food, now chyme, is mingled with the secretion from the mucous membrane of the intestine itself, the bile, and the pancreatic juice. Physiologists do not yet agree as to the precise offices performed in the organic economy by the liver or pancreas. The bile is certainly, in part, and probably wholly, an excrementitious fluid, or excretion, although being of an alkaline nature, it may incidentally mingle with the fatty matters of the food, and by converting them into a saponaceous mass, assist in their passage or absorption. All physicians are familiar with the various phases of disease which result from a deficient excretory action of the liver. Jaundice, rashes, humors, erysipelatous affections, dimness of vision, impaired hearing, and a multitude of cutaneous eruptions are attributable to "biliousness."

The following extract from the author's work, "The Hydropathic Encyclopœdia," may be pertinent in this place:

"The liver forms the bile from the venous blood. The object of the biliary excretion evidently is to eliminate certain im-

purities from the body in the form of compounds of carbon, hydrogen and nitrogen, and also to deterge the blood of a portion of any excess of alkali that may be absorbed by the venous extremities.

"Liebig has fabricated a singularly inconsistent hypothesis, which has satisfied himself and all others who are satisfied to echo his arguments without taking the trouble to examine them, that the bile is a nutritive product, and that, consequently, whatever will tend to the formation of bile, or any of the proximate elements usually found in bile, is a useful and nutritive substance. Liebig reasons in this wise: The bile is composed of several certain proximate elements. One of these is called *taurine.* This taurine is the only compound or proximate element found in the bile which contains *nitrogen.* Now *theine* and *caffeine,* the active principles of tea and coffee, are found, on chemical analysis, also to contain a very small quantity of nitrogen; ergo, tea and coffee, though injurious excitants to the nerves, may be useful to the liver by furnishing the nitrogenous element of the taurine of the bile. Such reasoning is extremely absurd, and the error is a most palpable one. It consists in mistaking a waste material for an aliment; a depurating process for a nutritive one. As well might one mistake putrid flesh for wholesome food, because it contains carburetted hydrogen, which is also found in the fœces, or excrementitious matters of the bowels."

The pancreatic juice, mingling with the oily matters of the food, or *with* the food (and it should be stated here that oily matters are never digested nor changed in the stomach), reduces them to the condition of an emulsion, which means, dividing the oily particles so minutely that they lose their apparent individuality. In this emulsified condition the fat is capable of being absorbed and carried into the general circulation, and, finally, expelled through the various emunctories, or deposited in the cells of the areolar tissue.

The spleen, when enlarged and indurated, is what is known in popular parlance as "ague cake." It is common in malarious districts after the intermittent fever has been "broken up" by

large doses of quinine or arsenic. When dyspepsia is complicated with this condition, the patient is always despondent and melancholy, unless the organic or vital temperament exists, with a very large development of the phrenological organ of hopefulness.

The relation of the pancreas to the spleen on the left side, and the duodenum on the right, is shown in Fig. 21. The cut represents the organs as viewed anteriorily, with their blood-vessels injected.

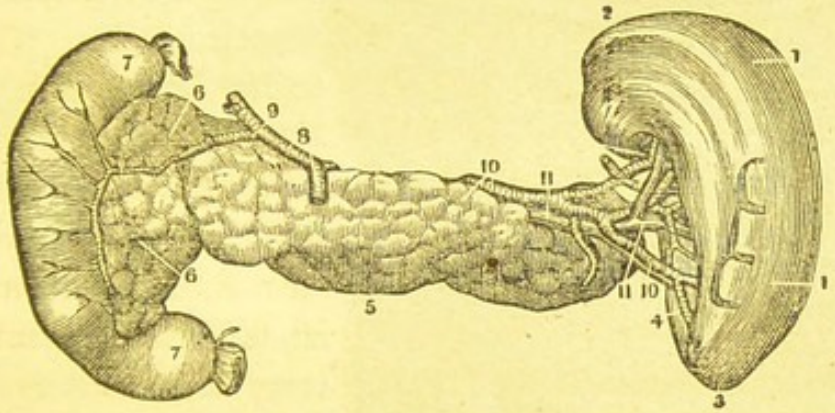


FIG. 21.—PANCREAS, SPLEEN, AND DUODENUM.

1. The spleen. 2. Its Diaphragmatic Extremity. 3. Its Inferior Portion. 4. The Fissure for its Vessels. 5. The Pancreas. 6. Its Head, or the Lesser Pancreas. 7. Duodenum. 8. Coronary Arteries of the Stomach. 9. The Hepatic Artery. 10. The Splenic Artery. 11. The Splenic Vein.

CHAPTER VII.

INTESTINAL DIGESTION.

FROM the commencement of the small intestines to the termination of the large ones, the mucous lining of the canal secretes a fluid which not only smooths the passage of matters along its surface, but aids in the elaboration of the nutrient elements. In different portions of the alimentary tract there are special glands, follicles, or other secreting structures, aiding in the complex process of converting "pabulum" into living structures. The small intestines are divided by anatomists into the *duodenum*, *jejunum*, and *ileum*, and the large intestines into the *cecum colon* and *rectum*. A glance at some of the more

prominent of these special appendages to the digestive apparatus will not only show how "fearfully and wonderfully" we are made, but may induce us to have a little more compassion on our own bowels, if we cannot have "bowels of compassion" for others; for it is in the long and tortuous tract of the intestinal canal that the most aggravated miseries of a dyspeptic life are experienced. Choleras, colics, diarrhœas, worms, hemorrhoids, various concretions, and, worst of all, constipation, have their seat in the intestinal tube, in addition to inflammatory affections and structural derangements, which are common to all parts of the system.

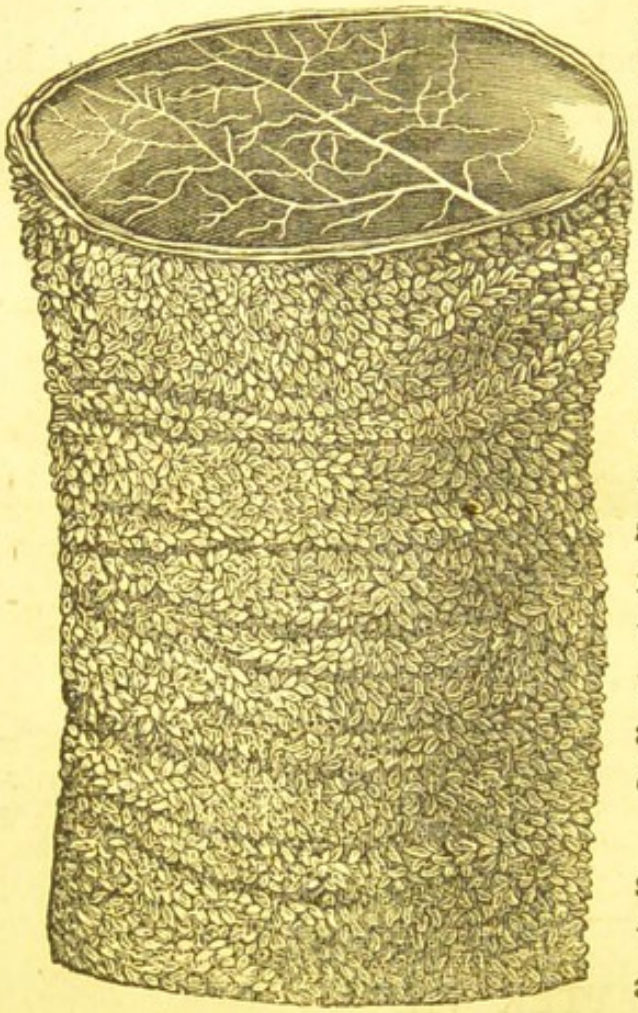


FIG. 22.—SECTION OF THE ILIUM.

In Fig. 22, is seen a section of the ileum, inverted, so as to show the appearance and arrangement of the villi on an extended surface, as well as the follicles of Lieberkuhn. The follicles are represented by the great number of black points between the villi, or projections, and can only be recognized by a close inspection.

A section of the small intestine containing some of Peyer's glands, as shown under the microscope, is represented in Fig. 23. They secrete a milky fluid with numerous corpuscles of various sizes, but not so large as those of the blood. The meshes seen in the folds are the ordinary tripe-like folds of the mucous coat.

Several late pathologists have advanced the theory that an inflammation of Peyer's glands in the jejunum and ileum, is the

essential cause of typhoid, or enteric fever, while an inflammation of Brunner's glands, in the duodenum, is the essential cause of typhus or putrid fever. But these theorists have mistaken effect for cause. In some instances these glands were found inflamed or disorganized after death. In other cases no such appearances were discoverable. If inflammation of these glands was the cause of these fevers, post-mortem examinations should have confirmed it in all cases.

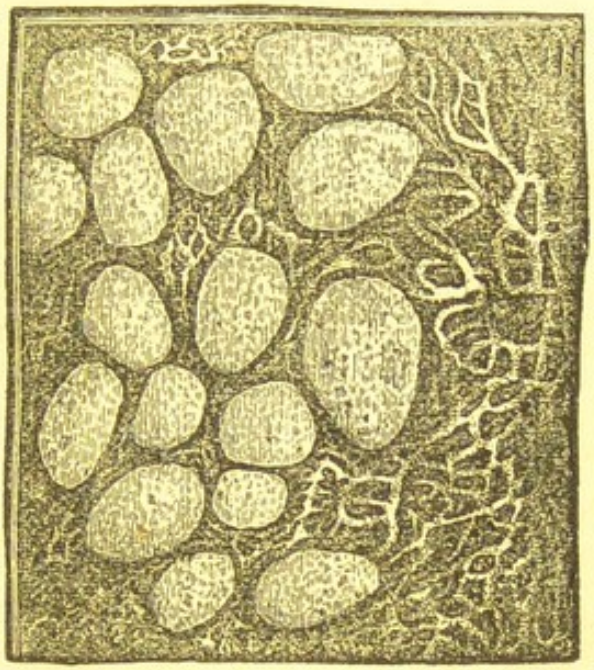


FIG. 23.—PEYER'S GLANDS.

The entire number of follicles in the whole alimentary canal has been reckoned by Dr. Horner ("*Special Anatomy and Histology,*") at "forty-six million nine hundred thousand and upwards." They constitute the minute anatomy of the mucous coat, and their most prominent phases are represented in the four following illustrations:

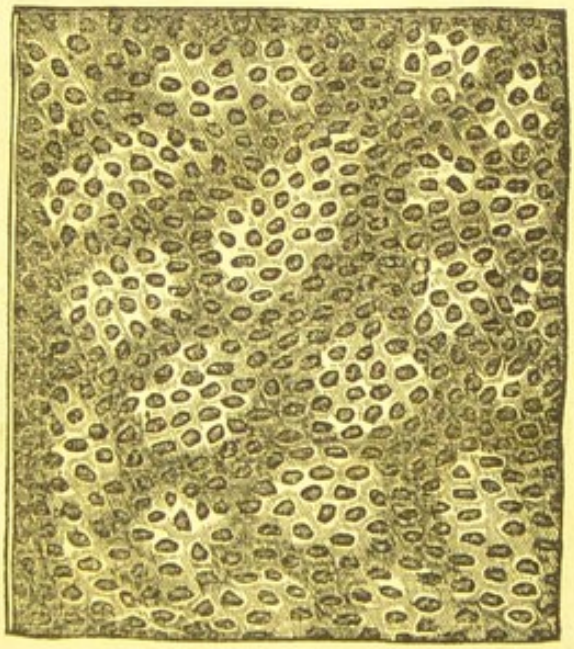


FIG. 24.—FOLLICLES OF THE COLON.

Fig. 24, is a view of the follicles of the colon, magnified one hundred and fifteen times. Their aggregate number is estimated at nearly ten millions.

Fig. 25, is a view of the folds and follicles of the stomach, highly magnified. About two hundred and twenty-five are found on every square of an eighth of an inch, which would give a little more than a million and a quarter for the entire stomach.

In Fig. 26, are seen the follicles and villi of the jejunum highly magnified. As the villi are erected by the injection, they run into each other and press one upon another like the convolutions of the cerebrum.

FIG. 25.—FOLLICLES OF THE STOMACH.

The follicles and also the villi of the ileum, highly magnified, are represented in Fig. 27. These villi are curved, with their edges bent in, or concave. There is, however, in the whole alimentary canal, almost every conceivable form and shape.

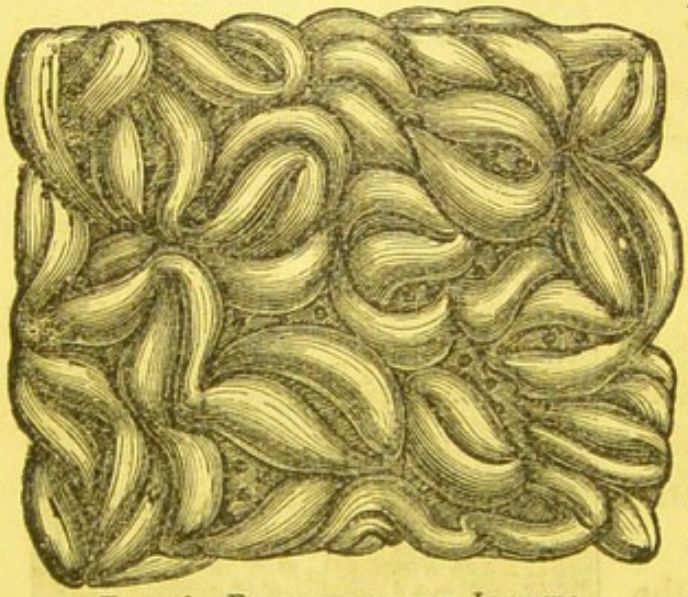


FIG. 26.—FOLLICLES OF THE JEJUNUM.

It is in the large intestines, where fecal matters are liable to accumulate, that the most distressing effects of indigestion are manifested. Admirable as are their structural arrangements and irregularly curviform direction for the performance of their functions under normal conditions, these very circumstances render them liable to become the seat of terrible sufferings when obstructed or diseased. This fact may be inferred from a glance at the illustration, Fig. 28, which is a view of the position and curvatures of the large intestines.

The large intestines differ from the small in being sacculated, an arrangement which favors the retention of the nutrient material which has not yet been taken up by the

extremities of the veins and the lacteals, until it can be completely absorbed, and also facilitates the excretion of fecal matters from the blood. But if constipation exist, these sacculations become loaded with hardened fœces, and sometimes with other concretions, rendering the patient as miserable as can well be imagined.

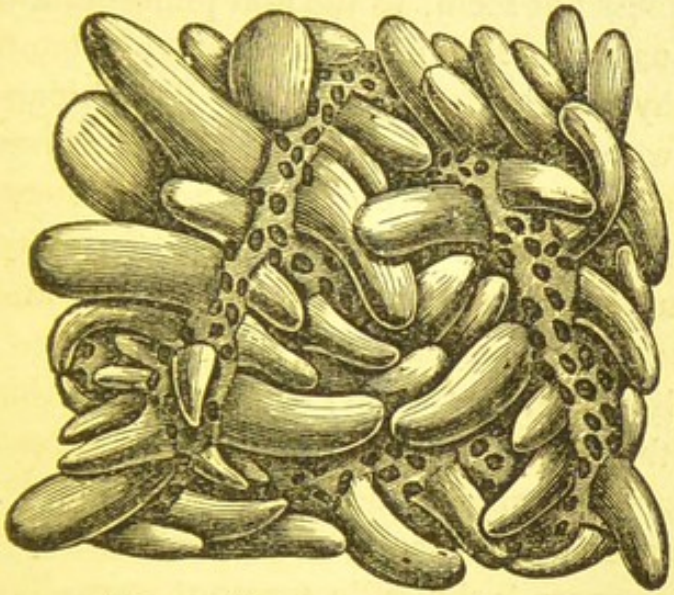


FIG. 27.—FOLLICLES OF THE ILEUM.

It will be noticed that the contents of the large intestines are carried in a circuitous route, and in one place directly upward for ten or twelve inches; thence across the abdominal cavity to the right side, thence downward on the left side to a position below the ileo-cœcal junction; thence through the sigmoid flexure (a curvature resembling the letter S), and finally, downward again in a straight line to the outlet.

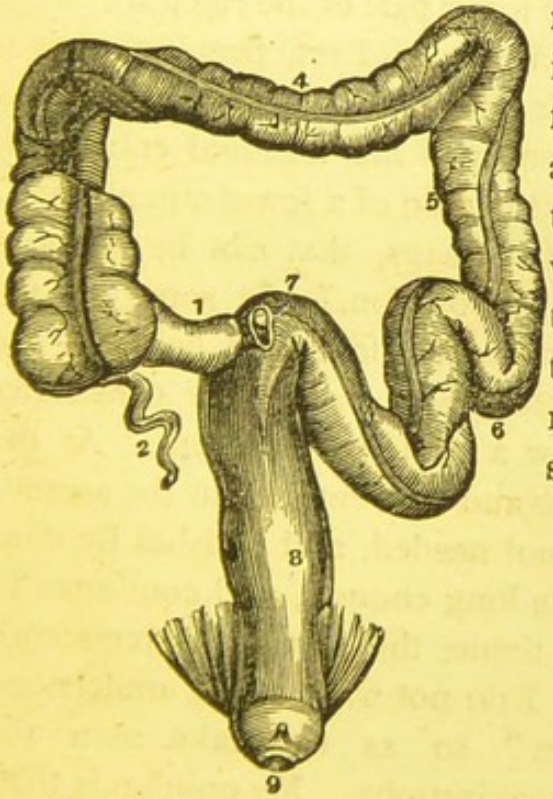


FIG. 28.—THE LARGE INTESTINES.

1. The end of the Ileum.
2. Appendicula Vermiformis.
3. The Cœcum, or Caput Coli.
4. The Transverse Colon.
5. The Descending Colon.
6. The Sigmoid Flexure.
7. Commencement of Rectum.
8. The Rectum.
9. The Anus.—The Levator-Ani Muscle is shown on each side.

The careless observer might see, in this extraordinary contrivance, nothing but a useless complication that renders the whole organism ever liable to manifold infirmities and premature destruction. But a similar mistake has been made with

regard to the convolutions of the brain. There is neither simplicity nor symmetry on the encephalic surface, and its irregular elevations and depressions seem, to the non-philosophical mind, but a promiscuous and useless massing together of brain substance. But the physiologist, and especially the phrenologist, sees the matter with very different eyes. He perceives the use, and then recognizes the beauty of the whole arrangement. He has learned that all of this unevenness of surface unfolds and spreads out, so to speak, the mental organs, and correspondingly augments their power.

The last of the small intestines (ileum) opens into a large sac or pouch, which is the portion of the large intestine termed cœcum. This is very large in some of the herbivorous animals. In the horse it is larger than the stomach. The careful student may inquire, for what purpose is the little tortuous worm-like appendage depending from the lower part of the cœcum? Well, it has no physiological use whatever, and yet, paradoxical as it may seem, "nothing is made in vain." Like the little trijointed bone at the lower extremity of the vertebral column, it seems to point a moral. It is the relic of a lower organization, and is the strongest argument, perhaps, that can be adduced in favor of the doctrine of "Evolution." In some of the lower animals, which subsist on coarse food and herbage, the beaver, for example, the *appendicula vermiformis* constitutes another pouch or stomach, or a prolonged cœcum. As the food becomes more frugivorous and concentrated in the ascending scale, the appendage is not needed, and perishes by non-use. If the human race exists long enough, and continues to develope in its cerebro-spinal tissue, the unseemly excrescence will entirely disappear. But I do not wish to be understood as interpreting "Darwinism" so as to make man the "descendant" of the lower organizations. My opinion is that, in the order of progressive development he has *ascended* above the whole animal kingdom.

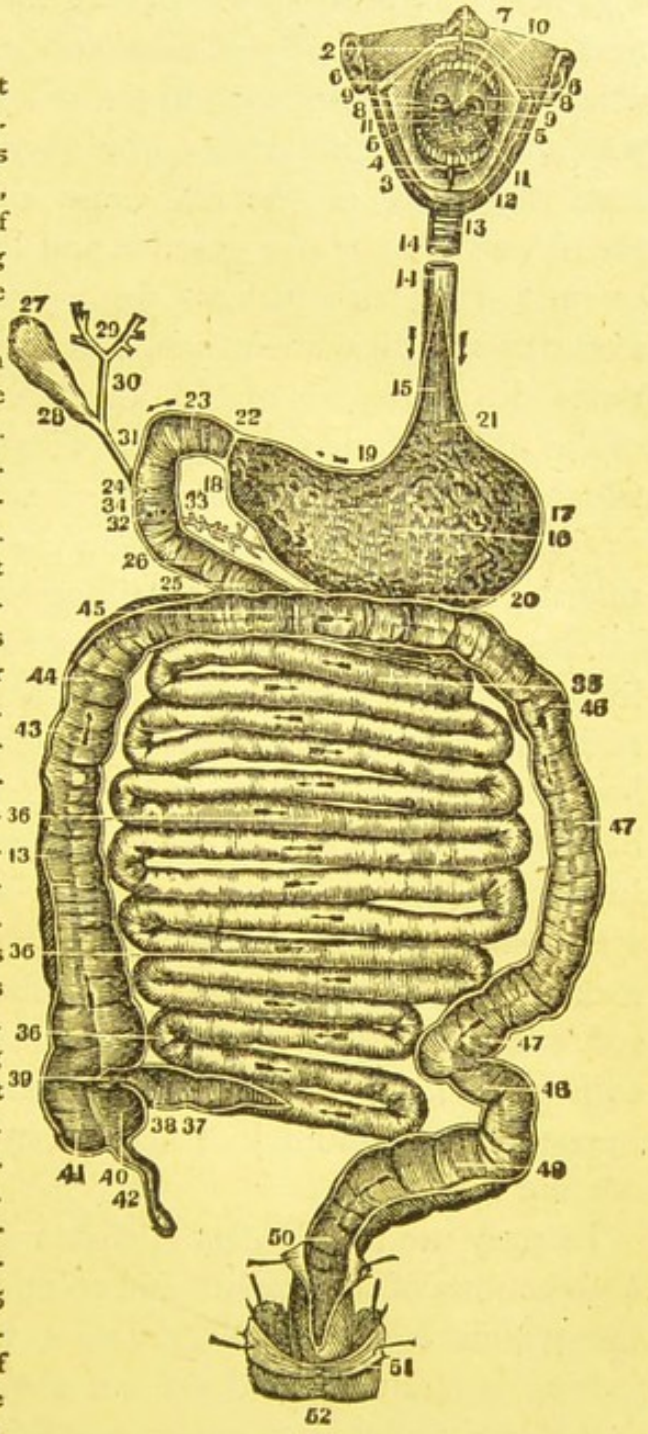
A view of the whole range of the alimentary canal is presented in Fig. 29. A portion of the œsophagus has been removed on

account of want of space in the figure. The arrows indicate the course traversed by the ingesta.

FIG. 29.

ALIMENTARY CANAL IN SITU.

1. The Upper Lip, turned off at the mouth. 2. Its Frœnum. 3. Lower Lip, turned down. 4. Its Frœnum. 5, 5. Inside of the cheeks, covered by the lining membrane of the mouth. 6, Points to the opening of Steno's Duct. 7. Roof of the mouth. 8. Lateral Half Arches. 9 Points to the Tonsil. 10. Velum Pendulum Palati. 11. Surface of the Tongue. 12. Pappillæ near its point. 13. A portion of the Trachea. 14. Œsophagus. 15. Its Internal Surface. 16. Inside of the Stomach. 17. Its Greater Extremity or great Cul-de-Sac. 18. Its Lesser Extremity or smaller Cul-de-Sac. 19. Its Lesser curvature. 20. Its greater curvature. 21. Cardiac Orifice. 22. Pyloric Orifice. 23. Upper portion of Duodenum. 24, 25. Remainder of the Duodenum. 26. Its Valvulæ conniventes. 27. Gall Bladder. 28. Cystic Duct. 29. Division of Hepatic Ducts in the Liver. 30. Hepatic Duct. 31. Ductus Communis Choledochus. 32. Its opening into the Duodenum. 33. Pancreatic Duct. 34. Its opening to the Duodenum. 35. Upper part of the jejunum. 36. Ileum. 37. Some of the Valvulæ Conniventes. 38. Lower extremity of the Ileum. 39. Ileo Colic Valve. 40, 41. Cœcum. 42. Appendicular Vermiformis. 43, 44. Ascending Colon. 45 Transverse Colon. 46, 47. Descending Colon. 48. Sigmoid Flexure of the Colon. 49. Upper portion of the Rectum. 50. Its lower extremity. 51. Portion of the Levator Ani Muscle. 52. Anus.



With the anatomical data before us, it is not difficult to understand why, in cases of prolonged constipation, or in torpid and feeble states of the alimentary canal and abdominal muscles, the cœcal pouch should be the portion of the canal

most liable to obstructions and accumulations. Many persons of good constitutions, not conscious of any very bad habits, who live "as other folks do," and attend to their daily business, suffer continually of fœcal collections in the cœcum, and, generally, to some extent in the colon also, especially in that portion of it denominated the sigmoid flexure, without the least suspicion of the real cause of their difficulties. And physicians of extensive practice and long experience not unfrequently dose such patients for years with aperients, cordials, stimulants, tonics, alteratives, nervines, and opiates, and sometimes with mercurials in addition, with no thought of the nature of the troublesome symptoms. I have known several cases in which the lower extremities were so feeble and the back so weak, from no other cause than the one we are considering, that the patients could not walk without a cane in each hand.

The ordinary symptoms are, a sense of weight or heaviness in one or both iliac regions, with occasional dull pains, alternating more or less frequently with aching or griping sensations. Sometimes the sensation in the part will be of a dragging or bearing-down character, in extreme cases amounting to a most intolerable tormina and tenesmus as in dysentery. All of these symptoms may be mild or severe according to the amount of excrementitious material present and the efforts made to dislodge it. Diarrhœa may also be present without removing the constipation, for the fœcal matters are often so hardened and impacted that fluid dejections pass by them without solving or moving them.

Literary and sedentary persons are much more liable to obstructions of the cœcum and colon than are laboring persons. Clergymen, lawyers and legislators, who devote much time to writing or studying, and do not give proper attention to diet and exercise, are often extreme sufferers. Were it proper and useful to do so, I could give the names of distinguished bishops, divines, statesmen, lawyers, and even physicians, who have been dragged down from positions of honor and wealth, to moral degradation and poverty, because of this condition of their bowels, and *the medical treatment.*

I say medical treatment advisedly. The condition itself might have occasioned disease and even death. But it would not alone occasion dishonor. Opiates were given to relieve pain, and stimulants to "support vitality." Their effects were only temporary, and as the cause was not removed they were frequently repeated. Soon morphine and brandy became necessities; and eventually drunkenness became a habit, followed in some instances by debauchery and other vices. Some of the readers of these lines may remember the sad story of two distinguished prelates, men of good name and fame and unimpeachable piety, occupying the exalted positions of Bishops of the two greatest States of our Union—New York and Pennsylvania. They were brothers. Both were degraded from their high and holy office for intoxication and lecherous conduct. The unfortunate men were more sinned against than sinning. It was shown on their trial that the *medicine* which had worked their ruin had been prescribed by their physicians.

But, to say nothing of the various entozoa which are frequently found in different parts of the alimentary canal, all of which are scavengers, and could not exist were it not for the morbid secretions and improper ingesta, there is another group of exceedingly distressing affections whose seat is the rectum. I mean hemorrhoids, or piles. Chronic inflammation of the mucous surface is among the effects of prolonged constipation, and this may extend from the mucous membrane of the cœcum and colon to that of the rectum, or fœcal accumulations may occur in the rectum. The result is, the numerous veins in the lower part of this portion of the intestinal tube, very near its outlet, become distended into tumors, rupture and bleed, or the mucous membrane itself becomes disorganized, and portions of it are hardened with excrescences and tumors of various forms, sizes, and degrees of consistence. In these cases defecation is always painful, and the pain is sometimes excruciating. When these tumors are large or numerous, or the whole mucous membrane greatly relaxed, the tender and perhaps bleeding bowel will prolapse after each defecation, in many instances only to be replaced with difficulty and suffering. In

extreme cases these tumors are removed by surgery—ligation or caustic.

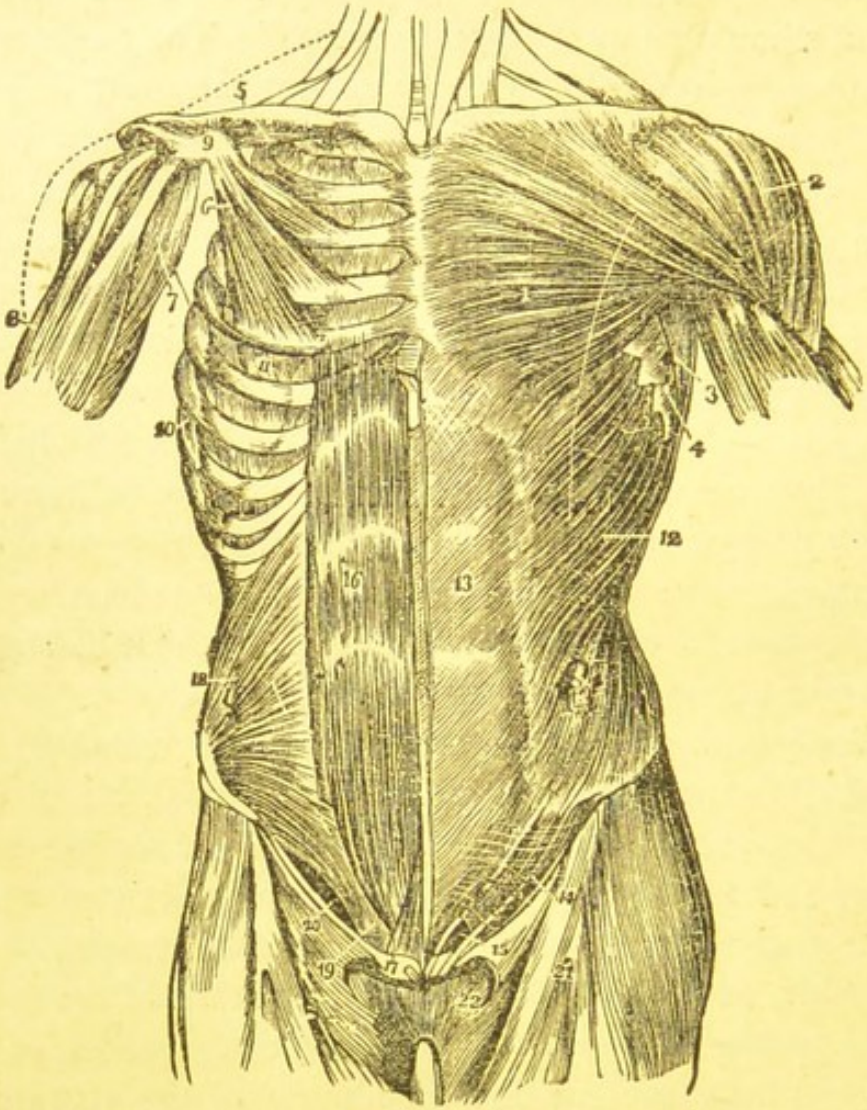


FIG. 30.—MUSCLES OF THE TRUNK, IN FRONT.

In Fig. 30 are seen the muscles of the trunk anteriorily. The superficial layer is seen on the left side, and the deeper on the right. 1. Pectoralis major. 2. Deltoid. 3. Anterior border of the latissimus dorsi. 4. Serrations of the serratus magnus. 5. Subclavius of the right side. 6. Pectoralis minor. 7. Coracho-brachialis. 8. Upper part of the biceps, showing its two heads. 9. Coracoid process of the scapula. 10. Serratus magnus of the right side. 11. External intercostal. 12. External oblique. 13, Its aponeurosis; the median line to the right of this number is the linea alba; the flexuous line to the left is the linea semilunaris; the transverse lines above and below the number are the lineæ transversæ. 14. Poupart's ligament. 15. External abdominal ring; the margin above is called the *superior* or *internal* pillar; the margin below the *inferior* or *external* pillar; the curved intercolumnar fibres are seen proceeding upward from Poupart's ligament to strengthen the ring. The numbers 14 and 15 are situated upon the fascia lata of the thigh; the opening to the right of 15 is called *saphenous*. 16. Rectus of the right side. 27. Pyramidalis. 18. Internal oblique. 19. The common tendon of the internal oblique and transversalis descending behind Poupart's ligament to the pectineal line. 20. The arch formed between the lower curved border of the internal oblique and Poupart's ligament, beneath which the spermatic cord passes, and hernia occurs.

But the student who would master the complex physiology of digestion, should not overlook one important auxiliary which is scarcely alluded to in medical books, and not mentioned at all, so far as I know, by the standard authors on Theory and Practice, in connection with the therapeutics of indigestion. I mean the abdominal muscles. There is a good reason why the abdominal viscera, and especially the alimentary canal should not be enclosed within bony walls, as is the case with the brain and the organs of the thorax. The walls of the abdomen are formed of muscular and tendinous bands, which are thin, flexible, and exceedingly strong. This structure provides for a great degree of mobility in the various movements of the body, and aids powerfully in the peristaltic action of the bowels. In the act of defecation these muscles, co-operating with the action of the muscular coat of the intestinal canal, compress the whole abdomen firmly yet steadily, so that the contents of the bowels are moved along and expelled easily and without pain. But when these muscles are inactive, from rigidity or relaxation, the whole effect is thrown upon the delicate fibres of the muscular coat of the intestines, resulting in imperfect or incomplete defecation, and, eventually, torpor and exhaustion of the peristaltic action.

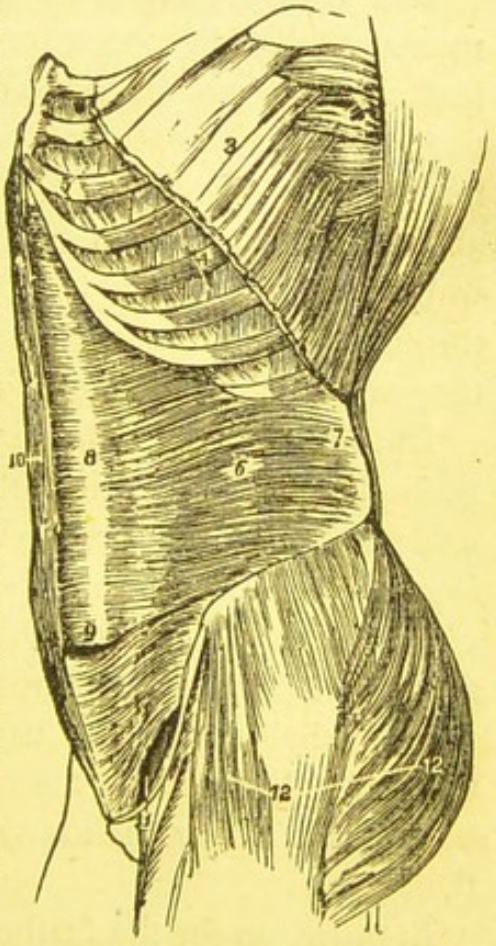


FIG. 31.—MUSCLES OF THE TRUNK, LATERALLY.

Fig. 31 is a side view of the muscles of the trunk. 1. Costal region of the latissimus dorsi. 2. Serratus magnus. 3. Upper part of external oblique. 4. Two external intercostals. 5. Two internal intercostals. 6. Transversalis. 7. Its posterior aponeurosis. 8. Its anterior. 9. Lower part of the left rectus. 10. Right rectus. 11. The arched opening where the spermatic cord passes and hernia takes place. 12. The gluteus maximus, and medius, and tensor vaginæ femoris muscles invested by fascia lata.

Many "wonderful cures" have been effected, of dyspeptics who had been dosed and drugged for years unavailingly, by simply exercising the abdominal muscles, by methods which will be explained hereafter.

CHAPTER VIII.

ABSORPTION OF THE NUTRIENT ELEMENTS.

The nutritive elements o. the food are taken from the alimentary canal by the extremities of the veins, and by the lacteal vessels, which originate in the small intestines. The process of absorption commences in the stomach and extends nearly or quite the entire length of the intestines. The venous absorbents convey their contents directly to the mass of blood, while the lacteal transport the matters which they take up through the mesenteric glands to the *receptaculum chili*, whence they are emptied into the blood near the heart.

In the stomach the more watery portions of the aliment, and such elements as require little elaboration, are taken up by the extremities of the veins. When milk is taken the watery part is absorbed and the solid portions reduced to a coagulum, or curd, before gastric digestion can take place. The lacteal absorbents convey the more dense and oleagenous elements, termed chyle, which is usually of a milky white color; but this depends much on the quality of the ingesta, being nearly transparent in those who use little or no fatty matters in or with their food.

A provision for the further elaboration of the chyle is found in the *mesenteric glands*, which are convolutions of the absorbent vessels numerously distributed along their course.

Fig. 32 is a view of the beautiful arrangement of these chyle-carriers. They are represented as injected. The arteries of the jejunum and mesentery are also injected.

1. Section of the Jejunum. 2. Section of the Mesentery. 3. Branch of the superior Mesenteric artery. 4. Branch of the superior Mesenteric Vein. 5. Mesenteric Glands receiving the Lymphatics of the intestines.

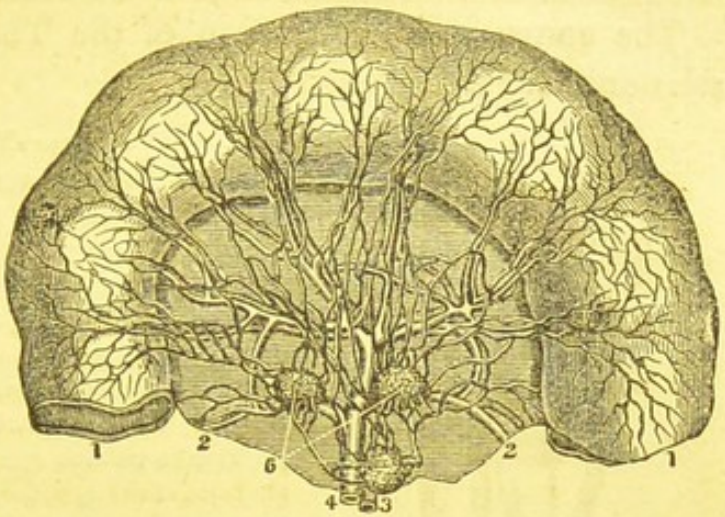


Fig. 32.—Lymphatics of Jejunum and Mesentery.

The structure and arrangement of the mesenteric glands are better shown in Fig. 33, which is a view of the lymphatics as they appeared after death of abdominal dropsy.

1. Thoracic Duct. 2. Section of the Aorta. 3. Glands around the Aorta which receive the Lymphatics from the intestine and give off vessels to the Thoracic Duct. 4. Superficial Lymphatics on the intestine. 5, 5. More Lymphatic glands receiving vessels from the intestine. 6, 7. Lymphatics from the intestine and mesentery.

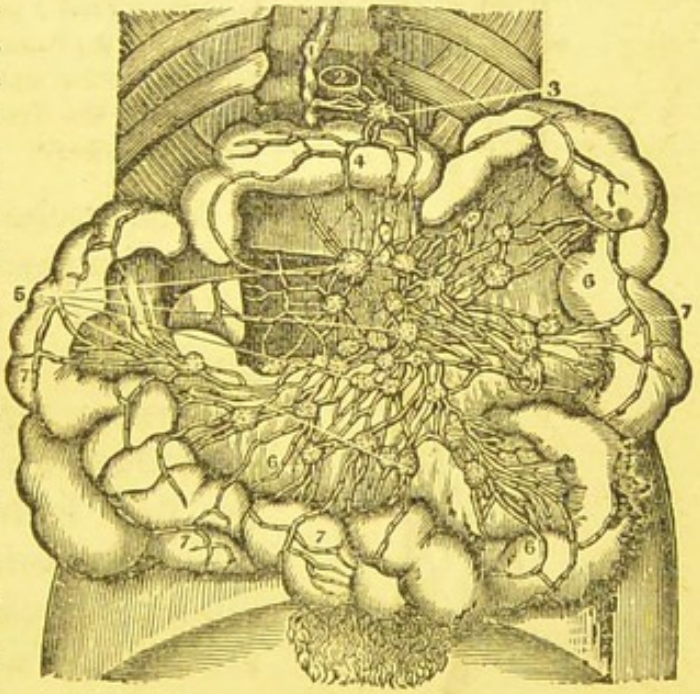


Fig. 33.—Mesenteric Glands.

All of the muscles of the abdomen are auxiliary to respiration as well as to digestion. Indeed they constitute the chief forces in the act of expiration; and without they are maintained in a vigorous condition by appropriate exercise, neither breathing nor digestion can be well performed. In the act of vomiting the spasmodic contraction of these muscles is the main force that ejects the contents of the stomach, and in the various forms of cholera and diarrhœa, it is mainly the same force, abnormally exerted, that causes the evacuations. Hence it becomes as necessary to regulate the action of these muscles in fluxes and profluvia, as to invigorate them in cases of dyspepsia.

The course and termination of the Thoracic Duct, and its relations, are represented in Fig. 34.

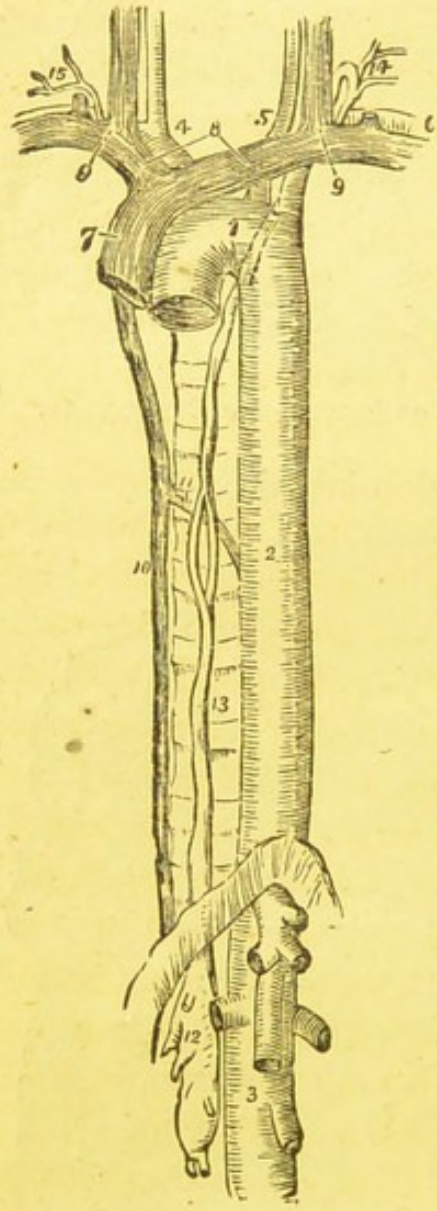


Fig. 34.—Thoracic Duct.

1. Arch of the Aorta. 2. Thoracic Aorta. 3. Abdominal Aorta. 4. Arteria Innominata. 5. Left Carotid Artery. 6. Left Sub-Clavian Vein. 7. Superior Vena Cava. 8. The two Veins termed Venæ Innominatæ. 9. Internal Jugular and Sub-Clavian Vein at each side. 10. Vena Azygos. 11. Termination of the Vena Hemi-Azygos in the Vena Azygos. 12. Receptaculum Chyli; several Lymphatic Trunks are seen opening into it. 13. The Thoracic Duct, dividing opposite the Middle Dorsal Vertebra in two branches, which soon re-unite; the course of the Duct behind the Arch of Aorta and Left Sub-Clavian Artery is shown by a dotted line. 14. The Duct making its turn at the Root of the Neck and receiving several Lymphatic Trunks previous to terminating in the Posterior Angle of the Junction of the Internal Jugular and Sub-Clavian Veins. 15. Termination of the Trunk of the Lymphatics of the Upper Extremity.

What precise changes the chyle undergoes in passing through the mesenteric glands is not known, but as all glands are secreting, excreting, or elaborating organs, it is certain that the influence they exert on the nutritive fluid is important; hence it is essential to perfect digestion that these minute and complicated structures are not deranged nor impaired. And just here is another consideration of no small importance. It is said by some medical authors, that when mercurial and other mineral drugs come in contact with the mesenteric glands, they "take on" inflammation. The phrase is absurd, but the meaning intended to be conveyed is, the medicine or poison (as it is administered with therapeutic or homicidal intent), occasions inflammation of the glands; and the rationale is, the vital structures, recognizing the presence of an enemy within the vital domain, resist or oppose it by determining the blood to the part. The inflammatory process, however, although it

retards, does not prevent the passage of the drug; for, as it is necessary for the chylous fluid to be passed along, the mineral particles which, in the form of oxides, chlorides, or salts, are exceedingly minute, pass along with it. The glands may be permanently diseased in this matter, and this method of getting drug-medicines into the blood is always more or less damaging to these delicate structures, and is the origin of most of the tumors which are seated in the mesentery, and which are beyond the reach of medication or surgery. In some cases hundreds, and in other cases thousands of these glands are involved in the formation of an indurated irregular tumor and sometimes occupying a large portion of the abdominal cavity. If invalids must have their blood and tissues pervaded with the agencies of the drug shop, the safer way is to administer them hypodermically. By injecting them into the skin they will pass directly into the blood, and thus save the wear and tear of the digestive organs. When repeated doses of potent drugs are sent into the circulation through the long and devious route of the digestive apparatus, the effect is not unlike that of the march of an invading army through an enemy's country. If the aggressive forces put on their best possible behavior, they are enemies still, and more or less desolation will mark their track. And in view of the fact that we have, in the United States, thirty thousand drug shops, and seventy-five thousand physicians, furnishing the supplies and prescribing the doses, it may be a fair question for a debating lyceum, whether there is more dyspepsia produced by drug medication than by all other causes combined?

CHAPTER IX.

AERATION OF THE FOOD ELEMENTS.

But the processes of digestion are not completed until the nutrient material reaches the lungs. In the respiratory organs, it receives its finishing elaboration, which fits it for assimilation. And here is another consideration for dyspeptics which is sel-

dom sufficiently regarded, if, indeed, it is ever thought of. *No food can be assimilated unless properly aerated.* Each particle of food must come in contact with a particle of atmospheric air, or it can never be used—else it is worse than useless. For this purpose it is diffused through the lungs with the blood which is there decarbonized. All of the venous and lacteal absorbents, as we have seen, convey the nutrient matters which they take up from the stomach and small intestines to the right side of the heart, as do all the venous extremities and lymphatics which originate in the large intestines. From the right side of the heart it is conveyed, with the venous blood from all parts of the system, to the lungs.

The function of aeration is not fully understood. It is well known that in respiration the blood is purified of its effete carbon, and that oxygen is received into the system. But it is not known that oxygen performs any other office than to combine with and reduce to ashes, and thus favor the expulsion of the disintegrated or dead matters. Oxygen is usually termed "vital air," but I suppose the vitalizing element is something very different.

So far as we can trace the effects of oxygen, they are purely destructive. Of course it is just as important to get rid of the offal, to remove the effete matters from the system, as it is to supply wholesome food. And for this purpose a full supply of oxygen is a *vital condition.* But this does not make it in any sense "vital air," any more than nitrogen is vital air, for a due admixture of this gas with the oxygen is just as essential to health as is the presence of the oxygen.

Pure oxygen is as non-respirable as is nitrogen, carbonic acid gas, or hydrogen ; although a larger proportion of it in the atmosphere than nature provides may be borne for a time without serious inconvenience. Those empyrics, however, who run the business of treating diseases with "Compound Oxygen," "Super-Oxygenated Air," "Vitogen," and other humbugs, must either be arrant ignoramuses, or have great faith in human credulity. These enterprising gentlemen might as well undertake to invent better kinds of food, or a superior quality of

water than nature has been enabled to accomplish, by changing the proportions of their constituent elements, as to imagine they can improve the atmosphere nature has provided for us to breathe.

In my opinion the vitalizing principle which may pervade any organic structure, and which is especially received in respiration, is an element inconceivably more refined than oxygen or its nascent condition, ozone, and more etherealized than even the all-pervading electricity or magnetism, and which fills all that part of the unmeasurable universe which is called space. But, for all practical purposes it is enough to know that perfect respiration is essential to perfect nutrition, and that every influence which diminishes the breathing capacity, correspondingly impairs digestion and conduces to dyspepsia.

All impurities of the atmosphere tend to enfeeble the respiratory, and indirectly, the nutritive functions, as do all habits of dress or positions of body which impede the action of the respiration. And here I must allude to two prevalent causes of dyspepsia, consumption, and general physical deterioration, which are not only destroying the young men and young women of our land at a fearful rate, but are alarmingly on the increase all over the country.

I cannot do better justice to this branch of our subject than by quoting a few paragraphs from one of my works on 'Tobacco-Using," recently published at the office of the *Health Reformer*, at Battle Creek, Michigan:

"THE BREATH OF LIFE.

"There is one view of the physical evils of tobacco-using which has never been presented distinctly by writers on this subject. I mean the effect of the habit of respiration. *Tobacco-using directly and fearfully lessens the breathing capacity.* This is one reason why tobacco-users require more sleep than others, other circumstances being equal.* Now, the available life-

* The less the nervous energies are exhausted by nervines, stimulants, or narcotics of any kind, or, indeed, by pernicious habits of any sort, the less will be the amount of sleep required for recuperation.

force of every living being is precisely in the ratio of the development of the respiratory organs. Tobacco-using, so long as it is continued, constantly diminishes the breathing apparatus. This is easily explained. Any one, on going, on a hot summer's day, from the stifling stenches of an uncleaned city, to the purer breezes of the open country, may have a realizing sense of the principle involved. His lungs will expand spontaneously. They seem to open full and deep to take in as much vital air as possible. It is a luxury to breathe. But in the dirty city, the accumulated impurities of the atmosphere are *resisted* by the pulmonary structures. The glottis partially closes to keep them out, and all of the respiratory muscles contract spasmodically to prevent their entrance. Breathing is, therefore, imperfect. And when the atmosphere is very impure, breathing is not only imperfect but painful; and in extreme cases it is entirely suspended.

"Now, nothing is more offensive to the vital instincts of the respiratory organs than the odor and fumes of tobacco. Talk about stenches, miasms, contagions, infections, from gutters, cess-pools, markets, stables, distilleries, tenement houses, offal gatherings, &c. ! All of them combined (let me gently hint to the Board of Health) do not equal tobacco in intrinsic repulsiveness, nor in their injurious effects on the lungs.

"Let any one, uncontaminated by its use, enter a close room where several persons are smoking, or a crowd in the street where fashionable young men most do congregate, and, in a moment, he will find himself breathing short and laboriously. He will experience a sense of suffocation, and perhaps feel an inclination to sneeze, retch, or vomit. His lungs expand with difficulty. They do not kindly receive the particles of the deadly narcotic. Inhalation is feeble and imperfect, while expiration is more forcible and complete. And thus the lungs are exercised in just the manner gradually and surely to contract the diameter of the chest and permanently diminish the respiratory capacity. And as our whole population is more or less exposed to an atmosphere strongly impregnated with tobacco effluvia, the vital function of respiration cannot fail to suffer a

continual deterioration. And all that is necessary to insure the ruin of the human race at no distant day is the increase of the habit of tobacco-using as rapidly as it has increased for three centuries past, or as rapidly as it is increasing at the present time. Frightful examples of this possible result may be seen in droves in all of our cities and large villages.

"Look at the swarms of young men—young in years, but old in vital conditions—who commenced this horrid practice in early life; and thousands do commence it even before the age of puberty. The close observer will not fail to notice in a majority of them, something unshapely and unhuman—the sharp features, angular faces, projecting shoulders, lank limbs, narrow chests, gaunt abdomens, sallow, bilious skin, and *old-manish* appearance generally. To the eye of the intelligent physiologist these young men—mere boys in the order of nature—are prematurely old, already in a decline. I have seen thousands of tobacco-using young men (of twenty to twenty-five years of age, according to the almanac) who were physiologically and for all practical purposes, older than thousands of their fathers and grandfathers were at fifty to sixty years of age. A large proportion of tobacco-using young men are dwarfed in body and mind irrecoverably; and should they unfortunately become husbands and fathers, their wives may well be pitied, while their offspring will in most cases be constitutionally frail and precociously dissolute, and many of them imbecile, if not idiotic.

"Many of these young men have the characteristics of dissoluteness and sensuality stamped indelibly on the physiognomy as well as the physiology. And with many of them—indeed all, to a greater or less extent—their secretions are all morbid, their excretions defective; their whole mass of blood foul, their breath fetid, their sweat nauseous, and their whole persons offensive.

"YOUNG MEN THE CHIEF SMOKERS.

"As we trace the history of tobacco-using from one generation to another, it is all downward—from bad to worse. The

fathers of many of the tobacco-using young men of the present day did not commence the habit until they had acquired a fair vital development. But they transmitted morbid propensities to their children, who commenced much earlier in life. Hence there is frequently a striking contrast between the comparatively stalwart tobacco-using father, and the puny, fragile, stunted, and inferior tobacco-using son. It is not difficult to imagine what *their* sons must be.

"It is worthy of remark that, as a general rule, persons who become addicted to tobacco-using (and the same is true of liquor-drinking) in early life, indulge more excessively than do those who commence in middle or mature life. Being excitable, the consequent depression is greater; hence the seeming necessity for more frequent repetitions.

"A few days since, I noticed an illustration of this statement, which will, I think, be found of extensive application. I was travelling from Philadelphia to New York. The car in which I was seated contained just forty persons. Eight of them were young men; twenty-two would pass for middle-aged, and ten were old persons—six men and four women. *All of the young men* (and this was *not* the "smoking car, forward") smoked cigars or huge meerschaums more than half of the whole distance; only two of the middle-aged men smoked at all, and then cigars only on one occasion for a few minutes; while but one of the old gentlemen befouled himself and the rest of us by smoking at all. I have made similar observations on all the leading railroads of the United States, and I am of the opinion that if any person, travelling in any part of the country by rail, steamer, ferry, or stage, will study this subject closely, he will find that the principal smoking is done by the young men. Tens of thousands of young men may be seen every Sunday standing around the corner groceries, and the thousands of tobacco shops (which find Sunday their principal business day of the week), smoking their lives away, and bestenching the atmosphere which others are obliged to breathe. And in every public gathering outside of a church, it may be readily noticed

that the principal smoking is performed by the young men and boys.

"Tobacco-using, in young persons, has the same effect in diminishing the breathing capacity that tight-lacing (which is alarmingly on the increase again) has. Some years ago, when the practice of tight-lacing, which has ruined many thousands of young ladies, induced the friends of humanity and of the future generations, to make special efforts to arrest the evil, many young men adopted the maxim, 'natural waists or no wives.' It is a pity the maxim was not more generally lived up to. But these young ladies might very well reciprocate the compliment while they accepted the philosophy in adopting the adage, 'natural mouths or no husbands.' Examples are, indeed, sadly frequent on the thoroughfares of our great cities, of young ladies who have destroyed more than one-half of their breathing capacity by this disgraceful habit of tight-lacing. They cannot possibly live to be old; they can never become mothers of healthy children; and while they do live they must be infirm and miserable in themselves, and a source of anxiety and sorrow to their friends. They are invalids for life. Their wan, expressionless faces, harsh, pinched, contracted features, with livid, bilious discolorations of the skin, proclaim in language that the physiologist cannot mistake, deficient respiration and imperfect depuration. And the counterpart of these appearances and indications may be seen in numerous young men who promenade the streets behind lighted cigars.

"But although the physiological result is the same in the cases of tobacco-using young men and tight-lacing young women, there is a considerable difference anatomically. In the case of the young ladies the obstruction to respiration is external and mechanical, hence there is greater deformity, or 'caving in,' of the vital organs, while, with the young men, there is less malformation or deformity of the chest.

"Let a tobacco-using young man and a tight-lacing young woman marry, and what must be the character of the offspring? We can see melancholy specimens enough on every hand.

"Now the only method which has ever proved effectual for preventing or curing consumption is, to keep the lungs expanded as much as possible. And for this purpose, breathing tubes, spirometers, blow-guns, lifting machines, and other gymnastic contrivances, have been found useful.

A LEARNED DISCUSSION ON TOBACCO.

"I cannot better illustrate the delusion that may exist in high places, even among the learned, on the subject of tobacco-using, than by the relation of the following incident: In 1862, I attended the annual meeting of the British Scientific Association, in Cambridge, England. In the section on Physiology, a paper was read on the evil effects of tobacco-using. The author stated very clearly the various morbid conditions and diseases which are well known to result from the habit, and quoted a respectable array of medical authorities who declared it to be extremely pernicious. The discussion that followed the reading of the paper was amusing, if not instructive. Every one who spoke on the subject (and they were all medical gentlemen), condemned, not the tobacco, but the author of the essay! 'He was not a competent judge.' 'His opinions were of no authority.' 'He was no physiologist,' etc. All who spoke, advocated the use of tobacco—moderately, of course. One gentleman said that, 'next to alcohol, tobacco was the best-abused article in existence.' Another stated that he had used the 'weed' for twenty-three years without being harmed by it. A third regarded it 'favorable to mentality,' a fourth considered its employment in moderation 'decidedly hygienic.' A fifth said, 'I always find my ideas to flow more consecutively after a few whiffs from a good cigar;' and a sixth justified its use by reference to the Turks, 'who used tobacco freely, yet were a strong and courageous race.' No one replied a word to the facts, or pretended to meet the arguments presented in the paper; but all who spoke, contented themselves with the utterances of opinions in praise of tobacco, and denunciations of the author. Surely, if an association of scientific men whose members claim to be as learned a body as exists

on the earth, can gravely utter such arrant fallacies, we need not wonder at the wide-spread ignorance of the non-professional people on this subject.

The importance of the subject of tight-lacing, and abnormal positions when habitually assumed, as affecting respiration and digestion, cannot, perhaps, be better stated and illustrated than in the following chapter on "Popular Physiology," a serial work now being published in the "*Science of Health.*" The illustrations are from a work by the author, entitled, "The Illustrated Family Gymnasium."

BODILY POSITIONS.

"A SINGLE glance at the situation of the various organs of the body, with respect to each other and to the bony skeleton, shows the importance of maintaining, under all circumstances, the normal position. Erectitude is one of the most obvious laws of the vital machinery, yet almost every one is crooked. 'Blessed are the upright,' physically as well as morally.

"Each structure and organ is provided with all the room necessary for its functional purposes, but no more. Nature is a rigid economist. She never wastes. She provides the machinery of life, and the conditions for its normal operation. Obey the law and live, disobey and die—these are her irrepealable mandates. The vital organs have definite relations to everything in the universe. Observe and conform to these relations and be well; disregard them and suffer. Such is the stern teaching of Nature's volume. But it is also benevolent. If laws can be disregarded with impunity, they are practically annulled, and exist in vain. Nature commits no error in the enactment of law, and provides no remedies for their infraction. Suffering is inevitable so long as we act in disobedience to the laws inherent in the vital organism. Unless this were so we could never learn to obey the laws. Experience may be a dear school. The penalties for transgression may be terrible. But neither is too costly or severe until it teaches us the greatest practical truth that the human mind is capable of comprehend-

ing—that all good is in the line of obedience to organic law, and all evil in opposition thereto.

"'Cease to do evil and learn to do well' in all things, is the divine philosophy, and applicable to every department of human life. In few things are human beings more prone to do evil and more regardless of all health considerations than in respect to bodily positions.

'Just as the twig is bent the tree's inclined.'

"A great majority of children in our primary schools become more or less abnormally inclined in manhood, because they are bent out of shape in childhood by unhygienic seats and benches.

"In the cut (Fig. 35) are seen the situation and relations of the principal internal organs of the body.

"The important lesson deducible from the illustration before us is, that in all of our exercises, active or passive, we should maintain the normal positions of the organs. In lying, sitting, standing, walking, running, working or playing, use the joints, and never bend or compress any other organ, part or structure.

"It is evident that, if the body is habitually bent so as to approximate the heart, A, and stomach, D, or if the chest is restricted by lacing, so as to lessen the diameter of the chest in the region of the diaphragm, *d*, every organ of the thoracic and abdominal cavity is more or less compressed, and most of them actually displaced.

"The horrid effects of tight-lacing (quite as ruinous to young ladies as tobacco-using is to young men), or of lacing at all, and of binding the clothing around the hips, instead of suspending it from the shoulders, can never be fully realized without a thorough education in anatomy and physiology. And if the illustrations here presented should effect the needed reform in fashionable dress, the resulting health and happiness to the human race would be incalculable; for the health of the mothers of each generation determines, in a very large measure, the vital stamina of the next.

"It is obvious that, if the diameter of the chest, at its lower and broader part, is diminished by lacing, or any other cause, to the extent of one-fourth or one-half, the lungs, B, B, are pressed in towards the heart, A, the lower ribs are drawn together and press on the liver, C, and spleen, E, while the abdominal organs are pressed downward, D, on the pelvic viscera. The stomach, B, is compressed in its transverse diameter; both the stomach, upper intestines and liver are pressed downward on the kidneys, M, M, and on the lower portions of the bowels (the intestinal tube is denoted by the letters, *f j*, and *k*), while the bowels are crowded down on the uterus, *i*, and bladder, *g*. Thus every vital organ is either functionally obstructed or mechanically disordered, and disease, more or less aggravated, the condition of all. In *post-mortem* examinations the liver has been found deeply indented by the constant and prolonged pressure of the ribs, in consequence of tight-lacing.

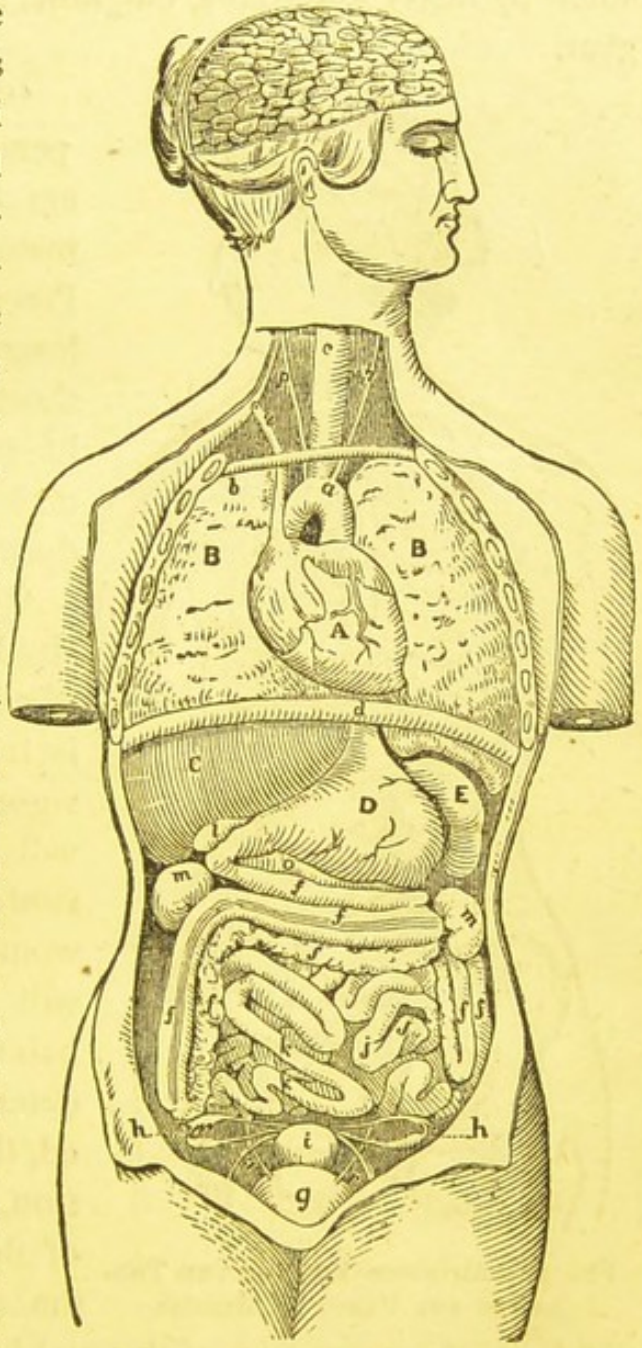


FIG. 35.—INTERNAL VISCERA.

"The brain-organ, protected by a bony inclosure, has not yet been distorted externally by the contrivances of milliners and mantua-makers; but, lacing the chest, by interrupting the circulation of the blood, prevents its free return from the vessels

of the brain, and so permanent congestion of that organ, with constant liability to headache, vertigo or worse affections, becomes a "second nature." And this condition is often aggravated by heavy water-falls, chignons and other ridiculous headgear.

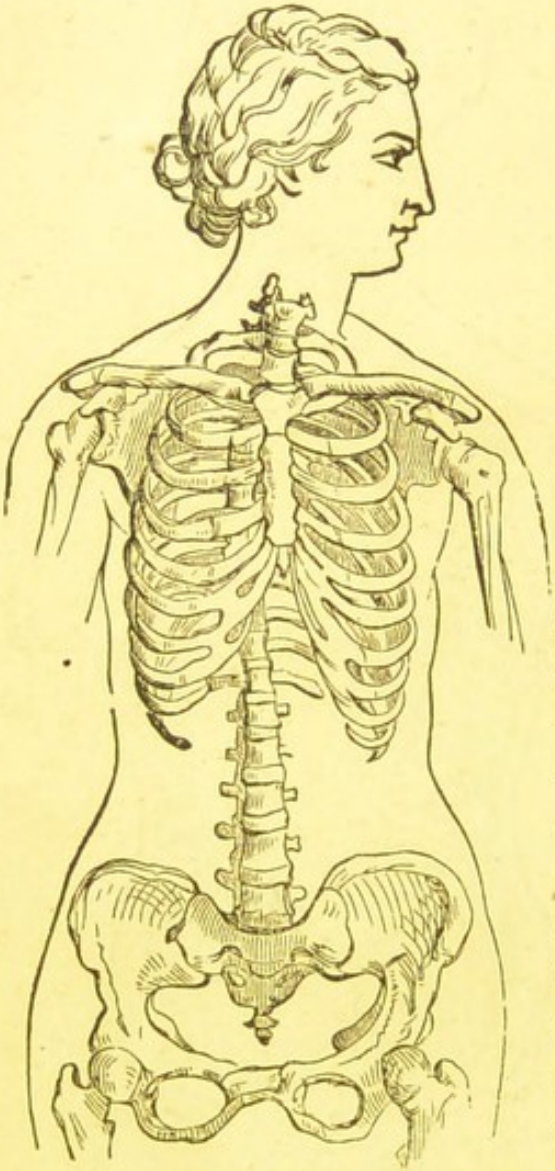


FIG 36.—ANTERIOR VIEW OF THE THORAX IN THE VENUS OF MEDICIS.

"The vital resources of every person, and all available powers of mind and body, are measurable by the respiration. Precisely as the breathing is lessened, the length of life is shortened; not only this, but life is rendered correspondingly useless and miserable while it does exist.

"It is impossible for any child, whose mother has diminished her breathing capacity by lacing, to have a sound and vigorous organization. If girls will persist in ruining their vital organs as they grow up to womanhood, and if women will continue this destructive habit, the race must inevitably deteriorate. It may be asserted, therefore, without exaggeration, that not only the welfare of the future generations, but the salvation of the race depends on the correction of this evil habit.

"The pathological consequences of continued and prolonged pressure on any vital structure are innutrition, congestion, inflammation and ulceration, resulting in weakness, waste of substance and destruction of tissue. The normal sensibility of the part is also destroyed. No woman can ever forget the pain she endured when she first applied the corsets; but in

time the compressed organs become torpid; the muscles lose their contractile power, and she feels dependent on the mechanical support of the corset. But the mischief is not limited to local weakness and insensibility. The general strength and general sensibility correspond with the breathing capacity. If she has diminished her "breath of life," she has just to that extent destroyed all normal sensibility. She can neither feel nor think normally. But in place of pleasurable sensations and ennobling thoughts, are an indescribable array of aches, pains, weaknesses, irritations, and nameless distresses of body, with dreamy vagaries, fitful impulses and morbid sentimentalities of mind.

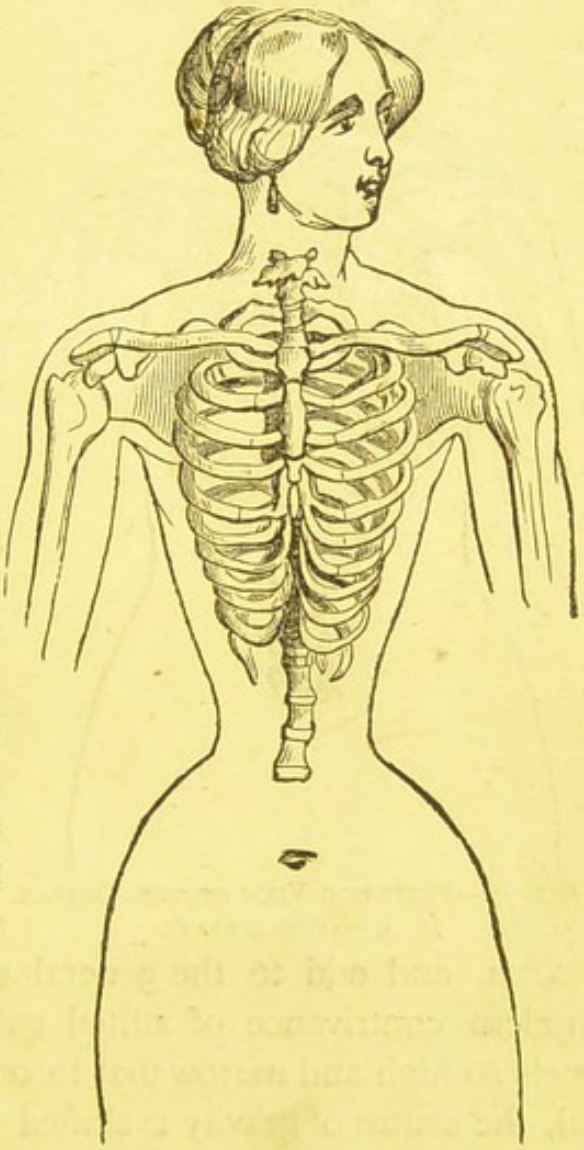


FIG. 37.—THE SAME IN A LADY DEFORMED BY STAYS.

"And yet another evil is to be mentioned to render the catalogue complete. Every particle of food must be aerated in the lungs before it can be assimilated. It follows, therefore, that no one can be well nourished who has not a full, free and unimpeded action of the lungs.

"The effects of improper dress on the bony skeleton, and especially on the spinal column, are shown in Figs. 36, 37, 38, and 39, which every physician knows are not overdrawn.

"In the contracted chest, represented by Fig. 37, (by no means an uncommon case), the external measurement is reduced one half; but as the upper portions of the lungs cannot

be fully inflated until the lower portions are fully expanded, it follows that the breathing capacity is diminished more than one-half. It is wonderful how any one can endure existence or long survive, in this devitalized condition; yet thousands do, and, with careful nursing, manage to bring into the world several sickly children.

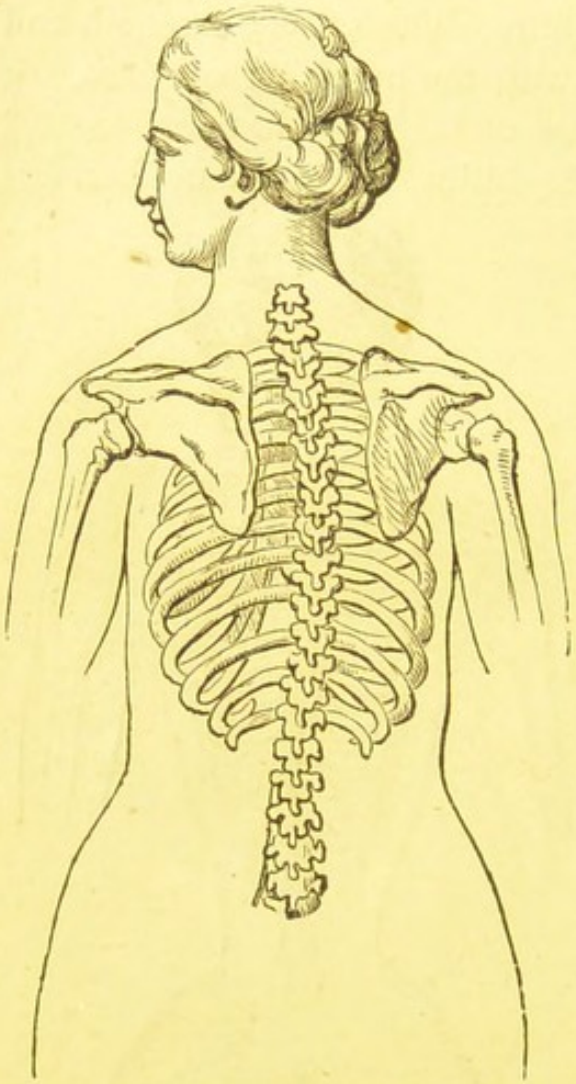


FIG. 37.—POSTERIOR VIEW OF THE THORAX IN A NATURAL STATE.

"The spinal distortion (Fig. 39) is one of the ordinary consequences of lacing. No one who laces habitually can have a straight or strong back. The muscles being unbalanced, become flabby or contracted, unable to support the trunk of the body erect, and a curvature —usually a double curvature—of the spine is the consequence.

"And if anything were needed to aggravate the spinal curvature, intensify the compression of the internal viscera, and add to the general deformity, it is found in the modern contrivance of stilted gaiters. These are made with heels so high and narrow that locomotion is awkward and painful, the centre of gravity is shifted 'to parts unknown,' and the head is thrown forwards and the hips projected backwards to maintain perpendicularity, rendering walking and all other voluntary exercises not only distressing to the person, but disagreeable to the spectator.

"To sit or stand in a crooked position, inclining the head and knees forwards, overstretches the middle spinal muscles, reverses the normal curvature of the spinal column, compresses

the liver, stomach and lungs, and is in effect equivalent to lacing the waist. Figs. 40 and 41 show the right and wrong positions in standing.

"Sleeping on two or three pillows, or on a bolster and pillow, is a prevalent yet pernicious custom. If long continued the effect is surely a distortion of the spine to some extent. If the head is raised high while sleeping, the stomach and lungs are injuriously compressed, and the upper intestines pressed downward on the pelvic organs. If children are allowed to sleep habitually on high pillows, spinal curvature and general debility will be the inevitable consequences. One pillow is enough for any person, and that should be only of moderate size. Figs. 42 and 43 exhibit the right and wrong positions in contrast.

FIG. 39.

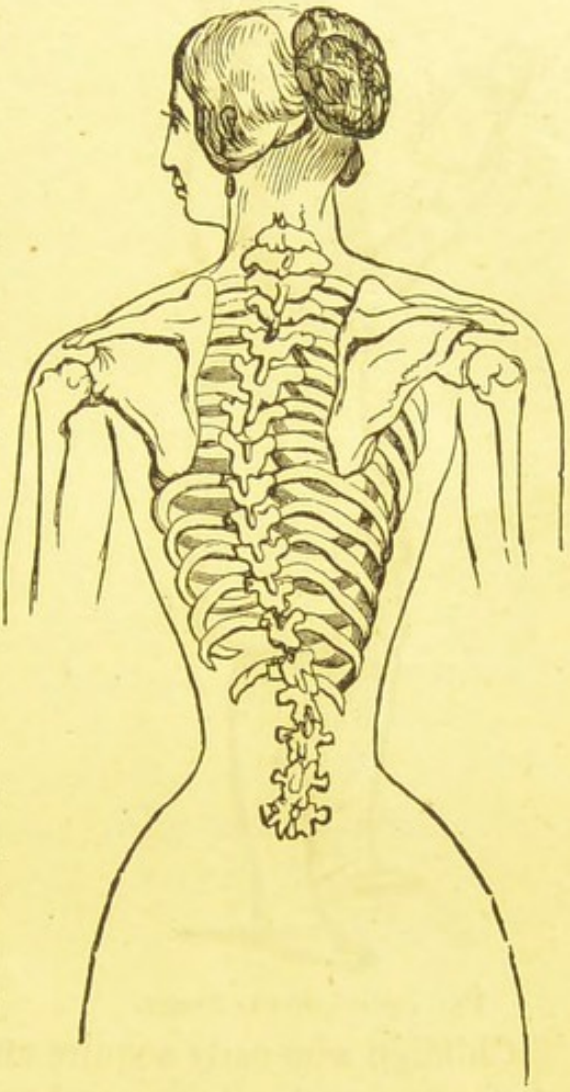


FIG. 39.—DISTORTED SPINE.

"Malpositions in sitting seem to be among the increasing evils of high civilization without physiological education. This habit is mainly attributable to the immensely unanatomical construction of chairs, benches, sofas, pews, etc. Not one school-house in all the land, not excepting those in which physiology is professedly taught, has a chair or a bench that a child can sit upright on without a constant and consciously painful effort. Nor have we ever seen, in private families or public institutions, halls or churches, stages or ferry-boats, railroad cars or steamers, a single seat constructed on hygienic

principles. Figs. 44 and 45 show the normal and abnormal positions.

FIG. 40.—STANDING ERECT.

FIG. 41.—MALPOSITION.

Children who early acquire and continue in the habit of sitting in normal or abnormal positions will either preserve the erectitude of the spinal column as shown in Fig. 46, or become crooked-backed, as seen in Fig. 47.

It is apparent that, inclining the head forwards and bending the body at the middle of the back, instead of on the hip-joints, necessitates a backward projection of the entire spinal column, with a corresponding incurvation or pressure anteriorily; hence the whole body is distorted from the crown of the head to the soles of the feet; more than a hundred muscles are unbalanced, and every organ and limb is weakened.

In all exercises, in walking, running, lifting, and in manual labor, the power of the individual is always determined by the

number of muscles that are brought into co-operative action. But if the body be crooked, or any part of it out of the normal relation to other parts, some muscles will be strained by over action, while others will become relaxed from insufficient action, and all weakened—just as in the crooked ways of society some persons are drudged to death while others die of indolence.

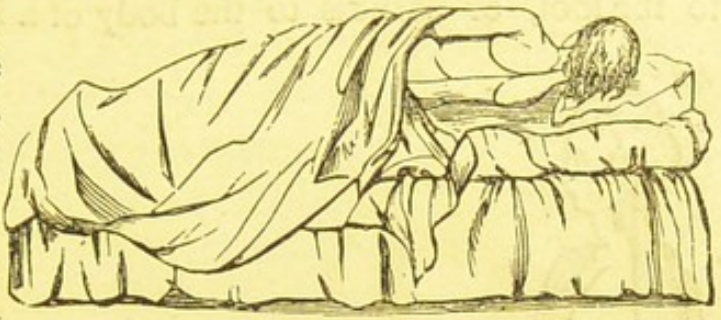


FIG. 42.—PROPER POSITION IN BED.

FIG. 43.—IMPROPER POSITION IN BED.

If seats were properly constructed persons would sit upright, for the reason that it would be the most comfortable position. It would be painful to sit otherwise. The chairs, benches, sofas, pews or other seats, should

FIG. 44.—CORRECT SITTING POSITION.

FIG. 45.—MISPOSITION IN SITTING.

fit the small of the back, the curve of the hips and the whole length of the thighs, as accurately as a well-made shoe is shaped to the foot, or harness to the body of a horse. But the com-

46.—Natural Spine.

47.—Distorted Spine.

mercial articles reverse this rule; they press unduly on the upper part of the thighs and the upper part of the back, and afford no support whatever where it is principally needed. Moreover, in addition to the defective shape, they are, on the average, two inches too high, rendering it impossible for the feet to rest evenly and easily on the floor. No wonder that, on chairs which are a torment to one who tries to sit erect, persons are continually leaning back against the wall, drawing up their feet, placing one foot across the opposite knee, bracing one or both feet against the chair rounds or any adjacent object, and getting into all sorts of uncouth and ridiculous attitudes.

The cut (Fig 48) represents the outline of our ideal chair.

We place it on record for the benefit of the future generations, in the hope that some ingenious mechanic or pecunious philanthropist will supply one of the great wants of the age by introducing it."

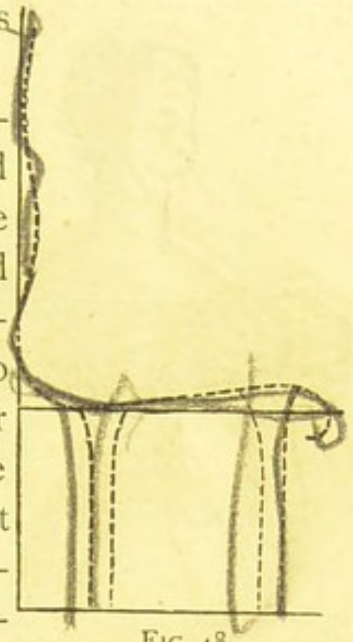


Fig. 48.
The Anatomical Chair.

As normal sensibility is intimately connected with respiration, the depression and melancholy so common to dyspeptics whose chests are contracted, are readily accounted for. Many of these invalids have, by tight-lacing or other unhygienic habits, so changed the form of the chest as to render it concave in front where it should be round and full, thus preventing the descent of the diaphragm in inhalation and rendering a full inflation of the lungs impossible.

In the illustration (Fig. 49), which is a side view of the chest and abdomen in respiration, the importance of the unimpeded motion of this muscular structure which divides the cavities of the thorax and abdomen may be recognized at a glance.

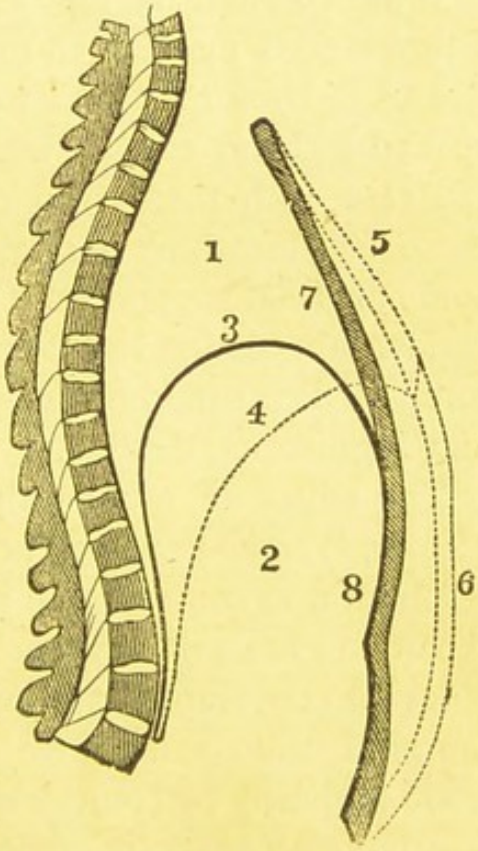


Fig. 49. Action of the Diaphragm.

1. Cavity of the Chest. 2. Cavity of the Abdomen. 3. Line of direction for the diaphragm when relaxed in expiration. 4. Line of direction when contracted in inspiration. 5, 6. Position of the front walls of the Chest and Abdomen in Inspiration. 7, 8. Their position in expiration.

The careful reader will now have no difficulty in understanding why it is that the women of our country are so much more dyspeptic, as a general rule, than the men, and so much more predisposed to consumption.

Let us complete the illustration by contrasting the forms of features of one who has, by tight-lacing, acquired the abnormal

shape of the chest, with its necessary accompaniment of a wan, dejected, and expressionless face, (Fig. 50,) and a "human form divine," whose breathing capacity and life-resources are shown in a full expanded respiratory apparatus, and a correspondingly vitalized, hopeful, and intelligent countenance — such as sculptors and painters delight to fashion and exhibit in marble and on canvas, and such as admiring crowds will gaze upon for hours with pleasure.

FIG. 50.—UNNATURAL WAIST.

Those persons who are distinguished as having a "fine flow of animal spirits," invariably have a free play of the respiratory system. The blood being well purified and the food elements properly aerated, the circulation is well maintained on the surface, and the patient is not disturbed by nor sensitive to slight changes of temperature, nor chilled with an easterly wind or the fog of a morning, as is the case with those who do not breathe sufficiently. And these half-breathing mortals are always feeling the need of some artificial support, and are hence more liable to resort to various stimulating viands and pungent condiments, which only mitigate their sufferings temporarily, to be followed by collapse and augmenting debility.

The editor of a monthly periodical, ("Hall's Journal of Health,") some years ago advanced a theory on the relation of respiration to consumption as novel as it was absurd. And as the author has written a book on consumption, and sells medicines for consumption through the press, and, moreover, as his journal has attained a large circulation, and is often quoted as good authority by country newspapers, his ingenious views are worthy of a passing refutation.

Briefly stated, the new and original theory amounts to just this: 1. Consumption is tuberbulosis of the lungs. 2. Tuberculation of the lungs usually commences in the upper portion. 3. A due expansion of the lungs prevents the formation

of tubercles. Ergo, By constricting the lower portion of the lungs, as by tight-lacing, the upper portions of the lungs are forced to do the breathing which the lower portions are prevented from doing, and hence tight-lacing and such other machinery or habits as diminish respiration in the lower part of the lungs are remedial. They are both preventive and curative of consumption.

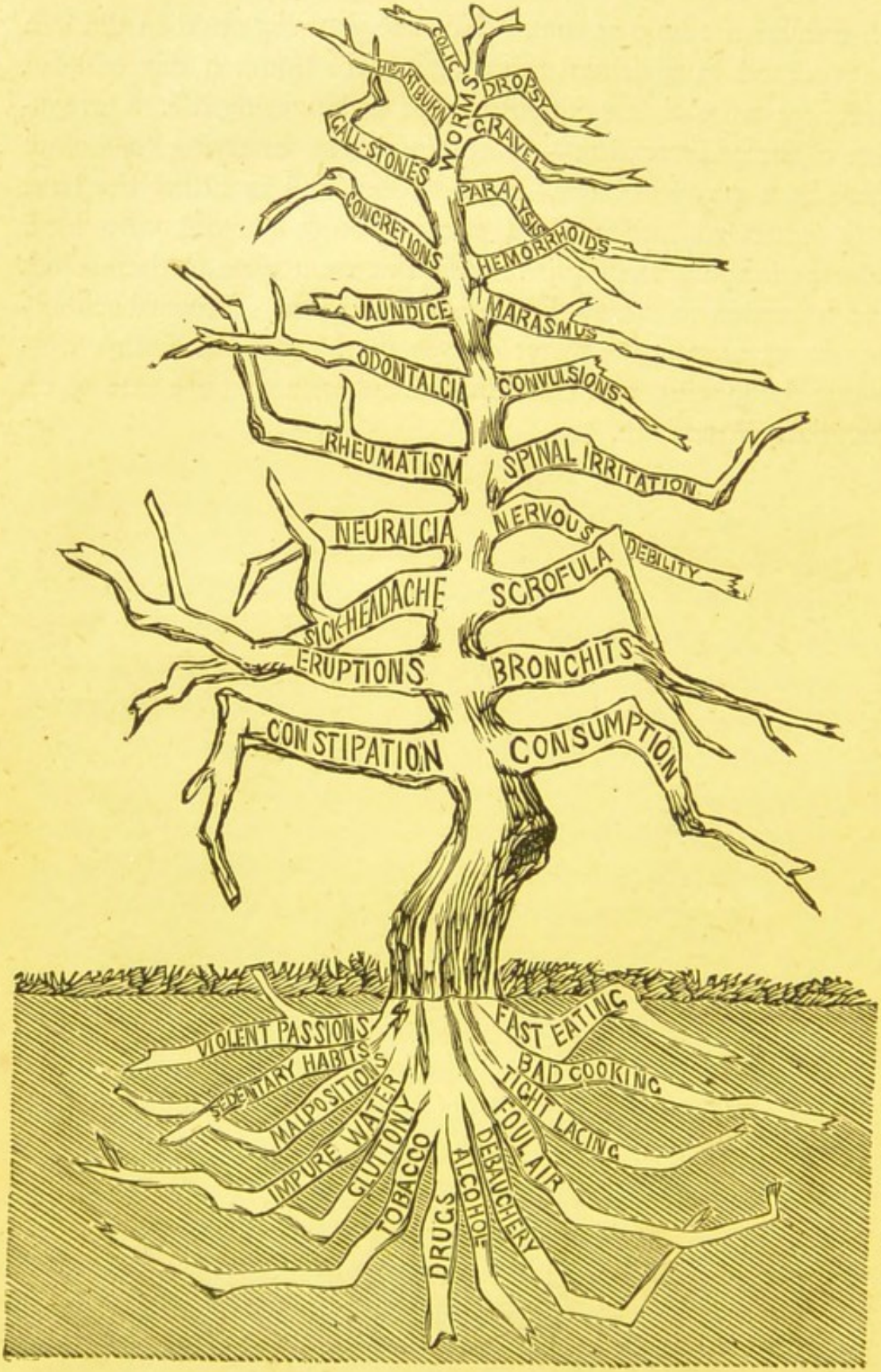
Ridiculous as this reasoning may seem to any tyro in physiology, it has appeared so plausible to some invalids that they have been misled by it. But a little deeper insight into the anatomy and physiology concerned will at once dissipate the delusion. The competent physiologist well understands that, in the act of respiration, the lower portions of the lungs are always expanded before the upper portions can be filled with atmospheric air ; hence whatever tends to restrict inhalation in their lower portions must inevitably diminish still more the respiratory capacity of the upper portions, and favor tuberculation. If the 10,387 deaths which occurred in New York in 1872, of the four diseases most immediately connected with respiration, viz., consumption, scrofula, pneumonia, and bronchitis, a large proportion of whom were young women, do not point the proper moral on this subject, then there is no use in mortuary statistics.

The greater prevalence of dyspeptic and consumptive diseases among women than men has caused some medical writers to *theorize* that the explanation is to be found in original frailty. But the contrary is true. In the normal condition woman has the stronger vital and nutritive temperament, and is, constitutionally, less predisposed to either consumption or dyspepsia than man. There is a necessity and a reason for this. She is provided by nature with a nutritive apparatus not only competent to nourish and sustain her own structures, but also able to develop and nourish offspring. My opinion is, that, if men would dress as the majority of women in fashionable life do, there would be ten cases of consumption among them where there is one now.

Another very prevalent source of dyspeptic conditions in

youth, resulting very frequently in consumption soon after maturity, if not before, deserves special mention in this place, for the special reason that it is never mentioned in medical books, and seldom thought of by parents and teachers. I mean our common schools. We are accustomed to impute our progress, morality, and intelligence, to our churches and schools. This is true, with some grains of allowance. But these drawbacks are very serious ones. Most of the school-houses in our cities, and not a few in the country, are pest-houses, very much in the sense that tenement houses are. They are not properly warmed in winter, and not properly ventilated at any season. They are too hot or too cold in winter, and too redolent of miasm in the summer. The scholars cannot get fresh air in cold weather without a chilling draft, nor pure air in warm weather under any circumstances. Many a private mansion, occupied by half-a-dozen persons, has more of the "breath of life" circulating through its rooms, than have some of our ward school-houses where several hundred children are tortured into "book knowledge," at the expense of vitality. As the air in the room where fifty or a hundred children are crowded together, is constantly vitiated by the exhalations from the skin and lungs, it is impossible, in cold weather, to ventilate sufficiently from the doors and windows without rendering the atmosphere in various parts of the room too variable and uneven for health. The only proper method of warming school-houses—and the plan is equally applicable to churches, public halls, theatres, etc.—is to have the fresh air conveyed from the outside of the building, or from the hall within, through a tube or pipe under the floor, to be discharged under the stove, or better still, into the cylinder or air box adjoining the stove, so that the air could be warmed before being diffused through the room. This arrangement would secure a uniform temperature, and purify the air without occasioning unwholesome or even unpleasant currents. When buildings are heated by steam the same arrangement for supplying fresh air is equally desirable, the outer air being admitted under or adjoining the radiating coil or plates.

Moreover, school-children are, as a rule (I know of no exceptions), made to "sit still" too many hours in the day, and on unhygienic seats at that. Not one growing child in ten can be confined in a school more than three hours a day without suffering more or less of debility and endangering life. Our system of forced education—developing brain, or trying to, before there is a physical basis—is all wrong, and is filling the land with educated imbeciles—I mean young persons who have information and accomplishments, but are useless to themselves and a burden to others, because of ill-health. I regard school-houses as among the worst causes of the general frailty, dyspeptic tendencies, and consumptive sequæla that are said to be peculiarly American.



ARBOR MORBORUM.

DYSPEPSIA.

PART II.

DYSPEPSIA.

CHAPTER X.

NATURE OF DYSPEPSIA.

As digestion is the most complex of all the organic processes, its derangements, which constitute indigestion, or dyspepsia, are the most complicated of all morbid conditions. Pathologically it may be said to be the sum of all chronic diseases, as fever may be said to be the aggregate of all acute diseases; for there is not a symptom in all of the one thousand diseases which make up the nosology, that is not found in some form, state, or stage, of both dyspepsia and fever, with the single exception of those which appertain to structural lesions. If all the "phenomenology" which the confirmed dyspeptic experiences in six or twelve months were suffered in the period of twelve or twenty-four hours, the disease would be termed fever, instead of dyspepsia; and if the symptoms which belong to a paroxysm of fever, and which mark its cold, hot, and sweating stages, were extended over a period of some weeks or months, the disease would be termed dyspepsia instead of fever. In both cases the inability to nourish the body sufficiently is a leading feature of the morbid manifestations; but in fevers, properly so called, the power of digestion and assimilation is wholly suspended in the early stage, while in dyspepsia it is only impaired.

It is a great mistake to regard dyspepsia as peculiarly or especially a disease of the stomach. We have seen, in the preceding explanations and illustrations, how essentially co-

operative are a multitude of organs and structures in the digestive processes. And they are just as co-implicated in the derangement of these processes. In some cases one structure or organ will be more obstructed, impaired, or deranged than others, and in other cases two or more will be the seat of the more troublesome symptoms. Thus, one dyspeptic may have one of several morbid conditions of the liver, as torpidity, congestion, induration, chronic inflammation, gall-stones, or abscess, as the special complication of his case, and attended with jaundice, difficult breathing, or palpitation, a sense of weight, tenderness in the right side, spasms near the pyloric orifice, or throbbing pains, as the most prominent symptom. Another will have great distress, "goneness," acrid eructations, sick headache, a cramp in the stomach, because of the acid and putrescent bile which is occasionally emptied into the duodenum just below the pit of the stomach. A third may have constipated bowels, and a fourth diarrhœa, and a fifth these states interchangeably, as the most troublesome manifestation of the general ailment; a sixth may have the vessels of the head so clogged with viscid blood as to experience more headache, either constant or periodical, than anything else to complain of; a seventh may feel great distress after eating; an eighth, frequent paroxysms of nausea and vomiting; a ninth, capricious or craving appetite; a tenth loss of all appetite; an eleventh, canker in the mouth, or *stomatitis;* and a twelfth, general prostration, hypochondria, or nervous debility, as the more distressing part of his case. Many dyspeptics suffer in all of these ways, and have the symptoms above enumerated as changeable as the winds, and quite as uncertain with regard to rules for calculation as the weather "probabilities."

Medical authors generally assign "weakness of the stomach" as the essential proximate cause of dyspepsia. They might as well say, weakness of the head, or heart, or hands, or feet; all are weak when the digestive processes fail to supply the elements of strength; and the debility of the stomach or other digestive organs, in any case of dyspepsia, is no greater and no worse than that of all other parts of the body. Indeed, the

difference is just the other way, for nutrition, being the first and last process of organic life, all other parts of the system are disproportionately debilitated when the digestive function is impaired. Dyspepsia is, therefore, but a name for universal physical deterioration, although the symptoms of the general condition may embrace all the aches, pains and distresses that our language can express.

The error of regarding dyspepsia as a local disease instead of a constitutional infirmity, leads to the mischievous practice of local medication ; and the weak stomach is excited with stimulants, urged with tonics, soothed with nervines, quieted with opiates, and modified with alteratives, while the other "chyloipœtic viscera," especially the ever-involved liver, are treated to mercurials, not forgetting to remind the bowels of their remissness of duty by a succession of purgatives. These are excellent methods for curing dyspepsia by killing the patient, or to mitigate symptoms by destroying vitality.

Professor George B. Wood, M. D., of Jefferson Medical College, Philadelphia, is the author of the latest and largest American work on the Theory and Practice of Medicine. In this work ("Wood's Practice of Medicine"), which is a text-book in our medical colleges, the author informs us that, "The most prolific source of dyspepsia is probably the combined influence of sedentary habits and errors of diet."

This being the case, it would surely seem that the combined influence of appropriate exercise and a correct dietary ought to be the sufficient remedies. The Professor does indeed tell many things useful in the list of eatables and drinkables, and some articles of each class to avoid, but the strange part of the story is that he recommends, on his own reputation, or commends on the opinion of other authors, in the treatment of dyspepsia and its incidental affections, no less than a dozen classes of medicines, and more than one hundred individual drugs, to say nothing of the unmentioned ingredients in the compounds, and the bleeding and blistering processes.

The individual remedies are, ipecacuanha, rhubarb, aloes, castile soap, croton oil, Cheltenham salts, Saratoga water,

(which contains no less than ten drugs) sulphur, mustard seeds, magnesia, quassia, columbo, gentian, chamomile, wild cherry bark, serpentaria, carbonate of iron, copperas, carbonate of soda, carbonate of potassa, powder of iron, tincture of chloride of iron, iodide of iron, chalybeate mineral waters, oil of vitriol, aqua fortis, muriatic acid, nitro-muriatic acid, subnitrate of bismuth, white vitriol, lunar caustic, lactic acid, pepsin, rennet, carbonic acid water, creosote, senna, orange peel, cloves, cardamom, fennel seed, mercurial or blue pill, calomel, salt (in the form of a warm salt bath), opium, mustard plaster, cayenne pepper (in the stockings), burgundy pitch (as a plaster), extract of dandelion, magnesia, bicarbonate of soda, lime water, prepared chalk, prepared oyster shell, carbonate of ammonia, aqueous solution of ammonia, aromatic spirit of ammonia, powdered charcoal, compound cathartic pill (composed of several drugs), seidlitz powder, castor oil, mustard sinapisms (over the stomach), preparations of codeia, leeching, cupping, blisters, tartar emetic, setons, issues, moxa burnings, henbane, stramonium, deadly night shade, extract of hemp, lactucarium, chloroform, prussic acid, tobacco (smoking), acetate of morphia, sulphate of morphia, nux vomica (dogbane), oxide of zinc, gallic acid, sulphate of quinia, laudanum, Hoffman's anodyne, black drop, essence of peppermint, essence of spearmint, essence of pennyroyal, ginger-tea, compound spirit of lavender, compound tincture of cardamom, oil of turpentine, bleeding (in some cases largely), camphorated tincture of opium, oil of horsemint, lemon juice, common salt, epsom salt, cinnamon, brandy, spiced brandy, spiced wine, sparkling wines, extract of belladonna, sulphite of soda, strong tea, coffee, citrate of caffein, cologne water, cider, and arsenite of potassa.

The list may seem very formidable at the first count, but as the remedies are all directed against the symptoms, or effects, and none of them against the causes, and as the symptoms of dyspepsia, in all of its multitudinous forms and incidental affections, embrace the whole range of pathological phenomenology, the list might be extended to the two thousand reme-

dies of the drug materia medica, as well as limited to one or two hundred—provided always, that drugs are the proper remedies for dyspepsia.

CHAPTER XI.

SPECIAL CAUSES OF DYSPEPSIA.

It is true, as a general proposition, that whatever impairs the health of the whole system or any part of it, conduces to the condition of defective nutrition termed dyspepsia. But there are many agents and influences which seem to derange the vital organism more prominently or more immediately in the primary nutritive function, which may properly be treated of as the special causes of dyspepsia. It is these agents and influences which are enumerated, more or less in detail, in medical books, as causes of dyspepsia.

The special causes of dyspepsia are more comprehensively and clearly stated by Dr. John Mason Good ("Study of Medicine,") than in the writings of any later author with which I am acquainted:

"The common causes, whether confined to the stomach, or co-extensive with the associate viscera, may be contemplated under two heads, *local* and *general*. The local remote causes are, a too large indulgence in sedative and diluting substances; as tea, coffee, and warm water, or similar liquids taken as a beverage; or an equal indulgence in stimulant and acrid materials, as ardent spirits, spices, acids, tobacco, whether smoked or chewed, snuffs, a daily habit of distending the stomach by hard eating or drinking; or a rigid abstemiousness, and very protracted periods of fasting. The general remote causes are, an indolent or sedentary life, in which no exercise is afforded to the muscular fibres or mental faculties. Or, on the other hand, habitual exhaustion from intense study, not properly alternated with cheerful conversation; becoming a prey to the violent passions, and especially those of the depressing kind,

as fear, grief, deep anxiety; immoderate libidinous indulgence, and a life of too great muscular exertion. Perhaps the most common of this latter class of causes are, late hours, and the use of spirituous liquors."

There is one prolific cause of indigestion, and of those most distressing complications, obstinate constipation, pile tumors, prolapsus of the lower bowel, fistula in ano, and fissures in the rectum, which medical authors do not mention, although some of them allude to it as among the general causes of indigestion. I mean purgative or cathartic medicine, regular or irregular. Torpid or inactive bowels is so nearly a universal condition in civilized society, that purgative medicine of some kind is generally regarded as necessary as is food or drink. And people generally regard them as among the most innocent, or at the most, the least injurious of the various classes of medicines. It is a disastrous mistake. Bad as liquor and tobacco are, purgatives are much worse. A majority of persons may take an ordinary drink or dose of rum, brandy, gin, or whisky, three times a day with less injury to the health, than are doses of jalap and cream of tartar, senna and salts, castor oil, or any of the multitudinous aperient, purgative, bilious, or anti-bilious pills that are swallowed by hundreds of tons annually.

It is well known to physicians that the habitual employment of purgative medicines of any kind, however much it may relieve temporarily, never fails to aggravate constipation in the end. I have had patients to treat whose bowels, after being pilled for a few years, would not move without special attention, once a week. In one instance a patient came to me from Europe to be treated for constipation. He had taken cathartics regularly for a dozen years, and his bowels were so devitalized that, during a fifteen days' passage across the Atlantic, his bowels did not move at all, nor did he experience the least indication in that direction. Women suffer more than men of purgative medicines because their more sedentary habits seem to require larger doses or more frequent repetitions.

The late Professor William Tully, M. D., of Yale College, said to his medical class that more injury was done by the

injudicious use of cathartics, by the regular profession, as a whole, than by all other classes of medicines.

The late Professor Robley Dunglison, M. D., in his work "Therapeutics and Materia Medica," denounces the prevalent employment of cathartics by physicians in no measured terms; and he quotes (Vol. I. page 176,) the eminent Dr. Stokes, of London, with regard to their use in fevers, as follows:

"A common practice has prevailed in these countries, and indeed, still exists to a very great extent, of making the patient take purgative medicine every day; and this, I regret to say, is too often done even in cases where the surface of the small intestine presents extensive patches of ulceration. Now, I will ask you, can anything be so barbarous as this, or can it be exceeded in folly or mischief by the grossest acts of quackery? Here we have an organ in a state of high irritation, and exhibiting a remarkable excitement of its circulation, and yet we proceed to apply stimulants to that organ, and to increase the existing irritation. Would it not be absurd, in a case of inflammation of the knee or elbow-joint, to direct a patient to use constant exercise and motion? Would it not be a very strange practice to apply irritants to a raw and excoriated surface? Yet something equally absurd and equally mischievous, is done by those who employ violent purgatives in a case of inflammation of the digestive tube in fever. This has been a great blot in the history of British practice. Calomel and black bottle, and even jalap and aloes, and scammony, have been prescribed for patients laboring under severe and extensive dothinenteritis. Morbid stools are discharged, and the more morbid they are, the more calomel and purgatives does the physician give to change their character, and bring them back to the standard of health. I want words to express the horrible consequences. Too often have I seen fever patients brought into the hospital with diarrhœa, hypercatharsis, and inflammation of the mucous membrane from the use of purgatives administered before their admission. Practitioners will not open their eyes. They give purgatives day by day, a very easy practice, and one for which there are plenty of precedents; but

it is fraught with most violent consequences. I will freely admit, that the disciples of the school of Broussais have gone too far in decrying the use of laxatives altogether. But if they have lost hundreds by this error, British practitioners have *killed thousands* by an opposite plan of treatment. In cases of fever where there is no decided symptom of gastro-enteric disease, there can be no objection to the use of laxatives, *if required*, but they should always be of the mildest description. You will gain nothing by violent purging in fever; mild laxatives alone can be employed; and where there is any sign of intestinal irritation present, even these should be used with caution. There is one mode of opening the bowels, which you may always have recourse to with advantage in fever, viz., the use of enemata. There is not the slightest doubt that, occasionally, accumulations of fecal matter will take place, and tend to keep up irritation, but they should always be removed with the least possible risk of producing bad consequences. To purge in fever when intestinal irritation is present, is a practice opposed alike to theory and experience, and I have already stated that its results are most horrible."

All the reasons which Dr. Stokes presents so forcibly against the employment of cathartic drugs in fevers, applies with still greater emphasis against their employment in dyspepsia, for the reason that, in fevers, the points of irritation are more diffused throughout the system, whereas in dyspepsia they are more concentrated along the tract of the alimentary canal.

The late Professor Charles A. Lee, M. D., in some editorial notes to Copland's Medical Dictionary, pages 385 and 386, makes a fearful and yet most truthful statement of the pills and other causes now in operation to extend and perpetuate dyspepsia among the people of the United States. There is food for reflection in the following paragraphs:

"Dyspepsia is, comparatively, a modern disease in our country, having been scarcely known until within the last thirty years (1846). Our ancestors, as stated by an accurate observer, were accustomed to much bodily exertion; there were but few pleasure or wheel-carriages in the country; both

males and females generally rode on horseback ; professional men almost universally had farms, on which they labored more or less ; merchants were also frequently engaged in mechanical pursuits ; the habits of living were simple and frugal ; intoxicating liquors were seldom drunk ; religious excitements, so destructive to the health both of body and mind, were almost unknown ; regular and natural hours of sleeping and eating were observed ; and these circumstances proved highly propitious in securing the general enjoyment of bodily health and mental vigor.* These salutary habits, however, have been gradually exchanged for those of a more unnatural and injurious tendency ; bodily labor, carried to the point of fatigue, is now deemed degrading, if not decidedly vulgar ; languishing in easy carriages has succeeded to equestrian habits and equitation ; professional men confine themselves to the legitimate business of their calling ; excitements of every kind, civil, political, religious, mesmeric, are the order of the day ; habits of luxurious living have become general ; alcoholic drinks are more extensively used than formerly, although a great improvement has taken place within the last few years ; the almost universal practice prevails of using tobacco in some form; habits of inactivity, tight-lacing, keeping late hours, &c., are gradually undermining the health of the female sex, and laying the foundation of gastric affections ; and all these causes, with numerous others that might be named, are slowly deteriorating the health of the community, and their effects are likely to become still more evident and distressing in the next and succeeding generations."

How fearfully the prediction has been realized, as any one may see in the skeleton forms, gaunt abdomens, caved-in chests, projecting shoulders, wan complexions, dyspeptic walk, and consumptive look of the fashionable young ladies and gentlemen who promenade the thoroughfares of our great cities. Of the pill business, Professor Lee says :

"Another very prominent cause of the prevalence of indi-

* "A Dissertation on Chronic Debility of the Stomach, by Benjamin Wolsey Dwight, in Memoirs of the Connecticut Academy of Arts and Sciences. New Haven, 1811."

gestion in this country is the excessive use of cathartic medicine in the form of pills. Were we to give the amount of the latter annually swallowed in the United States, the statement would not be believed ; and yet we have it from good authority, namely, that of the manufacturer himself, that one establishment in the city (New York,) turns out, by the aid of steam, no less than ten barrels per day, and this is by no means so extensive as some others of a similar kind. These pills, which are highly drastic, are used by immense numbers of people, not only in cases of actual illness, but in time of health, as prophylactic remedies. The consequences are easily predicted. In addition to this, great quantities of bitters are used, in which brandy, wine, or some alcoholic liquor forms the principal ingredient ; and on the occurrence of the least feeling of discomfort, recourse is had to the panacea, till at length the powers of the stomach are exhausted, and derangements either functional or structural take place. We could wish that the epitaph of the Italian count could be placed so as to be seen by every man, woman, and child: *'I was well—wished to be better—took physic, and died.'*

"Much of this evil is doubtless owing to physicians, who have been too much in the habit of pouring down drugs empirically in every case of illness, slight or severe, in order to humor a popular notion that the materia medica must furnish a remedy for every disease, and a popular prejudice that want of success is a sure indication of poverty of resource on the part of the practitioner."

A little figuring will give us a more realizing sense of the extent to which the people are *pilled.* Our population has doubled since Dr. Lee wrote the above, and pill-makers have multiplied ; and as there could not have been less than half-a-dozen establishments in a single one of our cities, manufacturing each ten barrels per day, the quantity now made daily cannot be less than one hundred barrels per day ; and then Philadelphia does an extensive business in the same line, as do Boston and other cities. But, reckoning the pills turned out

in the city of New York alone, let us see how the matter stands, Pills *vs.* People.

A barrel of pills will weigh about as many pounds as a barrel of pork, and a pill of average size three and a half grains. From this data the expert in arithmetic may soon ascertain that the good people of this enlightened nation are provided with the bowel-moving agencies of fifteen billion nine hundred and ninety-one million, six hundred thousand individual pills annually. But our statistics thus far represent only the irregular trade. If we add the pills orthodoxically prescribed, we may swell the amount to twenty billions—two billions of pills for each million of our population, or five hundred pills for every man, woman, and child. And yet our ciphering is not complete. Young children cannot swallow pills; there are Homœopathists who do not believe in them, and Hygienists who never take medicine of any kind; hence a nice calculation may allow the actual pill-takers about one thousand a year each, averaging within a fraction of three pills per day. How long the human stomach and bowels can stand this pill-trade is, like the problem of the final consummation of all things, only a question of time. The fact that our people "still live" under it, is a sufficient demonstration that "humanity is tough." Such a treatment of our domestic animals would exterminate them in a single generation.

In a late work on Indigestion, by Arthur Leared, M. D., extracts from which appear in the *Popular Science Monthly* for May, 1872, the following remarks are made in relation to the most prominent causes of dyspepsia:

"At all stages of adult life, but particularly during its decline, the appetite is over-stimulated by condiments, and tempted to excess by culinary refinements. Dyspepsia is not the worst result of this. Gout, and still more serious maladies connected with an impure state of the blood, closely follow."

"Two habits, smoking and taking snuff, require special notice as causes of dyspepsia. Excessive smoking produces a depressed condition of the system, and a great waste of

saliva, if the habit of spitting is encouraged. I have met some severe cases of dyspepsia clearly resulting from these causes. Some individuals are unable to acquire the habit of smoking even moderately. Deadly paleness, nausea, vomiting, intermittency of pulse, with great depression of the circulation, come on whenever it is attempted. But this incapacity is exceptional, and so universal is the desire for tobacco, that it seems as if some want of the system is supplied by its use."

What is the "excessive" use of tobacco, or any other poison? One might as well talk of excessive lying, or excessive stealing, as though moderation in these habits might be judicious, or necessary! Nor does the great number that have depraved their instincts and become addicted to tobacco-using, make the vice a virtue. As well might the general prevalence of gambling or prostitution, in any given locality (Wall Street, Five-Points), be adduced as the evidence that gambling, or prostitution supplied some want of the system. And, verily, it does. But it is the craving of a demoralized mental or a debauched physical nature.

It seems quite impossible for a modern medical author to write anything about tobacco or alcohol without doing it with the "modern improvements" of logic. He knows they are bad. He knows the people are very much addicted to them. He cannot stultify himself by saying they are not injurious. He cannot stultify his business by saying they are wholly evil, and that continually. And so he compromises by condemning their excessive and commending their moderate employment, leaving his readers to find out where moderation ends and excess begins—in the grog-shop, the gutter, or the drunkard's grave, if they can.

Winslow's Soothing Syrup.

Perhaps no single quack nostrum is doing more mischief in our country at this time, in deranging the digestive organs of infants, paralyzing their nerves, stupefying their intellects, and laying the foundation for dyspeptic miseries and mental

imbecilities in later life, than this pernicious opiate. *The Druggists' Circular* says :

"MRS. WINSLOW'S SOOTHING SYRUP has several times been condemned in the columns of THE DRUGGISTS' CIRCULAR, but we have not published the formula. The original recipe is kept secret, but the results of analysis have been made known. It has been shown that one ounce of the syrup contains one grain of morphia. If, then, Mrs. Winslow's instructions be followed, the dose for an infant three months old contains an equivalent of ten drops of laudanum, and this Mrs. Winslow recommends to be repeated every two hours ! The injury that may be done by the ignorant use of such a nostrum is hardly to be estimated ; and yet a calculation has been made that not less than fifteen million ounces of the syrup are annually sold in the United States ; in other words, that the children of this country are dosed every year with as many million grains of morphia !"

CHAPTER XII.

SYMPTOMS OF DYSPEPSIA.

As already stated, the symptoms of dyspepsia are as numerous and as complicated as are *morbid* conditions and abnormal sensations. In number and severity they vary infinitely, some dyspeptics being able to attend to their ordinary business and duties, and only experiencing occasional pain or distress in the stomach or auxiliary digestive organs, while others are unable to do anything but dwell despondently on their miserable feelings, and are, indeed, as wretched as human nature can bear and live.

The symptoms attending the more important phases of the disease have been explained in connection with the organs and structures to whose special functional disturbance they are more particularly referable, in the first part of this work. I

will only add the description of Dr. Good, whose admirable work, though not now a text-book in our medical colleges, is a vastly more useful work for the medical student or the non-professional reader, than any work on the Theory and Practice of Medicine that has appeared since.

"Dyspepsia may be regarded as consisting of the combination of several morbid conditions irregularly intermixed; sometimes one set of symptoms taking the lead, and sometimes another; with a peculiar tendency to costive bowels, and especially that species of costiveness dependent on a weakly temperament or a sedentary habit, and in which the discharged fœces, instead of being congestive and voluminous, are hard, slender, and often scybalous. Dyspepsia, therefore, in the language of Dr. Cullen, may be described as a want of appetite, a squeamishness, sometimes a vomiting, sudden and transient distentions of the stomach, eructations of various kinds, heart-burn, pains in the region of the stomach, and a bound belly. Yet none of these are universally present, and all of them seldom. So that, as already observed, the symptoms of cardialgia, flatulence, and vomiting, with a few others, enter in irregular modifications into dyspepsia, as those of dyspepsia enter into hypochondriasis.

"There is also another complaint which frequently enters into the multiform combination of maladies, of which dyspepsia is the general expression, and which has been rarely noticed by writers, although it is often a very troublesome symptom, and that is gravel. In treating of gravel, or lithia, as an idiopathic affection, we shall have to notice that one of its chief and most common causes is an excess of acidity in the *prima viæ;* and, as such excess is almost constantly to be found in dyspepsia, gravel must frequently attend or follow, and is even a necessary effect where there exists what has been called a calculous diathesis. And, for a like reason, where there is a podagric diathesis, gout, in some form or other, is a frequent concomitant."

"In dyspepsia the debility is not often confined to the stomach, but extends to the intestinal canal, and the collati-

tious viscera, as the mesentery, the spleen, the pancreas, and especially the liver, in which it most frequently commences; and hence another cause of the great complexity of this disease."

"The debility, and indeed torpitude of the intestinal canal, is evident from the habitual costiveness which so peculiarly characterizes this affection. Whether this be direct or indirect, intrinsic or sympathetic, as harmonizing with the weakness of the stomach, it is not easy to determine; but nothing can be a stronger proof of the great inactivity of the intestinal tube, from whatever cause produced, than the feebleness of its peristaltic motion, notwithstanding the acrimonious matters that are so frequently diffused over its inner surface."

"The imbecility of the liver is equally obvious in most cases, from the small quantity of bile that seems to be excreted, or its altered and morbid hue, as evinced by the color of the fœces, which, in some instances, are of an unduly dark, and in others of an unduly light tint; and possibly from the inactivity of the intestines themselves, whose peristaltic motion is conceived by Dr. Saunders and other pathologists to be, in a great measure, kept up by the stimulus of the bile."

"When the mesentery is affected the chyle is generally obstructed in its passage to the thoracic duct, and the general frame, deprived of its needful nutrition, becomes flaccid and emaciated; and from a collapse of the minute vessels on the surface, assumes a wan or sallow complexion."

"It is highly probable that the pancreas and spleen are both also affected in many cases of dyspepsia. Of the actual part taken by either, in the process of digestion, we know but little; but we do know that the pancreas pours forth a considerable portion of the fluid which holds the solid part of our aliment in solution; while in most of the cases of dyspepsia brought on by a habit of drinking spirituous liquors, the spleen is evidently affected as well as the liver."

"It is in this stage of the disease that we frequently meet the tenderness or other uneasiness in the epigastric region, and that peculiar hardness of the pulse, often accompanied by febrile symptoms, which Dr. Wilson Philip has pointed out

as pathognomonic of what he calls a second stage of the disease."

"It has also been well observed by Dr. Philip, that the lungs are, in many instances, apt to associate in the morbid action of the digestive organs, when it has become chronic, and to produce, as a result, a peculiar variety of consumption, to which he has given the name of dyspeptic phthisis. The dyspeptic character of the disease, however, and especially the hepatic symptoms, together with those of lowness of spirits, flatulence, and other hypochondriacal affections, rarely fail to accompany it when complicated with phthisis, and point out its real source; and the cure must be chiefly directed to the primary malady, how much soever the induced symptoms may also demand our attention; for it will be in vain to subdue the latter, while the former is still suffered to bear sway."

"It must nevertheless be admitted, that in some instances the secondary disease seems to afford relief to the primary, and that the organ first affected recovers its health in proportion as that subsequently affected yields to the attack; in the same manner as, in erysipelas and the migratory forms of herpes, the eruption travels forward, the part relinquished heals, and fresh parts are affected in succession. In all such cases, the secondary complaint becomes a new malady, and must often be followed up under another principle and another mode of treatment."

"Under whatever form, and from whatever cause the disease occurs, there is a considerable degree of general languor and debility. Exercise or exertion of any kind soon fatigues; the pulse is weak; the sleep disturbed; the extremities are cold, or rendered so on slight occasions; and the tongue for the most part is fussed, or covered with a creamy mucus in the morning. Yet this last symptom is not always to be depended on; for it is sometimes wanting in the disease."

"That dyspepsia should be connected with a morbid condition of any of the adjoining organs, is by no means difficult to conceive, when we reflect that they are all concerned, directly or indirectly, in completing the great object of the digestive

process, which is that of furnishing a constant supply of nutrition for the system at large."

Not half a century ago, it became a fashion with some physicians, in obscure and complicated cases of indigestion, when diagnosis was dubious and prognosis impracticable, especially after the patient had "suffered many things of many physicians," to request the patient to make a written list of his symptoms, as they occurred from day to day. But it was found to work like Homœopathic "provings." If the experimentee swallow an inappreciable particle of *preparata creta*, diluted in, diffused through, or potentized by, ten thousand trillion times its bulk or weight of water, he may count five, fifty, five hundred, or five thousand "symptoms," according to the time and attention that he will give to the subject. So with these miserable dyspeptics, made more miserable by the miserable business of thinking of their miseries. There was no end to their miserable and ever changing sensations. The moment a confirmed dyspeptic undertakes "to see how he feels," and make a record of his morbid sensations, he can always have a day's work before him. He can write down symptoms day after day, "from the rising of the sun to the going down of the same," besides dreaming of them half the night. That inimitable lithograph of equine pathology, on sale at the horse bazaars, denominated "The Horse with all Diseases," whose deformed body, distorted joints, dilapidated surface, abrasions, swellings, ulcers, and emaciation represent sixty-four distinct maladies, does not indicate more phenomenology than almost any dyspeptic, who has been *cured* half a dozen times, can count if you give him time enough.

Many febrile patients are drugged into chronic diseases, which invariably present some one or more of the numerous phases of dyspepsia; and many of the worst symptoms of which most dyspeptics complain, are nothing more nor less than the effects of the medicines they have taken. Women, in this respect, suffer much more than men do, for the reason that, being more dyspeptic, they are doctored more. The following remarks, quoted from my work on "The Health and Diseases

of Women," published at the *Health Reformer* office, Battle Creek, Michigan, will apply, with some qualification, which the reader will readily appreciate, to men as well as women :

"DRUGGING DURING PREGNANCY.—But if the woman escapes with dear life the ailments incident to puberty, other perils are before her. In the common order of events, the matrimonial relation is formed. Then come child-birth and nursing, with all their joys and sorrows. Lucky is the woman who can, on these occasions, escape the doctor's lancet and drugs. During pregnancy, she usually suffers more or less of nausea, cramps, constipation, vertigo, etc., for which she is bled, physicked, and narcotized, predisposing her to hemorrhage, milk-leg, broken breast, and other *sequelæ*, and multiplying the occasions for taking more medicines.

"DRUGGING DURING THE LYING-IN PERIOD.—After confinement, the majority of women are troubled (and no wonder) more or less with indigestion, constipation, sour stomach, flatulence, sore mouth, sick headache, etc., for which chalk, soda, saleratus, magnesia, lunar caustic, bismuth, blue pill, etc., are prescribed. And now the medicines are doing a double work of mischief. The drugs which she is continually taking into her system, under the name of medicine, deprave the blood, vitiate all of the secretions, and poison the very fountain whence the new-born being derives its nourishment.

"These drug poisons must be expelled. The living system gets rid of them through every available channel. And that portion which passes off with the milk often destroys the life of the nursing infant, or renders it a puny, feeble thing for life. So much for the child. It must be at all times liable to canker, colic, humors, rashes, convulsions, and death, so long as its mother is continually taking into her system that which contaminates and impoverishes the only source of its subsistence.

"CHRONIC DRUG DISEASE.—But if the mother survive the terrible ordeal which a false medical system imposes on her, there is yet trouble enough in the future. The dosings of infancy, the druggings of puberty, and the poisonings of her maternity, have laid the foundations for innumerable and name-

less chronic diseases; and now these must be doctored *secundem artem.* And thus medical science has laid the foundation for an extensive practice in the healing art—provided the patient lives long enough.

In due time the woman comes to be regarded as a *confirmed invalid.* And no sooner is she "cured" of one malady, than another "sets in."

How strange that some new disease is always ready to "supervene" so soon as the existing one is "subdued!" Her aches and pains, and "sinking spells," and flutterings, and *gonenesses,* and short breathings, and palpitations, and dragging sensations, and nervousness, require, in the judgment of the family physician, a course of tonics, nervines, and stimulants, and quassia, carbonate of ammonia, assafetida, castor, musk, valerian, spices, aromatics, phosphate of iron, or iron-by-hydrogen, wine, brandy, porter, ale, lager beer, etc., etc.

She is also put on the medico-slop diet of the pharmacopœias —fed on such delicate abominations as panada, starch puddings, beef tea, mutton broth, oyster soup, chicken gravy, buttered toast, and sugar nick-nacs. In a word, instead of being nourished and strengthened, she is merely stuffed and stimulated.

All this makes a bad matter worse; and at length the doctor, having treated the *general dyspeptic condition* for a few months, or a few years, looks a little deeper into the case, and finds out that the patient has a *torpid liver.* Then come calomel and opium, perhaps blue pill again, to "touch up" the hepatic function, with henbane, or conium, or morphia, to quiet the irritation.

Well, in due time the torpid liver is "cured," or its action so depressed that it ceases to make any further resistance to the medicines, and now the doctor discovers that *jaundice* has "set in." Verily it has. And the drugs are just what have set it in.

But this jaundice must be "treated;" and so the persevering physician doses it, or the patient, with a combination of "alteratives"—antimony, hydriodate of potassa, yellow dock, bitter

sweet, blue flag, mandrake, black cohosh, corrosive sublimate, iodine, and arsenic.

And thus another set of poisons are sent into the vital domain, with the inevitable result of another set of drug diseases.

Soon, another diagnosis is made, and the disease is pronounced *kidney complaint.* This is medicated with leeches, cuppings, salts, antiphlogistics, diuretics, alkalies and counter irritants, and the next phase of the malady is said to be *nervous debility.* And again the patient must be put on tonics, stimulants, and nervines, as lunar caustic, phosphorus, ammonia, extract of hops, cascarilla, myrrh, hypophosphites, preparations of iron, camphor, ether, spirits of nitre, compound spirits of lavender, golden seal, unicorn, wormwood, thoroughwort, skunk cabbage, etc., etc.

When the sensibility of the nervous system is sufficiently subdued, the nervous debility is as *subdued* also. The disease is "cured," though the patient is nearly killed; but no sooner is the cure achieved than (how unfortunate!) still another disease "supervenes." Now the muscular system gives out; the back becomes weak, and the limbs tremulous. The kind and ever-faithful physician now diagnosticates *spinal irritation.* Still he is not without hope for his patient. The resources of his art are immense. There are in the apothecary shop at least one thousand drugs which he has not yet administered, and there are numerous processes which he has not yet brought into requisition. Why should he be discouraged? So long as there is life there is hope—at least of making a bill.

Blistering, cupping, leeching, scarifying, pustulations, caustics, issues, setons, moxa burnings and the actual cautery, are the *scientific* remedies for spinal irritation.

The marring, and scarring, and haggling, and mangling, finally *overcome* the spinal irritation, and then we come to the end of the chapter, which is *neuralgia.*

Neuralgia is regarded as incurable. But there is one consolation—there are no more diseases to "set in." The patient has got below the range of their action, and hence cannot be "attacked" by them. Her vitality is too low to respond to

morbific causes, hence they may remain in her system without any special effort to get rid of them. She cannot, therefore, have any particular disease known to the nosology, but she can be very wretched.

The doctors can cure almost everything except neuralgia. We have seen how effectually they cure dyspepsia, liver complaint, jaundice, kidney disease, nervous debility and spinal irritation, but neuralgia is peculiarly a "medicorum opprobrium." Yet medical science does not wholly despair, it can still "alleviate the symptoms." For what did "nature provide" morphine, quinine, stramonium, belladonna, prussic acid, veratria, aconite, chloroform, digitalis, henbane, ratsbane, dogsbane, fleabane, and all the banes, venoms and viruses, all the drugs and die stuffs, and dregs and scum of the mineral, vegetable, and animal kingdoms, except to quiet pain? And so long as the poor patient is dosed with narcotics and depressants below the point of susceptibility, she may be kept oblivious of misery. Has not medicine been entitled *the art divine?* I fear the Irish doctor was not far wrong when he presented a bill to his wealthy neighbor: "To curing your wife till she died."

And now after medical skill has done its best, or its worst, surgical ingenuity exhausts itself in vain efforts to repair the damages occasioned by bad living and worse doctoring. The uterine organs become permanently congested, relaxed, and debilitated, ulcerations occur, excrescences form, and displacements result.

These are treated indiscriminately with astringents, caustics, pessaries, braces, leechings, scarifyings and burnings, which, although in some cases temporary relief is obtained, never fail to aggravate the difficulties in the end.

Induration, paralysis, fistulous openings, extensive inflammations, permanent adhesions, fungous excrescences, and cancerous ulcerations, are among the frightful catalogue of evils which result from these attempts to give "mechanical support" to the displaced viscera.

Not long since, I had a patient under treatment for erosive

or cancerous degeneration of the uterus, the consequence of the prolonged employment of pessaries. And a few years ago, I was consulted by a lady who had a fistulous ulcer opening externally from the bowels, just below the umbilicus, through which the fecal matters were discharged, produced by wearing an "abdominal supporter."

A few years ago, I visited a young lady in Philadelphia who had been a bed-ridden invalid for fifteen years, in consequence of a retroversion of the womb. Her father was wealthy and had employed the most eminent physicans and surgeons of that doctor-making city, who had invented a bureau drawer full of "supporters" for the displaced organ; and they had "toned her up" with tonics, and "quieted her down" with nervines, and nourished her on "blood-food" preparations of iron, until her muscular system was as flimsy as a wet rag. And these are but examples of hundreds whose cases have come under my observation and treatment.

I cannot pursue this branch of my subject here. Those who would have fuller information are referred to my larger works, "Pathology of the Reproductive Organs," and "Uterine Diseases and Displacements." The limits of this work will only enable me to show the errors and absurdities of the prevailing medical system, and indicate "the better way."

As future generations may prosper or must perish, just as the mothers of the race maintain or lose their vital stamina, I cannot forbear copying the following appeal to Christians, from that excellent monthly, *The Christian Monitor*. It ought to be distributed as a tract in every Sunday-school in the land:

THF PRIME CAUSES OF WOMAN'S SUFFERINGS.

BY JOSSI ANN MAI.

The principle of progression in human nature furnishes the proposition "that it is not the goal, but the course which makes us happy"—not so much the possession of an object as the pursuit that gives pleasure. If this is true, it is also true, that a consciousness that one's course will not secure the object sought, will incur great discomfiture and *its* consequent evils; for while the attainment of earthly prizes do not satisfy, they lure us on, compensating and withholding in advance according to the course. Life is a repetition of causes and effects, of efforts and rewards, or punishments,

which are but the tiny ripples of its sea, that must widen and extend into corresponding shapes in the great ocean of eternity for all its possessors.

We do not advocate the doctrine, that a man's temporal life on earth, antetypes his employment in heaven ; but we do believe that the degree of moral power possessed here must characterize, at least his infancy, in the world to come. "In the place where the tree falleth there it shall lie." "He that is unjust let him be unjust still ; he that is holy, let him be holy still." "My reward is with me to give to every man according as his work shall be."

Therefore when one has enumerated to himself from infancy to old age the fruit, which should be the perpetual outgrowth of his nature in order to obtain the eternal meet awarded to Christians, and finds himself failing, and refailing, in his efforts to produce them, it discourages and demoralizes; and in many persons produces their descent into the depths of immorality; others, perhaps, more hopeful and persevering in their natures, press on, but suffer material demoralization, by a recognition of the result, which may come of the knotty, wormy, imperfect fruits, which are the issues of their life.

Not unfrequently have I met women who have assured me, in the grief and agony of their souls, that they would be good, and subdue their excitable, passionate dispositions, if they could. They had married with bright hopes, and the determination to live useful, noble lives; had been obliged to work hard, with no time for mental cultivation; their husbands had gone on from one degree of improvement to another, until they were no company for each other; which is always heart-rending to a sensible woman; children had come fast and were growing up disobedient and untrained; they felt responsible for it, for their course had been unsteady, fretful and passionate; they had tried again and again to be firm, kind and judicious; but ere they were aware of it, would find themselves, in a fit of anger, shorn of their strength. And so they had come to the conclusion that "They could not be good and there was no use of trying."

But what is the cause of all this? Effect must have cause. Two items furnish the causes—one the primary, the other, the secondary. First, an unwholesome training in youth—when, if that sublime injunction, "Know thyself" had been obeyed, by a study of the mental, moral, and physical laws of the human being,—the importance of obeying them, and the strength and power of reason acquired for self-control—accidents and casualties aside—the secondary, poor health, might have been avoided. and the great behest of life nobly and sublimely fulfilled.

But no—the announcement that a girl baby is born is equivalent to cramming its head with the rules of etiquette, coquetry, and a fashionable toilette, instead of anything that would contribute to the magnanimous symmetrical development of the immortal spirit. The instruction is early given, that the one who plays the round of fashionable life the most successfully,

will bear off the palm of beauty and grace, indicative of woman's highest capabilities;—hence the distorted spine, wasp waist, tiny feet, pale-faced, sickly, sentimental, passionate, powerless woman! All this secondarily, the outgrowth of false dressing, excesses and irregularities in eating, drinking, sleeping, and slothful inactivity.

Probably no country furnishes such multitudes of peevish, fretful, nervous women as the United States. Who can wonder that one is all worn down with nervous debility, and only keeps herself up by stimulants; another afflicted with that terrible disease, nervous dyspepsia, which congests the brain, and affects the mind so seriously that an eminent physician has compared persons thus diseased, to the ancients possessed with evil spirits; another with engorgement of the portal vein and blood-vessels of the liver, thus interfering with its depuratory office, and not only clogging up the system, but mind; another with consumption; another, diseases peculiar to her sex, which have the most direful effect upon the system; and still another with scrofula in some form, creating not only a feverish, excitable condition of body, but mind, making its position unreliable. Yes, I say, who can wonder that these things are so, if they consider the customs and manner of life of women.

Lacing is the universal practice, and it sometimes seems that all are aiming at perfection of deformity, if possible. Let one enforce by example or word, the importance of a dress reform, and how soon will all unite to show their dexterity, in pitching the sarcastic quoits of ignorance at her; as though they would be doing God service if they could cause her to renounce common sense for the pursuit of disobedience to physical laws, and thereby bring on the long catalogue of diseases consequent upon the pressure of the vital organs—and all this is done to secure false beauty and symmetry of form.

Let us consider the difference in the dressing of a boy and girl. His clothing reaches from head to foot, and hand, equally distributed and loosely made, which is calculated to induce good circulation and development, from two reasons:—first, there are no bands or corsets to form ligatures of compression and irritation about his body;—secondly, equality of clothing secures equality of warmth, and hence, there are no cold extremities deserted of the blood, which must congest in some other part of the body. He must wear flannel, wadded coats and vests, with thick-soled boots, reaching to the knees, as a protection. How is it with the little girl? Her mother, supposed to be her best friend, will send her out on a cold winter day, with one-third the amount of clothing she does her boy. Thin shoes reaching just above her ankle, with one thickness, (a cotton or woollen stocking,) reaching to the knee; two or three thin layers of thin cloth over the arms; perhaps a little more about the waist and shoulders. But it would not do to burden her with the amount of clothing the boy

wears, or rather, it would prevent the exhibition of the delicate form, which the mother had contended for with dame Nature.

But is this all? If it were, we might hope for a more speedy recovery of woman's health; for the world is becoming aroused about the necessity of a dress reform which is destined to secure improvements at least. I believe that one of the greatest evils of woman's life is intemperate eating. Her first sin was committed in eating, and we are inclined to think her last will be, when we hear Christian women talking like this:—"Do you suppose I would deny myself of what I wanted if I *knew* it would make me sick?" Dear sisters, I pray you, for 'tis to you that I write, not to close your ears to the fact, that our God is a God of justice, and that He would not have framed and established laws in the human being, without attaching a penalty to their disobedience; and that in nine cases out of ten, sickness is traceable to over-eating, or the eating of such combinations as would destroy the stomach of a horse.

Oh, woman, how can you consciously deprave and vitiate the powers which God designed should glorify His name, by the influence of their fullest capacity, by being a submissive slave to the lowest passions of your nature? That this is done, is evident to casual observers. Women not only glut and gormandize from morning till night, and in some parts of the country, eat snuff, and drink wine, until perversion is the ruling feature of their appetite, but they transmit the disposition to their children, and compel them to cultivate it; for no sooner are the children out of bed than they find the indispensable "piece" in their hands, a faithful friend until bed-time; and not unfrequently does it accompany them thither. And the only antidote for the cries of a suckling babe, is its "dinner," which is seasonable any hour in the twenty-four; unless it cries too hard, when drugs, "soothing syrup," "paregoric," etc., become a plus quantity, in some cases with a piece of meat, or candy to suck; for it wouldn't do to deny it anything the mother's distorted sympathy supposes it would like. Not unfrequently these plus quantities, added to the minus quantity, common sense and nature's laws, produce a quantity minus its life. Then the lamentations of the unhappy parents follow; only finding consolation in the perverted application of the scripture—"The Lord doeth all things well." "He giveth and He taketh away." Instead of searching out the cause, and learning wisdom from their folly, they persistently pursue the same course, until similar results are again produced.

We sometimes think that no woman should have the care of a family, who is unversed in the laws of being, or without the acquisition of self-control. The women of one generation, ungoverned by a right knowledge of the necessities of physical and spiritual being, and the avoidable causes of disease, may commit sin from the effects of which three generations cannot recover.

The prevalent custom on the part of most women of wearing the hair twisted into a mass on the top or back of the head, and the more modern and still more pernicious custom of loading the head with false hair, or substances resembling it, is a fruitful source of headache, and, indirectly, a cause of dyspepsia.

Says a writer in the *Science of Health* : "And not hair only, as if that were not bad enough, but hemp, jute, and coarse inferior vegetable fibres, must be raised from their native clod, to intermingle and be placed on a par with that most unrivalled production of nature—the crowning glory of the human form. As a matter of health, the subject assumes a more serious aspect ; much more so, indeed, than many of our ladies have any idea of. Perhaps the most prevalent complaint among ladies at the present day is headache ; and we think that careful investigation will bear us out in asserting that this trouble has rather increased than diminished since the present style of wearing the hair came in vogue, involving, as it does, the loading of the head with such a quantity of foreign material."

Ridiculous and silly as is the fashionable head-toggery of chignos, frizzles, pugs, etc., the ridiculousness merges into the tragical when we consider the inevitably demoralizing effects on both body and mind.

THE HORRORS.

I will conclude this "chapter of horrors" by copying one of several cases which I have published. The case of Mr. Strong was published in the Philadelphia *Evening Star* of October 8, 1872 :

Written for "The Evening Star."

THE HORRORS DEPICTED.—I do not mean remorse of conscience, nor melancholy, nor "dumps," nor "blues," nor "hypo," nor what the phrenologist would term "hope small ;" but a sense of unmitigated wretchedness disconnected with all considerations of conduct or character, good, bad or indifferent, and unattended with any outward manifestations of disease.

It may puzzle the reader to understand how a person can be

mentally horrified without being morally bad or physically sick. He is sick, but the name of the disease is not found in the nosology, nor is there any name or phrase in ancient Latin or modern French that will apply to it. It can only be described.

The patient is in agony all the day, and afflicted with frightful visions all the night. He is utterly miserable, yet cannot tell why. He sees nothing but sources of sorrow in this life, and imagines nothing but suffering in the next. Everything around him, and all that you say or do, aggravate his misery. He sheds no tears, his face is blank and expressionless, he cannot laugh nor cry, and he seems to know nothing and care for nothing except to feel bad.

But the rationale of this matter is very simple. It means nothing more nor less than a torpid liver with an inactive skin. The bile elements are retained in the blood because of torpidity of that great excreting gland, the liver; they are not expelled through the skin in the form of "humors," because of obstruction of that emunctory. The consequences are the blood becomes thick, viscid, clogs the internal viscera, and the whole volume of circulating fluid is pressed from the circumference of the body to the centre, and especially upon the brain. Why should he not be horrified?

Put your finger in a vise, or your body under half a ton's weight, and you will have some idea of the pain that can be produced by pressure. The felon on the finger, the gout of the toes, the rheumatism in the large joints, the boil, and the carbuncle are intensely painful only because of the extreme pressure consequent on accumulated blood. Let the blood recede from the surface and accumulate in the brain, lungs, liver, and other internal organs, and there will not be acute pain locally, but distress generally. Instead of smarting or throbbing on the surface, there is aching and agony all through. The sense of misery is too diffused to be imputed to any one organ, hence the patient cannot tell where, how, nor why he is diseased.

All persons who are distinguished as having a "fine flow of animal spirits," have a free external circulation; the vessels

of the skin are well filled; and so long as this condition is maintained the "horrors" can never be experienced. They may be sick, afflicted, or unfortunate, but the grief and depression will be temporary. It is impossible for such persons to settle down in gloom and melancholy

I could mention the name of several persons in New York and Philadelphia, who, after being in the horrors for months, have recovered their usual good health and spirits, by a little hygienic attention to the functions of the skin and liver. I am at liberty to mention one, which is typical of all, that of a Mr. Strong, produce merchant of Philadelphia, who was treated at our "Hygeian Home."

The horrors in Mr. Strong's case were horrible in the extreme. He would pace the room or walk the hall continually, sighing and groaning as though some terrible calamity was impending. Nothing that could be said would comfort him in the least. He seemed perversely determined to be as miserable as possible, and make others so to the extent of his ability and opportunity. Yet, poor man, he could not help it. The whole cause of all his trouble was within, but he fancied it was everywhere else. His imagination was just as morbid as his blood, and the very atmosphere was peopled with Milton's "devils with devils damned," and vengeful deities—the reflections of his own mental state.

In all of these cases we have only to purify the blood, restore the circulation to the surface, and the crushing load within is removed, the fiends and demons of the day depart, and the ghosts and goblins of the night disappear. As soon as the patient is "all right" within himself, the universe becomes all right to him.

Mr. Strong, by means of plain simple food, tepid bathings, and active manipulations to the skin, with no medicine of any kind, soon began to come to himself, and then all the world came to him. He is now attending to business as usual.

R. T. TRALL, M.D.

CHAPTER XIII.

DYSPEPSIA AND THE CACHEXIES.

That nearly all those forms and manifestations of morbid conditions which, in medical books, are termed cachexiæ, or "depraved habits of body," constituting the peculiar diatheses called tubercular, scrofulous, scorbutic, hemorrhagic, plethoric, dropsical, consumptive, and even entozoic, or verminous, are primarily caused by derangements of the digestive processes, is becoming more and more the opinion of pathologists.

In a late work on Pulmonary Consumption, by C. J. B. Williams, M.D., F.R.S., of London, who is regarded as the first pathologist in Great Britain, if not in Europe, the author substantially affirms the doctrine I have all along advocated. Dr. Williams is at the head of an extensive hospital and school in London; has had an experience of forty years, and his observations are based on a careful study of the data of one thousand selected cases recorded in his note-book. The importance to be attached to Dr. Williams' conclusions may be inferred from the following notice of his work by the *New York Medical Review* for January, 1873:

"The author of this work needs no introduction to the medical world, as his 'Principles of Medicine' is a standard work in both Europe and America. As the student of Alison, Laennec, Andral, and Chomel, he learned what those distinguished authors had to teach, both at the bedside and at the dead-house. The knowledge thus acquired was, for the subsequent twenty years, constantly applied at St. George's and University Hospitals, where he attended the wards almost daily, and always superintended personally the post-mortems. In addition to this, Dr. Williams' experience in diseases of the chest in private practice for the last forty years, has not been exceeded by that of any other physician.

"With these facts before us, and the recognized ability of the author, we are warranted in expecting an exhaustive and reliable *resume* of the subject under consideration.

"The author's theory of the pathology of this disease is based on his own observations, aided by the recent researches of Lionel Beale, Ricklinghausen, Stricker, Cohnheim, Max Scheultzer, and others, in regard to

the processes of the living plasma or formative material from which textures are produced."

Dr. Williams indicates his theory of the pathology of consumption in the following words:

"It is not possible to convey in a few words the views on the nature of Phthisis, to which I have been led by observation and reflection on the facts and opinions of others as well as my own: but the popular terms *decline* and *consumption* are the most significant which I can employ to represent them. I believe Pulmonary Consumption to arise from a decline or deficiency of vitality in the natural *bioplasm* or *germinal matter*; and this deficiency manifests its effects not only in a general wasting or atrophy of the whole body, but also in a peculiar degradation, chiefly in the lungs and lymphathic system, of portions of this bioplasm into a sluggish low lived, yet proliferating matter, which, instead of maintaining the nutrition and integrity of the tissues (which is the natural office of the bioplasm), clogs them and irritates them with a substance which is more or less prone to decay, and eventually involves them also in its own disintegration and destruction. This degraded bioplasm, which I will call *phthinoplasm* (wasting or decaying forming material), may be thrown out locally, as a result of inflammation; or it may arise more spontaneously in divers points of the bioplasm in its ordinary receptacles, the lymphatic glandular system; and then it commonly appears in the form of miliary tubercles, scattered through the adenoid tissue of the lungs.

"I would characterize all consumptive diseases heretofore classed under the terms Tuberculous and Scrofulous, together with the products of low and chronic inflammation, as instances of a *lowered vitality of the bioplasm;* and I would strongly insist on their being totally distinct, on the one hand, from cancer and other malignant diseases, the characteristic of which is a new *kind* of vitality, a new growth, perhaps parasitic, with new organic elements, foreign to those of the tissues which they invade and destroy; and on the other hand, distinct also from *total loss of vitality*, death of the bioplasm, which would speedily result in decomposition, gangrene, and putrefaction; to such a result phthinoplasms do occasionally lead, but it is not a part of their common history. That this latter distinction is not sufficiently observed by some German writers is evident from their applying the term *necrobiosis* to caseation, which, although a process of decay from *lowered* vitality, does not indicate the absolute death of every living part, as in a slough or gangrene. It will be seen in the chapter on Fatty Degeneration (which thirty years ago was a special object of my study), that I have traced a resemblance to vegetable life in its process and products; and, although ultimately destructive, it is the most gentle step towards the death of the tissues. Nay, various proofs will be adduced that fatty trans-

formation is often a salutary process, assisting materially in the removal of phthinoplasm and other superfluous products of inflammation."

"The great indication to sustain the vitality and sufficiency of the bioplasm, by all available means, medicinal, regiminal, and climatic, will be the first suggestion for the prevention and treatment of consumptive diseases. A second, equally obvious, will be the avoidance of all influences which may injure the bioplasm; generally, by deleterious action on the whole body; or locally, by exciting low inflammation in the lungs or other organs. A third indication, more difficult than the others in its fulfilment, is to counteract the injurious effects of phthinoplasms already formed, and to promote their quiescence or removal."

DYSPEPSIA AND WORMS.

All of the varieties of entozoa which infest the alimentary canal, would have no existence there, were it not for the *products of indigestion* on which they feed. Because they are scavengers, some physicians, who were poor physiologists, have regarded them as wholesome and necessary to consume the offal, etc. But, in a healthy state of the digestive organs, there would be no offal for them to scavengerize. The effete matters (excretions) would be expelled as often as necessary, and not allowed to accumulate so as to afford shelter and sustenance for these troublesome pests.

Children whose dietary consists largely of greasy foods, sugar, and fine flour, always have constipated bowels, and are always affected with worms. The immediate cause of all such vermin as effect a permanent lodgment in the alimentary canal is alimentary uncleanliness. And uncleanliness in our dwellings and surroundings is the sole cause of all the noxious insects or animalculæ which annoy us and destroy our fruits and vegetables, as well as the cause of all contagious diseases—small-pox, measles, scarlatina, whooping-cough, mumps, influenza, etc., of human beings, and glanders, murrain, rinderpert, epizooty, gapes, staggers, etc., of domestic animals.

The "measly" livers of stall-fattened and sty-fattened cattle and hogs, is nothing more nor less than an insect, not unlike the louse or crab, which burrows in the substance of the liver, or lodges in some portion of the intestinal tube. Its form and shape conform to the locality in which it develops and propa-

gates its kind. In the bowels it elongates into the tape-worm. It often makes its way into other glands, and into the areolar and muscular tissues of animals, especially of the hog; and is so tenacious of life that ordinary boiling does not destroy it. In the Crimea, during the late Turko-Russian war, the British soldiers became so frequently affected with tape-worms that they finally traced it to pork rations, and refused to partake of them.

Raw sugars are another common source of "measles" in the glands and bowels. The sugar insect (which is the cause of that tormenting skin affection known as "grocer's itch), is found in nearly all of the brown sugars of commerce. More than one hundred thousand have been found in a single pound of "merchantable" Muscovado sugar.

A late writer in an agricultural journal published at Memphis, Tenn., ("Philips' *Southern Farmer*,") attributes worms in colts to indigestion. He says: "It is the opinion of many veterinarians that worms in colts are usually connected with indigestion; that is, they produce ill-health when the digestive organs are disordered." They produce ill-health whenever present. Indigestion causes their presence, and then their presence aggravates the indigestion.

A writer in a late number of the *London Field* states that the gape worm among chickens is unusually prevalent. If he will examine into the sanitary conditions around those wormy chickens, he will find uncleanliness correspondingly prevalent.

We have the authority of Scripture that all "evil beasts shall cease out of the land" when the people obey "the ways of the Lord," which means, I suppose, when they keep themselves and their surroundings clean, and till the earth on hygienic principles.

CHAPTER XIV.

PRINCIPLES OF TREATMENT.

THERE are two methods of treating dyspeptics; one aims to cure the disease; the other endeavors to cure the patient. All drug medical systems profess to cure diseases; and they can do it, whatever becomes of the patient. The Hygienic medical system is based on the fundamental premise that *disease should not be cured;* but that its causes should be removed, to the end that the patient may recover health. All drug systems teach that disease is an entity or substance; a something at war with vitality which should be suppressed, opposed, counteracted, subdued, expelled, killed, or cured; hence it is opposed with all of the missiles of the drug shop. The Hygienic system teaches that disease is a *remedial effort*—a struggle of the vital powers to purify the system and recover the normal state. This effort should be aided, directed and regulated, if need be, but never suppressed. And this can always be better accomplished without medicines than with them.

Few persons are aware how many of their ailments, of which they suffer for years, if not for life, are attributable to the medicines which so promptly relieved them of some trivial pain or slight indisposition. Many of the infirmities and diseases of youth and manhood can be traced to the remedies which *cured* their ailments of infancy and childhood.

Professor E. R. Peaslee, M. D., of New York, said to his medical class a few years ago: "The administration of powerful medicines is the most fruitful cause of derangements of the digestion."

Professor Alonzo Clark, M. D., of the New York College of Physicians and Surgeons, said, in a lecture to the medical class, not long since: "All of our curative agents are poisons, and, as a consequence, every dose diminishes the vitality of the patient."

And Professor John C. Draper, M. D., says: "Vitality once lost can never be regained."

Authorities *against* drug remedies could be quoted from the highest authorities of the medical profession to any extent. But I will conclude with as many, from the same source, in favor of Hygienic medication.

"The same uncertainty exists in medicine that the law is so justly noted for. We do not know whether our patients recover because we give medicine, or because nature cures them. Perhaps *bread pills* would cure as many as medicine." Prof. J. W. CARSON, M.D.

"The older physicians grow the more skeptical they become of the virtues of medicine, and the more they are disposed to trust to the powers of nature." Prof. ALEX. H. STEVENS, M.D.

"I wish the Materia Medica was in Guinea, and that you would study *Materia Alimentaria*. You are taught learnedly about Materia Medica, and but little about diet. We will have less of doctors when people *eat to live*. Prof. WILLARD PARKER, M.D.

The rational treatment of dyspepsia, in all its states, stages, forms and complications, consists in supplying the condition of health. This is the way to "aid and assist nature" properly and effectually. Instead of "curing one disease by producing another," we should aim to cure the patient in such a manner as to leave him sound and whole.

CHAPTER XV.

FOOD.

A CORRECT dietary should be placed at the head of all of our therapeutic measures; for without this all other appliances may fail, and certainly will fail to afford more than temporary benefit. And all food should be plain, simple, of a consistence to insure proper mastication, and of but few articles at a single meal. With these general rules kept in view, a good Hygienic cook can furnish as great a variety of dishes as any who "eats to live" can desire.

Bread is of the first importance. But, unfortunately, there

is no wholesome bread in the market. The public taste and judgment are so perverted that a good article could find no purchasers at the provision stores, and those who would have it must make it, or cause it to be made.

Fine flour and yeast are things to be eschewed. Wholesome bread can contain only two ingredients—unbolted meal and water. Atmospheric air is the only "rising" that is needed or that should be tolerated. Yeast fermentation is a *rotting process*, and acids and alkalies are pernicious because of the saline matters which result from their combination. Wheat-meal is more generally preferred. The following recipe will make *perfect bread*, if properly manipulated.

"Mix unbolted wheat meal (freshly ground) with pure *cold* water, to make a stiff dough; knead the dough thoroughly, working in as much meal as possible; cut into small pieces and bake in a quick oven. It will bake quicker and keep longer if made into rolls a little larger than the finger; or into cakes one-half or three-fourths of an inch in thickness, two inches wide, and three inches long. This bread may be dried as hard as a brick, and kept sweet and good for weeks. You have only to dip it in water a minute, and let it stand five minutes, to have as tender, wholesome and delicious bread as need be eaten."

Hot water, instead of cold, is preferred by some; and on my "Hygeian Home" table we have both kinds. This has a somewhat firmer crust, a softer body and sweeter taste, but will not keep so long as that made with cold water.

An expert bread-maker can also make very light loaf bread with either cold or hot water and meal. I have, at this writing, bread within reach, made one year ago, which is both sweet, delicious, and wholesome. It was made in small rolls, about as large and long as my middle finger, then dried in the sun, or before a stove. I do not know why it would not remain unchanged, if kept dry, for a thousand years. This is the best possible manner of preparing bread for long journeys, or for economy of room and expense. One pound of it has more real nutriment than a ton of that spurious *stimulant* known as "Liebig's Extract of Meat." I have carried it to England, kept it four weeks in that humid climate, and found it good and sweet after returning.

Some years ago I offered a premium of one hundred dollars for the best bread. More than one hundred specimens were in competition, and a committee, chosen for the purpose, made the award to the following :

"Mix unbolted meal of any grain preferred, or of a mixture of two or more kinds in any proportions which may be preferred, with pure water, either cold or hot. If cold water is employed, the meal and water should be mixed to the consistency of thick batter ; then beaten or stirred a little with a spoon or ladle to incorporate more atmospheric air ; after which, more meal is to be added, until the mass becomes as stiff a dough as can well be kneaded. Knead the dough a few minutes (and the more the dough is kneaded, the more brittle and tender the bread will be), cut into pieces or cakes half an inch or three-quarters of an inch in thickness, and about two inches in diameter, and bake in a quick oven—as hot as possible without burning the crust, which must be carefully guarded against. It is better to moderate the heat of the oven a little after three or five minutes.

If hot water is used, it should be *boiling* hot, and the meal and water stirred together very quickly with a strong spoon to the consistency of dough, not quite so stiff as that for ordinary loaf bread made of fine flour. It is then to be cut into pieces or cakes, and baked as above. Either form of bread may be made into larger or smaller cakes, or into loaves of any convenient size to bake, and baked in a gas, wood, coal, or kerosene stove, or in an oven ; and the crust be rendered as soft and tender as may be desired, by enveloping the cakes or loaves a short time in wet cloths immediately on being taken from the oven. The small cakes, when made with hot water, will soon become as tender as even the toothless can desire, by being kept in a covered earthen crock ; or they may be rendered as hard and solid as the soundest teeth can require, by leaving them uncovered and in a dry place."

Excellent and wholesome fruit-cake can be made by the addition of dates, raisins, figs, or other sweet fruits.

I protest against an article of bread, called "gems," which are made in some families, and are constantly on the table of some pretended "Water-cures" or "Hygienic Institutes." The pans in which they are cooked are greased, so that the *sham* is fried rather than baked ; the crust is usually very hard or burned, and the inside soft and *mushy*. Such stuff is eminently dyspepsia-producing.

Rye meal, corn meal, rye-and-corn, and oatmeal bread or cake may be made in the same manner as that of wheat-meal.

Wholesome pastry can be made of meal and fruits of any kind; if the fruits are too acid to suit the taste, they can be modified with more or less fruit of a sweeter kind, as dates, raisins, figs, etc. By placing a damp cloth over the crust for a short time after it is taken from the oven the crust will be as tender as the feeblest teeth require. A dry cloth will render it as tender as most persons care for.

Wheaten grits, hominy, samp, oatmeal, mush, boiled rice, etc., may be used occasionally as a part of the meal; but hard bread, a green apple, or something similar, should always be eaten with them to insure mastication.

Soups and gruels are permissible also occasionally, with the same conditions. Of the soups for dyspeptics none is better nor more generally relished than the potato. Beans, split-peas, rice, tomato, and barley, are among the admissible articles for soups.

Of the fruits and vegetables in our markets, but few are objectionable; but only one or two kinds should be taken at one meal. Those who are troubled with flatulence, colic, spitting up the food, or nausea after meals, should not take fruit and vegetables at the same meal. For such persons bread and fruit, and perhaps mush, for breakfast, and bread and vegetables for dinner, is the better plan.

Very sour fruits and acid vegetables, as cranberries, lemons, onions, radishes, celery, &c., had better be dispensed with. There are plenty of better things.

Of animal foods little need be said. I prefer an exclusively vegetarian diet when it can be properly prepared. But with many persons animal food is a necessity in the sense of being the lesser evil. At an ordinary hotel or boarding-house the bread-food is all of the commercial kind, and lean flesh-meat is the better article. But pork, shell-fish, fat, and all fried dishes should be abstained from. Lean beef and mutton are the best, or least objectionable kinds of flesh-meat.

Eggs are not so good as the better kinds of flesh-meat, nor so bad as many other kinds. Flesh food should never be

cooked in any other manner that broiling or boiling ; and eggs should always be soft-boiled.

Condiments and seasonings of all kinds can be disposed of in few words—*the less the better*. Those who are accustomed to high-seasonings will recover a more normal taste and soon learn to relish very plain cooking, by gradually reducing the quantity. I have known many persons learn to like all dishes better without sugar than with it in a few weeks, after having used it excessively for years. And I could make the same remark with regard to vinegar, salt and butter. None of these things are foods, in the proper sense of the word, the medical profession to the contrary notwithstanding.

Another important advantage of diminishing the thirst-provoking seasonings is, little or no desire for drink at meals.

Much experience and observation have convinced me that the excessive use of sugar in this country is a prolific source of indigestion, constipation, "biliousness" and erysipelatous eruptions. For fifteen years I allowed a part of my patients to use sugar moderately. For ten years past I have had no sugar on their table ; and the results of the change are, I hear but little of the heartburn, acidity, fetid breath, and "*stomatitis*" of which my patients formerly complained so much.

At a meeting of the Polytechnic branch of the American Institute, at Cooper Union, New York, Professor J. V. C. Smith, M.D., in a lecture on milk, stated that the liver was a sugar-making organ ; and he argued that, because the liver performed a "glycogenic" function, children should be allowed to eat sugar freely—also adults. I do not see how the conclusion is legitimate from the premises. If it is the business of the liver to make sugar, let the liver do it. The liver makes bile. Would Professor Smith recommend us to take bile as food?

CHAPTER XVI.

DRINK.

WATER-DRINKING between meals should be according to thirst. It is a mistake to load a weak stomach with cold water on the theory that it is a tonic. Food and drink have, fortunately, no medicinal properties, and should never be taken for any purpose but to supply necessary material for use. As a habit it is well to take a tumbler, or part of one, of pure soft water, after dressing in the morning, and let the drink be regulated by the thirst at all other times. As I have explained in the preceding part of this work, it is not compatible with perfect digestion to drink at all at meals. Those who use seasonings, and those who are thirsty while eating, should take as little as may be consistent with comfort. Small sips will often allay thirst as well as larger draughts and be much better for the stomach. Very cold water is certainly unhygienic at meals, and especially bad for dyspeptics. Some medical authors, and among them Dr. G. B. Wood ("Wood's Practice of Medicine") recommend ice-cream after meals as a tonic. Few things could be worse. Hot coffee or tea would be the lesser evil. I have known many patients who were subject to inflammation and hemorrhage, suffer severely and invariably of bleeding piles soon after eating ice-cream, nor do I regard the iced-water, or bits of ice which are so generally administered to cholera patients, as either proper or beneficial. The reason that they must be pernicious is sufficiently obvious to one who sees "the pathology of the disease" through unprejudiced spectacles. The cold water or ice in the stomach determines the blood from the surface of the body to the central organs, aggravating the internal congestion, which is the chief point and only danger in the case. So with dyspeptics whose internal viscera are always in a greater or less degree of congestion, ice-cream or large draughts of cold water, not only interfere with the process of digestion, but determine the blood from the surface, where

it is already deficient, to the central organs where it is already in excess.

The dyspeptic should avoid hard water as he would hard drugs, for all the hard waters on the earth are only drugs in solution. All of the mineral and medicinal springs, from Saratoga to White Sulphur, and from Cheltenham to Vichy, are only modifications of the oceans, the great reservoirs of all the impurities that water can dissolve. No one thinks of drinking them when well, nor would any one be content to have his food cooked in them. But when sick, *presto*, the more earthy, saline, alkaline, and mineral ingredients they contain, the more they are in demand! Such is fashion.

I have long been convinced that a better method for converting grain into meal or flour than by grinding between stones, was among the desiderata of a hygienic mode of life. The ordinary process of grinding inevitably impregnates the meal or flour with more or less pulverized stone. The quantity may be infinitesimally small in a single loaf of bread, nevertheless some chance particle not reduced to impalpable powder may be transferred to the body of the one who partakes of the loaf, lodge in the joints, liver, kidney, or bladder, and become the nucleus of concretions which occasion painful or fatal diseases.

The hygienic method of preparing meal (and flour should not be prepared at all) is by cutting or pounding, as was done before flouring mills were invented. And the following paragraph, which I copy from an exchange paper, indicates that the right idea has already become embodied in machinery:

"FLOUR WITHOUT MILLSTONES.—A machine for making flour without the use of millstones, has just been started in England. The grain is crushed by one thousand little trip hammers attached to the proper machinery to produce the results desired. The new machinery is very cheap and does up its work in a scientific manner. The flour produced is said to be far superior to that obtained by grinding. A pounding mill costing $1,000 will produce as much flour every day as an old fashioned mill, costing $5,000. The new mill is very simple. When a hammer is out of order you can replace the same for a few cents. For four thousand years millers have produced flour by grinding the grain with stones. The new idea gives a new departure. What results it will produce in this country remain to be seen."

In those complications of indigestion indicated by torpid liver, gall-stones, intestinal concretions, albuminaria, or "Bright's disease of the kidneys," mineral and hard waters of all kinds are extremely pernicious. And they are scarcely less so in rheumatic and gouty affections, gravel, catarrh of the bladder or uterus, and duodenitis.

There is no beverage in the universe except water, and there is but one rule for its quality—*the purer the better.* Those who reside where all the water of the streams, springs, and wells is hard, have only the alternatives of getting their supply of fluids from juices, fruits and vegetables, catch rain water, obtain pure water by distillation, or be sick. Few persons imagine the "wear and tear" that is constantly disorganizing their structures, and bringing them prematurely to the grave, in consequence of drinking hard water. The foreign particles are everywhere occasioning a wasteful friction of the vital machinery, deranging the blood-corpuscles, damaging the secretions, and destroying the molecules of the tissues. If the railroad companies of the world, instead of keeping all the machinery of the locomotives and rolling stock well oiled, so as to obviate friction to the greatest possible extent, should apply sea-water, or Congress water, or the hard water of lime-stone regions, to the machinery, not one of the roads could pay running expenses; the iron would rust, the wood work be strained, the joints would break, and all would go to ruin speedily. The principle that machinery will work long and well in inverse ratio to the friction, is as applicable to vital as it is to mechanical organisms.

CHAPTER XVII.

EXERCISE.

Next in importance to a proper dietetical regimen, if not equally important, is systematic exercise. Those dyspeptics who are so fortunate as to have some healthful vocation, may need no special instruction on this subject, except in relation to special exercises for special morbid conditions.

One of these conditions, and probably the most prevalent one, and certainly the one most generally overlooked or unthought of by medical men, is an inactive state of the abdominal muscles. With all sedentary persons this is one of the essential matters to be attended to in the treatment. As has been already explained, no one can have a normal action of the bowels unless the muscles which constitute the walls of the abdomen co-operate with the peristaltic action of the intestinal tube. Dyspeptics may exercise in vain, in a hundred ways, unless their muscles are brought into action and invigorated. And there is one method of exercising these torpid muscles which all dyspeptics can resort to with advantage without the aid of doctors or machinery, and which is one of the best "movement cures" ever invented. I mean, slapping the abdominal muscles with the flat hand. The slapping should be very gentle at first, so as to cause no pain, and gradually increased in force, as the muscles become active and elastic. Dyspeptics who are so tender over the liver or stomach that the weight of one's hand is painful, can in a few weeks or months, by persevering slapping, endure a blow that would do credit to a pugilist without inconvenience or injury. The exercise may be advantageously varied with rubbing and kneading; and, after a while, when the tenderness is overcome, by pounding with the fist, the rule of beginning gently and gradually increasing the force being observed. The muscles of the loins and around the small of the back should also be exercised in the same way, which can easily be done with the back of the hand. This simple exercise alone has effected some "astonishing cures" and is better for feeble invalids than all the appliances of a regular gymnasium. Very feeble dyspeptics should have these exercises *passively*, that is, made by an attendant.

Some forty years ago, a Mr. Halstead, of New York, effected some wonderful cures of feeble and emaciated dyspeptics, whose physicians had given them over to death, by a process of "kneading the bowels." He afterwards invented an exercising chair to accomplish the same result. But the kneading,

pounding, and slapping are much better than the chair, besides being more economical and always available.

The following case, which occurred just forty years ago, illustrates the principle we are considering: Two of my schoolmates, eighteen and twenty-one years of age respectively, declined in health. The family physician called their ailment dyspepsia, and attended them one year. They grew no better. Then Thomsonian, root and Indian doctors, far and near, tried their steaming and compounds in vain. The young men continued to decline. Both were extremely emaciated and the younger was unable to sit up. The elder brother suffered excrutiatingly at times of colic, and, becoming convinced that he could not recover, in one of his unendurable paroxysms, committed suicide by cutting his throat. A few days after this tragedy Mr. Halsted was heard of. A messenger was posted to New York, who paid a fee of $100; took a solemn oath not to disclose the secret, nor to apply it to any person but this individual patient, the younger brother. All medicine was discontinued; the regimen was the same, and the manipulations were commenced. In a couple of weeks the skeleton-patient was able to sit up. In a couple of months he was walking about. In one year he was in the enjoyment of good health. He is at this writing a Christian minister.

Another case of recent date is worth relating, as showing the benefit and the necessity for restoring the action of the abdominal muscles in desperate cases of dyspepsia. A merchant of Western New York visiting New York City on business, called on me for advice. He was one of the most miserable specimens of this miserable class of invalids that I ever saw—emaciated, the abdomen gaunt, and the muscles rigid, bowels torpid, and troubled with flatulence continually and colic frequently. All that he could eat without unendurable pain in the stomach was a small slice of stale bread and a bit of lean meat, and this meagre allowance usually occasioned so much gastric irritation that he had acquired the habit of taking a teaspoonful of brandy after each meal. He suffered constantly of hunger and could sleep very little. Like the majority of

such persons, he was in the pursuit of some nostrum or remedy that would impart to him health, while he continued to live and act in disobedience to all the conditions of health. He had destroyed his health in the eager pursuit of riches, and while intelligent in the ways and means by which property could be acquired, he was totally ignorant of nearly all the ways and means by which his own vital organs could be preserved. In ruining his health he had accumulated a hundred thousand dollars, and he made the remark, incidentally, that if he could recover his health at once he would be willing to give a thousand dollars!

I explained to him the nature of his malady, and called attention to his torpid and rigid abdominal muscles as the chief feature of his case. As my Hygeio-Therapeutic College was then in session, and as it happened to be one of the evenings for exercises, I invited him to the lecture hall. Some of the students were dancing the Schottische, and I explained to him how that method of "tripping the light fantastic toe" was admirably calculated to bring into action the torpid muscles of dyspeptics affected as he was. Other exercises might be equally useful, but this was one exactly adapted to his particular condition. He watched the terpsichorean performance with as much interest, probably, as he had often regarded the movements in fancy stocks. One year afterwards he called on me again. He was in fair health. He had learned the steps, and had *danced the dyspepsia all away.*

Walking, horseback-riding, and rowing, are among the useful exercises for dyspeptics, but are no better than sawing wood, working in the garden, washing and ironing, only as they may be more amusing to the patient. But the rule here, as in dancing, or gymnastics of any kind, is to commence very moderately, and be regular and systematic. It is on account of their being more orderly and better systematized that the health-lift, dumb-bells, Indian clubs, and various calisthenic exercises are so frequently preferable. Many useful instructions in manual exercises of all kinds may be found in my work entitled, "The Illustrated Family Gymnasium."

Invalids who undertake to regulate their own exercises almost invariably overdo at first. Wishing to "hurry up the cure," they strain some part of the muscular system and actually retard it. "Make haste slowly," is the safe rule. Those who are subject to prolapsion of the lower portion of the bowel, or to bleeding piles, can scarcely be too moderate for a month or so in every new kind of exercise which they resort to. The reason is, that as the vigor and elasticity of some sets of muscles are much weaker than others, and the whole muscular system unbalanced, it takes time, practice, and much patience to get them all acting harmoniously. Some persons with weak digestive organs and enfeebled respiratory apparatus, have comparatively strong limbs. They can walk miles without great fatigue of the muscles of locomotion; while a smart run of thirty feet, or a quick step up a flight of stairs, makes the heart flutter and the breathing laborious. Such invalids need very little of the walking but much of various other exercises. They should practice going up and down stairs and over uneven surfaces frequently, always keeping the mouth shut, and never exercising with sufficient violence to feel the necessity of opening the mouth. And this practice should be persevered in until they can go up two flights of stairs on the "double-quick" without occasioning shortness of breath or palpitation. An excellent "movement-cure" process, and one available to every invalid who can walk, is to strike the abdominal muscles with the flat hand, and, after a little, with both hands, while walking; the blows to be exactly synchronous with the contact of the sole of the foot with the ground or floor, the glottis to be closed and the breath held at the moment the blow and step are made. This compound gymnastic exercise gives a remarkable spring to the muscles of the abdominal walls, as any one can ascertain by making the experiment properly. This movement can be practiced with still greater effect while walking up and down stairs.

Those who have very weak lungs, or who are predisposed to consumption, should resort chiefly to such exercises as are especially calculated to inflate the lungs and expand the chest.

Whatever else they do or omit to do, there is no hope against final consumption except in keeping the lungs well filled with atmospheric air. Pulling against weights, tossing and catching ball, light dumb-bells, wands, etc., are adapted to their purpose. One of the best exercises without the aid of artificial machinery is this: Stand erect, with the arms perpendicular; raise the hands slowly, keeping the arms extended till they meet palm to palm over the head; then let them descend as slowly till they meet, palm to palm, behind the back, or in front, alternating these positions. The arms should go up-and-down to correspond with the respirations—fifteen to twenty per minute. Inhalation should take place as the arms ascend, and expiration as they descend.

CHAPTER XVIII.

BATHING.

The majority of dyspeptics require very little "water-treatment." Before their cases come under the cognizance of the physician, their circulation is low and nerves enfeebled. In nine of every ten of these cases a proper dietary, or a judicious plan of exercise, is vastly more important than bathing, provided any part of the remedial plan must be neglected. Yet bathing is in itself important, and in some cases will ensure success, when without it all other measures might fail. In the early days of "Hydropathy," packs, plunges, douches, and umschlags were overdone, on the false theory that disease was an entity, or a something at war with vitality, which must be expelled or cast out by a "crisis." And even in these days of "Hygienic" institutions and Hygeian "Homes," wet-girdles, chest-wrappers, and head-caps are too much employed on the absurd notion of *drawing out* disease, or purifying the blood through an artificial depurating surface. "Do thyself no harm" is the first principle and the universal rule for managing the bathing part of the treatment.

Not many years ago prolonged and very cold hip-baths—one to two hours, temperature 50 degrees or below, were frequently prescribed as "tonic," "derivative," or "sedative" processes, on the erroneous supposition that water was in some sense a substitute for medicine. Such "heroic" management never failed to exhaust vital power and aggravate the malady, when it did not change it to some new form or worse complication.

Within a few years past, the invalid public, always running to extremes in everything, have been blundering just as absurdly the other way; and very hot treatment—Turkish, Russian, etc., baths, have become the prevailing mania. They are more agreeable at first, but more debilitating in the end than were the extremely cold water processes. I have known many feeble dyspeptics killed by them, and several who were in the incipient stages of consumption hurried rapidly to their graves by them.

The limits of this work will not permit me to explain in detail all the bathing processes, nor even mention all of their applications to all forms and conditions of ill-health, but I must refer those who desire fuller information on the subject to my small work, "The Bath; its Uses," etc.

It is impossible to give, in a work of this kind, anything more than a plan or set of rules to regulate the water-treatment, for the reason that the conditions of the patients are so different; what is best for one may be worst for another; one patient may be benefited by some form of bath once or twice a day, while another would be injured by any bath applied more frequently than once or twice a week.

The following summary of such processes as can be managed in home-treatment, and such rules as all should observe, will serve as a chart or guide for the dyspeptic:

Wet Sheet Packing.—On a bed, or matress, two or three comfortables or bedquilts are spread; over them a pair of flannel blankets; and, lastly, a wet sheet (rather coarse linen is best) wrung out lightly. The patient, undressed, lies down flat on the back, and is quickly enveloped in the sheet, blankets, and other bedding. The head must be well raised with pillows,

and care must be taken to have the feet well wrapped. If the feet do not warm with the rest of the body, a jug of hot water should be applied ; and if there is a tendency to headache, several folds of a cold, wet cloth, should be laid over the forehead. The usual time for remaining in the pack is from forty to sixty minutes. It may be followed by the plunge, half-bath, rubbing wet-sheet, or towel-wash, according to circumstances.

HALF-PACK.—This is the same as the preceding, with the exception that the neck and extremities are not covered by the wet sheet, which is applied merely to the trunk of the body, from the arm-pits to the hips.

HALF-BATH.—An oval or oblong tub is most convenient, though any vessel allowing a patient to sit down with the legs extended will answer. The water should cover the lower extremities and about half the abdomen. While in the bath the patient, if able, should rub the lower extremities while the attendant rubs the chest, back, and abdomen.

HIP OR SITZ BATH.—Any small-sized wash-tub will do for this, although tubs constructed with a straight back, and raised four or five inches from the floor, are much the most agreeable. The water should just cover the hips and the lower part of the abdomen. A blanket should be thrown over the patient, who will find it also useful to rub or knead the abdomen with the hand or fingers during the bath.

FOOT-BATH.—Any small vessel, as a pail, will answer. Usually the water should be about ankle deep. During the bath, the feet should be kept in gentle motion. Walking foot-baths are excellent in warm weather, where a cool stream can be found. The hot-and-cold foot bath consists in holding the feet in water as warm as can well be borne—five, ten, or fifteen minutes—then dipping them a moment in cool or cold water, and wiping dry.

RUBBING WET-SHEET.—If the sheet is dripping wet, the patient stands in the tub ; if wrung so as not to drip, it may be used on a carpet, or in any place. The sheet is thrown around the body, which it envelops below the neck ; the attendant rubs the body over the sheet (not with it), the patient exercising himself at the same time by rubbing in front.

PAIL-DOUCHE.—This means simply pouring water over the sheet and shoulders from a pail.

STREAM-DOUCHE.—A stream of water may be applied to the part or parts affected, by pouring from a pitcher or other convenient vessel, held as high as possible ; or a barrel or keg may be elevated for the purpose, having a tub of any desired size. The power will be proportional to the amount of water in the reservoir.

TOWEL OR SPONGE-BATH.—Rubbing the whole surface with a coarse,

wet towel or sponge, followed by a dry sheet or towel, constitutes this process.

THE WET GIRDLE.—Three or four yards of crash toweling make a good one. One-half of it is wet and applied around the abdomen, followed by the dry half to cover it. It should be wetted as often as it becomes dry.

THE CHEST-WRAPPER.—This is made of crash, to fit the trunk like an under-shirt, from the neck to the lower ribs; it is applied as wet as possible without dripping, and covered by a similar dry wrapper, made of Canton or light woolen flannel. It requires renewing two or three times a day.

THE SWEATING-PACK.—To produce perspiration the patient is packed in the flannel blanket or other bedding, as mentioned in the Wet-Sheet Pack, omitting the wet sheet. Some perspire in less than an hour; others require several hours. This is the severest of water-cure processes, ar in fact, is very seldom called for.

THE PLUNGE-BATH.—This is employed but little, except at the Establishments. Those who have conveniences will often find it one of the best processes. Any tub or box holding water enough to allow the whole body to be immersed, with the limbs extended, answers the purpose. A very good plunge can be made of a large cask cut in two near the middle. It is a useful precaution to wet the head before taking a bath.

THE SHOWER-BATH.—This needs no description. It is not frequently used in treatment, but is often very convenient. Those liable to a "rush of blood to the head," should not allow much of the shock of the stream upon the head. Feeble persons should never use this bath until prepared by other treatment.

FOMENTATIONS.—These are employed for relaxing muscles, relieving spasms, griping, nervous headache, etc. Any cloths wet in hot water and applied as warm as can be borne, generally answer the purpose; but flannel cloths dipped in hot water, and wrung nearly dry in another cloth or handkerchief, so as to steam the part moderately, are the most efficient sedatives.

INJECTIONS.—These are warm or tepid, cool or cold. The former are used to quiet pain and produce free discharge; the latter to check excessive evacuations and strengthen the bowels. For the former purpose a large quantity should be used; and for the latter a small quantity.

GENERAL BATHING RULES.—Never bathe soon after eating. The most powerful baths should be taken when the stomach is most empty. No full bath should be taken less than three hours after a full meal. Great heat or profuse perspiration are no objections to going into cold water, provided the respiration is not disturbed, and the patient is not greatly fatigued or

exhausted. The body should always be comfortably warm at the time of taking any cold bath. Exercise, friction, dry wrapping, or fire may be resorted to, according to circumstances. Very feeble persons should commence treatment with warm or tepid water, gradually lowering the temperature.

The temperature of baths should always be regulated by the temperature of the patient. Very feeble invalids should never take very hot nor very cold baths of the whole surface, although hot or cold applications may be made locally to relieve spasms or check discharges. Dyspeptics who are not emaciated and are not disposed to chilliness may take a tepid ablution—70 to 80 degrees—each morning, and a hip bath each afternoon for ten minutes, at 75 to 85 degrees. For feebler persons the tepid ablution or wet rubbing sheet each other day is sufficient, with the hip-bath on the alternate day. Still feebler persons may take the tepid rubbing sheet one day, the dry rubbing sheet the second day, and the hip-bath the third day, and so on; and if extremely feeble the wet rubbing sheet should only be employed once a week, and the dry rubbing sheet on the other days. The dry rubbing sheet is practically an air-bath, and has never been sufficiently appreciated in or out of health institutions.

Sun-baths are among the best appliances in self-treatment, as most patients can manage them without assistance. All that is needed is a sunshiny place, in-doors or out, where the temperature is agreeable. The patient has only to expose the naked body to the sunlight and make gentle friction over the whole surface with dry towels, or a sheet, for five to ten minutes.

For bathing purposes, as for drinking and cooking, there is a great difference between pure and hard water. Hard and impure water may be better than none, but the rule is, the purer the better.

CHAPTER XIX.

CLOTHING.

So far as the recovery of health is concerned, the dyspeptic has only to dress in the most comfortable manner possible to insure the best possible results. But fashion has so demoralized judgment, perverted taste, and enslaved the minds of our people that it seems necessary to say a good deal on this subject, in addition to what has been said and illustrated in the first part of this work; and as the young ladies all over our country are going to ruin in droves because of the unwholesome garments that they put on, a few more "lines upon lines and precepts upon precepts," may not be inappropriate.

We should always keep in mind that clothing can never *impart* heat to the body; it only retains the heat which the body imparts, which heat of the body is owing to the circulation. The better the conducting material of clothing the more readily the heat of the body passes through it; and the more non-conducting the material the longer the heat is retained; hence in warm weather, linen and cotton, and in cold weather woolen and fir, are best adapted to maintaining an equilibrium of bodily temperature.

Says a writer in the *Science of Health*:

"We can easily understand how a delicate woman, weighed down by a mass of heavy clothing that would fatigue a strong man, with all her physical powers depressed and her circulation reduced to a low ebb, should shiver with cold, within the most abundant wrappings. Do not make the mistake of supposing that a heavy fabric is necessarily a warm one. It is a fact that a few folds of light fleecy material thrown loosely together are a much more efficient protection against cold than a double thickness, even, of some stuff four times its weight, and as compact as a board. Let wool and fur, both in their natural shape bad conductors of heat and therefore well calculated to preserve the natural warmth of the body, enter largely into the attire, and in as light a form as possible; refuse positively to don a garment of any sort in any weather, whose shape and weight shall impede the movements or cause the least sensation of fatigue in wearing it, and above all avoid weighing down the hips with the multiplicity of skirts which are

the abomination of the present age of dress ; give the shoulders their proper share of the weight of the clothing to sustain ; allow no uncomfortable restrictions to impede the free action of the organs of breathing and circulation, and you may bid farewell to pains in the back and shoulders, to headache, and to difficulty of breathing ; you will ride less and walk more, for walking will then be a pleasure, instead of an almost impossible task, as it is to a fashionably-dressed woman now-a-days."

The Washington *Star* newspaper makes the following report of a lecture recently delivered in the Congregational Church of that city, by Mrs. Chandler. It is certainly "plain talk," but as it is talk that every person ought to hear, and this book is intended for everybody to read, it may be properly recorded in this place :

"Our denaturalized, deformed, depraved tastes render us an easy prey to the tricks of the tradesmen on both sides of the water. Suppose our dwellings to be constructed upon a model planned across the ocean, without reference to our climate, our American modes of living, our physical demands, our means, our health or our comfort. Yet that is the stupid way in which we are led in that which comes nearer to us than our houses—the dress we wear.

"Our grandmothers have injured this whole generation with their broad-board corset, and we, already diseased from many other causes beside, and lacking their plumpness and beauty, are completing the wreck by binding and pinching and pressing and padding until the woman who retires at night is so unlike the one who walked by day that we need not wonder that the bridegroom, frightened by the dissolving view, does not know which is the bride, the clothes or the woman.

"The dress of the Friends is simple enough, but proves to be neither economical nor convenient. The Primitive Methodist dress, designed to be repulsive, died away for lack of beauty. When man was recognized as creator of the child, master of the woman, and disposer of the daughter, he arrayed himself accordingly in gorgeous apparel ; but with the partial elevation of woman his pride has taken a new departure, and the average American man now takes pride in the dress of his wife. While he consults freedom, ease, convenience and health in his own dress, he is glad to know that his wife and daughters represent his resources in their wardrobe.

"Emily Faithfull says the larger number of those who come to her in extreme destitution for assistance to obtain employment are widows and daughters of clergymen and other men of moderate income who have been accustomed to being supported, and had never learned any means whatever of earning, accumulating, investing or saving. Philanthropic women in our own country give the same testimony. It is but a step from helpless

destitution to hopeless degradation. Women in this Republic have established a caste in dress which makes a young woman whose father has an income of $1,500 feel that she must compete with the young lady whose father has $15,000 per annum, and the girl who earns $5 a week must in all respects keep pace with the one who receives $15 a week.

"The demands of fashion are more imperative than the demands of virtue, and a young lady feels more disgraced by an unfashionable garment than by soiled under clothing or dilapidated morals. Grinder & Co., willing to swell the list of lost sheep, offer a young lady $3 a week for constant labor, and when she states that it is impossible to even purchase food and shelter for that sum, they politely inquire if she has not some gentleman friend who will make up the balance; or, still more blandly, 'We will give you $20 a week, and you need not work at all.'"

We need only remark, in concluding this chapter, that tight shoes or boots are two evils that should be avoided by all who would keep well, and especially by all dyspeptics who would regain health. Tight-fitting shoes or boots conduce to coldness of the feet, a symptom that always troubles feeble invalids in cold weather; while high heels throw the whole body out of perpendicularity, and render all exercises, more especially walking, not only less pleasant and less beneficial, but in some instances positively injurious. Let a feeble person, accustomed to walk one mile a day over heels one inch thick, reduce the thickness to one-third of an inch, and he may experience at once the difference between laborious toil, and agreeable and useful recreation

Nothing can be said in favor of the "stove-pipe" hat which has so long oppressed the heads of men; it is conducive to congestion of the brain in some degree, baldness, and in persons predisposed to apoplexy actually dangerous. Whatever is worn on the head should be light and soft, or "softening of the brain" may be the final result.

In behalf of dyspeptic clergymen I must protest against the unhygienic manner in which fashion has dressed their necks: and as an article in the *Christian Advocate* expresses the right sentiments, I quote:

Ministers' Cravats.

"Who but Satan could ever have invented a 'minister's choker?' The idea of tying a band, a cravat, or anything else closely about the throat,

thus paralyzing all the organs of the voice, is absurd and cruel in the extreme. Let the neck be free ; and let all the bands around it be from one to two inches larger than the neck itself. If a collar-band is close, unbutton it. The neck will expand nearly an inch when the veins are surcharged with blood during the active mental and bodily exercise of public speaking. Then a loose collar becomes close, and the swollen veins, pressing against the cravat, are unable to bring back to the heart the blood which the arteries have conveyed to the head. The arteries keep pouring their flood into the head ; the veins swell, and cannot return it ; the blood dams up, a dark and livid flood ; the face looks red and purple ; thought ceases, ideas vanish, words fail, and the preacher is confused, stammers, and 'breaks down.'

"'Result of extempore preaching,' says one ; 'Embarrassment,' says another ; 'better stick to the manuscript.' Fudge! it is simply a close cravat—such a rigging would choke an apostle, and no man can preach when he is choked.

"The throat is a wonderful instrument of music. Place the fingers upon it, and every time you speak you can feel the vibration of the vocal organs, producing sound. Anything that even *touches* the throat impairs the purity of these sounds. Fling a cloth over the strings of a piano or violin, and get music out of it if you can. So every cloth which surrounds the throat impairs the sweetness of the voice. Women go with necks bare—men have theirs swathed and bandaged, and ten women have sweet voices where one man has one. A man's voice should be as *pure* as a woman's. Why is it not ? He is shaved and choked.

"God has provided a covering for man's throat—light and soft, it clothes the neck and preserves the health ; but a man gets a sharp iron, scrapes his neck, ties a rag around it, takes cold, has sore throat, bronchitis, and consumption, and dies.

"Preacher of the Gospel, strike for freedom and for life. Fling away the razor. Tarry in Jericho till your beard has grown. Throw off then, gradually, but entirely, the bandages about the neck ; stand erect, breathe freely, think, speak, and act, in blissful exemption from embarrassment, and exemplify what a man can be who fears God and cuts loose from the fashions of a fleeting world."

The sanitary view of the color of clothing is correctly stated by Dr. Nichols in the *Journal of Chemistry :*

"The color of clothing is by no means a matter of indifference. White and light-colored clothes reflect the heat, while black and dark-colored ones absorb it. White is the comfortable and fashionable color for clothing in summer. It reflects heat well, and prevents the sun's rays from passing through and heating the body. If white is the best color for summer, it does not follow that black is the best for winter. It must be remembered

that black radiates heat with great rapidity. Give a coat of white paint to a black steam radiator, which is capable of rendering a room comfortably warm at all times, and the temperature will fall at once, though the heat-producing agency remain the same as before. A black garment robs the body of a larger amount of heat than white, and consequently the latter color is the best for winter garments. It is the best color for both summer and winter. Although this statement may seem like blowing hot and cold, it is nevertheless true. Let those who are troubled with cold feet, and who wear dark socks, change to white, and see if the difficulty is not in part or wholly removed."

CHAPTER XX.

SLEEP.

I HAVE never known a dyspeptic invalid who could sleep too much ; but I have known many whose chief burden of complaining was sleeplessness. The rule for them all is, *sleep as much as possible.* But there is a difference between dosing, dreaming, or lying in bed, and sleeping.

It is a physiological law that assimilation mainly takes place during sleep. When the mental powers are in repose, the food elements, which have been elaborated by the digestive processes during the day, are formed into tissues and structures. The rapid emaciation of the body, and the delirium or insanity which affects the brain, in all cases of protracted wakefulness, prove that no one can be deprived of normal sleep without absolute deterioration of health and certain abbreviation of life. And it is a fact that ought never to be lost sight of in managing irritable and restless dyspeptics, that the nervous temperament and brain-labor necessitate a greater amount of sleep, than do the vital, or motive temperament and manual occupations.

Sound sleepers are generally sound thinkers, for the reason that the wear and tear of brain substance is well renovated. They are also powerful workers and long-lived, for the reason tha the waste of the vital organs is well repaired. And it may be stated as an invariable law of life, that no one ever did or ever

can be deprived of normal sleep without detracting correspondingly from vigor of both mind and body, and length of days.

Much is said in these days of fast living, commercial energy, and the mad pursuit of immediate pleasures and sensuous indulgences, of overworked brains, as a cause of dyspepsia. The true cause is, *abused bodies*. The brain cannot be overworked, provided the vital conditions are properly attended to.

A few years ago Dr. Edward Johnson, of London, wrote a book in which he maintained the paradoxical positions that "dyspepsia is not a disease of the stomach ; constipation is not a disease of the bowels !" The statements are simply absurd ; but they have some degree of plausibility as explained. Dr. Johnson argued, that as mental worryment, a feverish anxiety to get rich, too close attention to business matters, and "overworked brains," were among the chief producing causes of dyspepsia, the real disease was in the brain instead of the digestive organs. But this is confounding causes and consequences. Dyspepsia, as the term implies, affects primarily and principally the digestive organs, be the causes what and where they may.

I am of the opinion that, taking all the people of this country, or of the whole earth, ten persons underwork their brains to every one who overworks them ; and that ten persons overwork their digestive organs to every one who underworks them. Brain-work is in itself as healthful as any vocation can possibly be ; indeed, a certain and a considerable amount of it is essential to the best condition and highest vigor of the vital organism.

Dr. Beard, in a late article in the *Independent*, makes the following judicious observations :

"Persistent sleeplessness is a symptom that should always bring home to us the query whether we are not in some way overworked or overworried. Inability to sleep is one of the most constant precursors and accompaniments of cerebral exhaustion and decline. I have been informed by excellent and direct authority that Mr. Greeley stated during the last campaign that for fifteen years he had not had a good sound sleep. To those of us who have been accustomed to see him dozing on the horse-cars, in the omnibuses, and at church, this statement seems quite surprising ; but it is probable that by these extemporaneous naps he sought to make up for the wakeful hours of the night.

"Sleeplessness is oftentimes the prayer of the cerebral lobes for relief from work and worry, and it should never go long unanswered. Some of the greatest and healthiest natures of the world—like Goethe and Thorwaldsen—have had a "talent for sleeping," which made all their other talents shine at their best, for the brain is never so brilliant as just after fully awaking from sound repose. Sir Walter Scott found by experience that his mind was clearest for thinking out his novels just after rising, and for that reason he took pains to prolong as much as possible his morning toilet; and in the same way we may explain the fact that Calvin loved to compose while lying in bed.

"In great and pressing crises, when our work and our causes for worry are trebled, the temptation is very strong to cut short our hours of sleep; but these are just the occasions when, if possible, we should sleep the most. General Grant is credited with the statement that he owed the preservation of his health during the late war to the fact that, come what might, he always would have his eight or nine hours sleep. At one time, during the Vicksburg campaign, I believe, he was unable to obtain this, and then he began to suffer. Gladstone has declared that when he enters his home he leaves the cares of state behind him.

"Sleep is food for the brain. If a penny saved is a penny earned, then to economize nerve force by rest is, within certain limits, to supply nerve force by eating and drinking.

"To work hard without overworking, to work without worrying, to do just enough without doing too much—these are the great problems of the future. Our earlier Franklin taught us to combine industry with economy; our 'later Franklin' taught us to combine industry with temperance; our future Franklin—if one should arise—must teach us how to combine industry with the art of taking it easy."

Some dyspeptics will sleep best the fore part of the night, and others the latter part, or early in the morning. Such patients should practice "early to bed and *not* early to rise," until the habit of regular and orderly sleeping is acquired. I hardly need say that such persons especially, as well as all other persons generally, should avoid late or heavy suppers, and all exciting exercises, occupations, or thoughts after sunset.

Sleepless dyspeptics are very liable to cold feet, and sometimes despite any quantity of bedding. In such cases bottles of hot water, bags of hot sand, or hot bricks should be placed at the feet. If a couple of bricks are well heated, and wrapped in two or three folds of woolen cloth, they will remain warm ten or twelve hours.

CHAPTER XXI.

VENTILATION.

In the Chapter on Aeration, in the first part of this work, we have seen the relation of respiration to nutrition. The food elements can never be properly elaborated without free and unimpeded breathing; nor can they be well fitted for assimilation unless the air be pure. The impurities in the air we breathe, like those in the water we drink, or in the food we eat, not only poison the blood and obstruct the organs with foreign matters, but prevent the proper aeration of pabulum in the lungs. In both of these ways does impure air tend to derange the digestive organs.

But another very common, I had almost said universal source of blood contamination, is the re-inhalation of carbonic acid gas which has been exhaled, and the inhalation of the waste matters of the body consequent on ill-ventilated apartments. It is because no provision is made for ventilation that so many tenement houses of our cities are so pestilential, ever breeding typhoid fevers and other zymotic diseases. Our common school-houses, not being quite so bad, because only occupied during a part of the day, do not infect their inmates with sufficient rapidity to engender acute diseases, but are foul enough to cause a variety of chronic affections, and predispose to dyspepsia and many of its complications, especially those which are termed scrofulous, or tuberculous, bilious, scorbutic, etc. At this writing the Health Department of New York City are inspecting school-houses, factories, and public buildings, with the view of ascertaining their sanitary conditions. Dr. E. H. James, City Sanitary Inspector, made a report to the Board of Health, a few days ago, from which I make the following extract, which is equally applicable, doubtless, to many cities besides the commercial emporium, and, I fear to many rural districts:

"In connection with the recent inspections of public school buildings and factories, made by the Health Inspectors, I directed, on the 3d inst., Dr.

H. Endemann, Assistant Chemist of the Department, to collect specimens of air from a few of the schools and other public buildings, and submit them to chemical analysis, for the purpose of determining the amount of carbonic acid and other impurities. This duty he has performed, and I herewith present a brief abstract of his report.

"The following places were visited for this purpose: E. C. Higgins' carpet factory, foot of West Forty-third-street; Farren & Guetal's felt factory, No. 319 East Twenty-second-street; Johnson & Falckner's hair-cloth factory, Nos. 246 and 248 Sixth Avenue; Mellen & Co.'s horse hair, No. 518 East Seventeenth-street; Tombs Prison; Elm-street School; Roosevelt-street School; Thirteenth-street School, near Seventh Avenue; Thirteenth-street School, near Sixth-avenue; school, Nos. 97 and 99 Greenwich-street; school in Vandewater-street; school in Madison-street, near Jackson. Specimens of air obtained from two of the factories mentioned were examined and found to contain from 14.7 to 16.7 parts of carbonic acid in 10,000 parts of air, averaging about four times the normal quantity, which is 4 parts in 10,000.

The mechanical impurities generally consisted of the dust arising from the operations pursued, and were either of an organic or inorganic nature. Of the former, fine sharp pieces of hair, by irritating the mucous membrane of the respiratory organs, form the most frequent source of bronchial or pulmonary affections among this class of operatives.

"The air in the male department of the Tombs Prison was found to contain 14.7 parts of carbonic acid in 10,000 as an average of two experiments, and that in the female department 8.45 parts, being also the average of two experiments.

"From our public schools Dr. Endemann obtained seventeen samples of air the examination of which determined the presence of carbonic acid, varying in amount from 9.7 to 35.7 parts in 10,000 or, in other words, from more than twice to nearly nine times the normal quantity. The ventilation in these buildings is generally faulty and can be obtained only by opening the windows, a practice detrimental to the health of the children who sit near or directly under them. The following experiments, made in the Roosevelt-street School, shows the inefficiency of ventilating flues in the wall unprovided with means for creating an upward current. An examination of the air in one of the class-rooms provided with a ventilating flue, was made while one of the windows was open, and yielded 17.2 parts of carbonic acid in 10,000. The window was then closed, and after the lapse of ten minutes another examination gave 32.2 parts of carbonic acid, or an increase of 15.6 parts. The experiment now became to the teacher and children so oppressive that it was not continued. Dr. Endemann says: 'If the accumulation of carbonic acid had been allowed to continue we might have reached within one hour the abominable figure of 110.'

The following is a statement of the average result obtained from the several experiments made in each school.

	Carbonic Acid.
Elm-street School, three experiments	14.6
Roosevelt-street School, two experiments	19.5
Thirteenth-street (near Sixth-avenue) School, two experiments	28.1
Greenwich-street School, two experiments	17.6
Vandewater-street School, two experiments	14.7
Madison-street School, four experiments	24.2

As expired air contains not only this poisonous gas, but also effete animal matter escaping from the bodies of those present, and in quantities in proportion to the amount of carbonic acid exhaled, and it follows that air vitiated by respiration is far more deleterious than air vitiated by the same amount of carbonic acid from other sources, and as the standard of permissable impurity has been placed by high sanitary authority (Dr. Parkes and others) at six parts of carbonic acid in 10,000 of air, it is evident that the best practical talent should be engaged in designing and perfecting means for securing to our public schools adequate and thorough ventilation."

I recommend the Sanitary Inspector to test the atmosphere of some of our first class hotels. He will find it quite as *carbonic* as in some of the school-houses, besides being redolent of a worse miasm, and a more efficient cause of dyspepsia and consumption—tobacco smoke.

The most prevalent error in private houses is insufficient ventilation of the bed-rooms. Many persons who take great pains to have pure air and plenty of it during the day, will take as much pains to exclude it during the night. Many a dyspeptic is fidgety, nervous, and sleepless half of the night, and irritable and melancholy all the next day, simply because he had been told by somebody that "night air is dangerous," and had excluded it from his room as much as possible. Such persons ought to be informed that out-door air is always better and never worse than in-door air.

Young children and infants, though born with fair organizations, are often rendered puny and scrofulous by sleeping in unventilated rooms.

Notwithstanding the many "physiologies for schools," the scores of medical journals, the lectures and writings of health-reformers, and the wide distribution of health periodicals, the ignorance and recklessness of the great majority of the people

on the relation of respiration to health is astonishing. Any one may have a demonstration of this fact any cold or cool day between New York and Philadelphia, during the *stove season.*

A few days ago I was on a train between these places. The day was warm and sunny; there was a little snow on the ground, which was rapidly melting. In the car were two stoves nearly red-hot; nearly every seat was occupied, not one window was raised, and every little ventilator overhead was closed tight. The air soon become so foul that I was actually nauseated, and several of the passengers were nearly asphyxiated—as their semi-sleepy appearance and stupid dozing but too plainly indicated. Unable to get a seat by the window, I occupied myself in passing from one car to another, "standing on the platform" with a decided disposition to trespass on the "rules and regulations" every time I changed cars. In this manner I managed to ventilate myself until a seat next a window was vacated, when I raised the window and ventilated the whole car. Yet in this car were full-grown men and women, well-dressed, some of them ornamented with jewelry and diamonds, and all of them appearing intelligent in the ways of business and fashion. Whose fault was it that they had never been taught that atmospheric air is "the breath of life"?

CHAPTER XXII.

LIGHT.

Bright light and sunshine are among the remedial influences not to be disregarded in the management of dyspeptic invalids. The congestion of the large internal viscera, the liver especially, disposes them to melancholy and gloominess, which condition and feelings are always aggravated by dark and shaded apartments. There is, moreover, an innervating and inspiriting influence in sunlight; hence dyspeptics should spend as much time as possible out of doors in clear weather, only avoiding the direct rays of the sun when they are painfully hot. Window curtains should be eschewed, even though the

sunlight fades the carpet; nor should dyspeptics sit in parlors where the light is excluded, however luxuriously furnished. Light will do more for the vitiated blood, morbid secretions, and neuralgic nerves than glittering mirrors and downy sofas.

It is well known to physicians that the people who reside on the sunny side of the streets of our cities are less liable to scrofula, zymotic diseases, and cholera; and that underground apartments, where direct sunlight never enters, are prolific sources of tubercular affections in all their multitudinous forms. Those whose hard fortune compels them to occupy such places are almost always affected with measly and enlarged livers, and generally also with tuberculosis of the mesenteric glands, frequently extending to the liver and lungs.

Children should be allowed to expose their heads and faces (and the whole surface frequently) freely to sunshine; if freckles mar the beauty of the girl, it will be amply compensated by the fresher complexion and superior beauty of the woman. Parasols, except in the middle of the day during the "heated term," are pernicious things, as are the veils with which so many fashionable or fashion-aping ladies, shade their faces. They invariably render the eyes weak and irritable, aggravate congestion of the brain, and predispose to headache and innumerable indispositions which come under the comprehensive phrase, "nervousness."

There is much food for reflection in the following paragraph, which I copy from the Philadelphia *Evening Star*:

"THE SUN A PHYSICIAN.—Which is to be preferred, a faded carpet or a faded complexion? Nine-tenths of our lady friends will say a "faded carpet," and yet how few of them give a practical expression to their preference. If some of the pale-faced women, so many of whom are seen daily in the street, could be prevailed upon to make up their minds to let the sunlight of heaven visit them more frequently and more liberally in their dwellings, they would soon find that the bright, rosy colors abstracted from the carpets would be transferred to their cheeks again, and, more than this, that the lassitude and weariness of which they complain would be replaced by the freshness and vigor of robust health.

"No greater mistake can be made than that of excluding the sun from the dwelling. The sun is a great physician. Its curative powers are not sufficiently understood. If the benefits of a sun bath daily, of sun in the

parlor, the sitting-room and the bed-chamber were as extensively advertised as are some of the quack nostrums of the day, and as generally patronized, how many more bright eyes and rosy cheeks we should see, and how many less pale-faced invalids. Give Dr. Sun a fair trial.

CHAPTER XXIII.

TEMPERATURE.

Our climate, though marked temperate on the maps, is very intemperate in its vicissitudes, the thermometer ranging more than 100 degrees, and, in some years, 120 degrees Fahr. In summer hundreds die of "sunstroke," and in winter as many die of extreme cold. But this mortality is much more attributable to invalidism, or to unhygienic habits or to other circumstances, than to alternations of temperature. Good health can be enjoyed whenever good digestion can be performed. It is true that man can only attain his highest development within certain isothermal lines; for the relaxing heat of the tropics renders him indolent, while the extreme cold regions make it impossible for him to do much more than provide necessary food and shelter. There is, however, no necessity for dyspeptic invalids to go away from any non-malarious part of the United States in order to recover health, provided they make the proper use of such hygienic measures as are obtainable in all healthful localities. Eastern consumptives have a fashion of going to Minnesota; but as they generally depend on the climate there to effect the cure, and disregard nearly all other conditions of health, they seldom recover, except from the incipient stages of their ailment. And northern dyspeptics have a fashion of spending their winters in Florida, the Bermudas, or some other place where milder skies prevail in the winter season. They may enjoy themselves better in these places, during the cold months, than they could at home, as they "live, move, and have their being," more in the open air, and may prolong life; but they seldom recover. Dyspeptic, like consumptive invalids, generally carry all their bad

habits with them, trusting to the "one-ideaism" of *climatopathy;* but as they cannot travel away from themselves, if they carry their maladies and the causes of them wherever they go, changes of place, as a general rule, only make a miserable life more tolerable, and perhaps more protracted. Proper clothing, suitable dwellings or apartments, and hygienic habits, render it possible for all curable dyspeptics to recover health in almost any latitude or locality where it is fit for a civilized human being to have his "local habitation and his name."

A writer in the *Atlantic Monthly* for March, 1873 (George A. Shone), proposes a plan for superceding Florida and the Antilles, more magnificent and praiseworthy than useful or practical. His "institution" contemplates a forty-acre crystal palace, so arranged with steam-heaters and ice-reservoirs that the temperature could be regular to any degree desired; walks, fountains, statuary, flowers, shrubbery, etc., are to make the inside attractive, while boulevards, parks, play-grounds, gardens, drives, and hotels are to surround the immense structure of glass and iron. The cost is estimated at some twelve millions of dollars, and the income—two dollars a day for board—at nearly one million. The financial basis is well arranged, but who would be benefited by it?

It would be patronized mainly by the idlers who would go there to "kill time," and the pleasure seekers, who are forever in the pursuit of new sensations under difficulties; and there are quite too many attractive places of resort for such persons already.

If Mr. Shone supposes that dyspeptics could be happy in such an Eden, it is because he has not had many of them to manage. A majority of them would find the ideal paradise a real purgatory. The contrast between so many things to enjoy and their never-absent but ever-changing aches and pains, would aggravate their wretchedness, transform hypochondria to madness, and doubt to despondency. A plain cottage, a rough road, a sylvan grove, a natural river or stream, and society among farmers or mechanics who pursue some useful

vocation, and whose habits, dress, style and associations are more in accordance with the order and simplicity of nature, is what they need. When some intelligent philanthropist will arrange a forty-thousand-acre farm into gardens, and orchards, and workshops, construct plain and convenient dwellings, and provide work where invalids can pay their way, as well as play grounds for recreation, he will do one of the things needful. It is the *poor producers*, not the *rich consumers*, who should be the study of the world's charity and benevolence.

CHAPTER XXIV.

MENTAL INFLUENCES.

Pleasant scenery and cheerful companions are certainly among the desiderata for dyspeptics. They must have exercise, and whether work or play is best, when only one is available, depends on which is most enjoyable; for exercise, like food, does most good when it is best relished. In a perfect system of exercise for invalids, a variety of work, and different plays, would be embraced in the remedial programme. All work and no amusement begets stupidity and adds to melancholy; while all play and no useful work degenerates into selfishness and dissipation. The wise man and skilful physician will combine the two in such manner as to suit the various conditions of the patients.

Many games are amusing, and so far useful; and these should be varied so that some should be intellectual, others social, and others physical. Dyspeptics are ever prone to dwell on their morbid sensations, and seem never to be so *miserably happy* as when relating the endless story of their sufferings to others, and especially to the physician. They should be led into other habits and out of this one; for, unless the confirmed dyspeptic can be induced to think little and talk less of his bad feelings, the chance of ultimate recovery is small.

There is a wide field for the exercise of discretion on the part of the medical adviser in managing dyspeptics; and the

chief point of skill is to guide his intercourse with them so as to avoid depressing seriousness and irritating levity. His manner should always be positive and hopeful, without being dogmatic or flattering. There are no more suspicious persons under the sun than dyspeptics who feel themselves running down in spite of all the most nutritious food their weak stomachs can tolerate. If you look, talk and act with dignity and gravity, they imagine your prognosis is unfavorable; while if you treat their symptoms lightly, or do not give sufficient attention to their manifold distresses, and cannot satisfactorily explain all of their morbid sensations and utterly inexplicable *nervousnesses*, they are apt to think your diagnosis is at fault, or that you do not take proper interest in their case.

The Hygienic physician (and no other ought ever to meddle with a confirmed dyspeptic), should give the patient one thorough examination; listen with patience (if it has to be assumed for the occasion) to all he has to say, relevant or irrelevant; explain the nature of his case; indicate its complications and their special causes; give him the rationale of his leading symptoms; tell him the plan of treatment to be pursued, and then instruct him to dismiss all thoughts of his condition and feelings, save when they are manifestly new or greatly aggravated, and give his whole mind and might to doing the things which make up the remedial plan.

He should never talk nor think, if he can help it, about food while he is eating; but take the quantity and quality that his judgment approves, and say to the stomach, "Peace, be still."

Nor should he watch his sensations after meals, to see how the food agrees, for this is almost certain to make it disagree. "A merry heart doeth good like a medicine." Indeed it is medicinal in the hygienic and best sense of that word; and happy is the physician, and blessed is the patient, when the judicious manner of the one, and the cheerful compliance of the other, render the recovery of health comparatively easy.

The influence of imagination on the vital functions has always been recognized; and it was this recognition that enabled the ancient physicians to be so successful with charms, amulets,

and incantations, as it enables thousands of persons at the present day to perform cures which seem very marvellous to those who do not understand the rationale.

Plato taught that a person must have a natural disposition towards a thing if he would become that thing. It is most true that where the disposition dwells on an imaginary ailment, that ailment or some other will be the result of the mental influence; and true also, of the opposite mental state, when the mind dwells on anticipated health the doctor has much less to do.

We should not be too hard on the quacks so long as the people "will have medicine." True, the medical profession ought to teach them the better way; but as they do not, as invalids must have something to pin their faith to besides reason and common sense, and as the empirics are quite as safe as the regulars in their manner of dosing and materia medica, it would be a calamity to suppress them if we could, unless we could at the same time suppress the materia medica of the regular profession.

Lord Bacon has said: "The imagination is next akin to miracle-working faith;" and that "It needeth a Delian diver rightly to pursue the study of the imagination in disease." Edward Spencer, in the *Atlantic*, in an article entitled "A good word for Quacks," remarks:

"There is no doctor who would not rather contend with serious and even vital maladies, than with the thousand and one conceits and hypochondriacal fancies of the *malade imaginaire*, who, aggrieved by dyspepsia, and with his mind all awry, demands to be treated for every disease under heaven but the one mental lesion that makes him such a thorough nuisance. He has, indeed, no mortal malady; but does not his imagination give such as real and actual a twist to the nervous currents of his body as the magnet gives to the course of the compass? It is a nervous condition like this—and all sickness is accompanied with more or less general disturbance of the nerves—that the doctor and the quack equally find their opportunity, and establish their prestige, by working upon the excited and despondent or expectant feelings. The force of sympathy, even, can work a miracle, if the mind be in this state."

CHAPTER XXV.

OCCUPATION.

USEFUL, and, in many cases indispensable as may be the remedial measures treated of in the preceding chapters, there are many cases of invalidism in which occupation is the one thing needful. There are three classes of society, considered in reference to health, the working class proper, who have regular vocations, but who can have needful leisure for recreation and education—the middle class; the drudging class, who are toiled to death like beasts of burden prematurely, and the idle class. I need hardly say that the last two classes are abnormalities in sociology; and it is difficult to say which is most to be pitied. It is hard to labor incessantly with no reward except just food, and raiment, and shelter enough to keep the muscles in working order; no opportunity for mental improvement, and no hope of a better future in this life; and this is the condition of more than one-half of the human race. But who knows the miseries of "upper tendom?" I am of the opinion that to rust and rot to death, or to die of dissipation, is quite as disagreeable, all things considered, as to be worked to death. The hopeless pauper may have few enjoyments; but the great law of compensation does not make an exception in his case; he is exempt from a thousand miseries that those who only live to eat, drink, dress, and enjoy the fruits of others' labors, suffer continually. Indeed, one can hardly walk through the thoroughfares of the world's great cities, and witness the meretricious displays of what is called wealth and fashion, without a thought, if he is reflective, that one class of our people make themselves miserable in order to have other classes think that they are happy. There are thousands of beggars who would not exchange their "home" in some stifling attic, for palatial mansions, provided they were obliged to take the vexations, cares, sickness, doctors, nurses, and their attendant and inseparable disappointments.

Invalids should have some occupation that is useful, and some object in life ; for it is the thing to be achieved in the distant though uncertain future that energizes the mind, invigorates the body, gives persistence to effort, overcomes obstacles, and keeps mind and body in harmonious relations to each other.

God and nature have so ordered the universe that one person can no more do another's work, without damage to both than one can do another's eating, or sleeping, or breathing.

As dyspeptics are more prone to depression and melancholy than most other classes of invalids, whatever can inspire hopefulness should be made available, if possible. And, valuable as are gymnasia, games, plays, etc., there are many cases in which all together do not equal in remedial efficacy, any useful and healthful occupation I have many times wondered that, with so much surplus wealth in the land, and so much benevolence seeking expression and practical application, not a single dollar was ever given for such an institution as human society needs more than all others—an institution to provide health conditions, employment, and hygienic education and training for the sick and needy.

Much is said, now-a-days, of persons dying of overwork. But there was never a greater error. The *Golden Age*, in a recent issue, talked the right sentiments on this subject :

"The newspapers never tire of preaching pleasant homilies on overwork. Gov. Geary died of that disease. So did Mr. Greeley. And so did Mr. Raymond. And so do hundreds of other men whose work the world wants, and whose wisdom and experience are sorely needed. We have committed the homily to memory, and can produce it with variations and illustrations whenever circumstances require us to talk without saying anything. But the plain truth is that not one man in a million dies from overwork alone. It is not the overwork, but working in unwise ways, without that care of vital mechanism which is absolutely necessary to keep it from wearing out at one point or breaking down at another, which does the mischief we so loudly deplore. One man kills himself by brain-work, because he is too indolent or stupid to balance the account by a proper amount of muscular exercise. Another kills himself by irregular habits, or exposures, or strains, or over-indulgence. Sometimes a working man steals an hour or two away from sleep every night, and is put to death for petit larceny. Sometimes a man

dies because the sober cares of life have completely choked the laughter-valve of his nature and ten perish from excess of worry where one dies from excess of work.

"The example of Talleyrand, Napoleon, Brougham, Humboldt, not to mention other eminent toilers, goes to show that there is scarcely any limit to the amount of labor a man can do, provided that he will keep himself at the highest working condition, and use himself with the same wisdom and care with which he manages a valuable horse or a finely-constructed machine. If he will insist on compelling the animal he is bound up with to do two days' work in one day, or to strain himself by some terrible over-exertion, or to tug and toil in the harness until every particle of elasticity is lost and the possibility of recuperation is gone—if he will neglect the fine and delicate mechanism until friction wears it out in one place and rust eats it out in another, and dust clogs its joints and cinders cut through its nicely adjusted gearing—he must pay the penalty of his neglect in impaired power and a premature breaking down. It is not less labor that men want, but wiser methods of working, more varied occupation, better care, more frequent recuperation, and larger invoices of mirth and joy, with nobler incentives and hopes. We are satisfied that had Mr. Greeley given half the thought to caring for himself that he gave to the care of cattle, had he balanced his exacting brain-work with a corresponding physical exercise, if he had taken a daily bath of side-shaking and soul-expanding laughter, if instead of keeping one set of faculties pressed down upon the grindstone until they were ground clean away he had given each set its turn, he would doubtless have done more and better work and been alive to-day. And so of the other men whose premature departure is usually attributed to the same cause. It is not overwork but unwise working that kills. It is not less labor, but larger and wiser living that is needed to prolong life and enhance its results."

On this overwritten subject of overwork, a late issue of the *Saturday Review* has some pertinent remarks:

"Overwork is sometimes a simple appeal for compassion; its supposed victim is merely acting the part of pallid student, to impress the audience at home. More frequently it is a delicate periphrasis for other evils of a less presentable nature. Its sufferer may be imputing to intellectual exertion what is really due to a misguided passion for supper-parties and to nights spent in devotion to loo. In short, overwork is a highly convenient veil to throw over the innumerable methods in which a youth may injure his constitution. If the physical mischief produced by excessive study could be fairly compared with the mischiefs produced by other causes, we have a shrewd suspicion that their sum total would be infinitely less than is generally supposed. We may say pretty confidently, from a tolerably wide experience, that the number of victims to overwork is utterly insignificant

compared with the number of victims from other causes, and with the number of cases in which the excuse is imposed upon soft-hearted relations.

"Business which keeps a man in a constant oscillation between ruin and a fortune, which follows him home and prevents him from sleeping, is incomparably more trying than almost any quantity of downright steady work. The Stock Exchange, at New York, must fill lunatic asylums more quickly than all the most laborious Universities in Germany, England, and America. A professor may labor at the collation of manuscripts, or even at the search for the absolute, for fifteen hours a day, and be all the better for it; a third of the time spent in studying the ups and downs of Erie Railroad shares, and staking money on the result, would qualify him for a strait-waiscoat or a halter in a year. As, however, speculation has a comparatively discreditable sound, the evils which it produces are very frequently placed to the account of its more respectable rival, straightforward industry. We choose, in one form or another, to spend a great part of our time at the gaming-tables which exist in an infinite variety of forms in every capital in the world, and then complacently complain that we have injured ourselves by over application to our duties.

"As a rule, therefore, we should say that the complaints of overwork are amongst the most flimsy of all the excuses set up by men for the evils which they bring upon themselves. Very few people really work hard; and when they do it generally agrees with them. Directly or indirectly idleness does fifty times as much mischief, for the best cure for the love of excitement is steady application. A vast amount of good pity is thrown away in the world, and, instead of solemnly warning our friends not to do too much, we should find it simpler to refuse the indirect compliment for which they are maneuvering, and advise them to relax their minds by a little strenuous activity."

Another very prevalent error is the notion that intellectual vigor and a pleasurable life are incompatible with the declining period of life, or old age. The world is full of examples to the contrary, and all periods of history record them. Cornaro became a broken down dyspeptic at forty; but by adopting a "sober and temperate life," enjoyed good health till nearly one hundred.

It is said of Arnauld, the Jansenist, that he wished his friend Nicole to assist him in a new work. Nicole replied: "We are now old; is it not time to rest?" "Rest," exclaimed Arnauld, "have we not all eternity to rest in?"

Dr. Samuel Miller says: "There is no doubt that the premature dotage of many distinguished men has risen from their

ceasing, in advanced life, to exert their faculties, under the impression that they were too old to engage in any new enterprise."

When John Adams was 90 years of age he was asked how he kept the vigor of his faculties up to that great age. He replied: "By constantly employing them; the mind of an old man is like an old horse; if you would get any work out of it you must work it all the time."

We have on record many remarkable instances of earnest and successful workers after they have passed into the period known as old age.

Ecclesiastical history tells the story of Casidorus, who at the age of 70 retired to a monastery and devoted the remaining twenty years of his life to literature and religion; and of Epiphanius, who became an author at 64 and wrote several large works before his death.

Between the ages of 58 and 67 Baxter wrote forty works; after the age of 66 some of his most valuable works were written.

"The only remarkable thing," says Hannah Moore, "which belonged to me as an authoress, was that I had written eleven books after the age of sixty."

Says Lord Brougham, at the conclusion of his autobiography: "If any statements have been feebly and inaccurately rendered, it may be remembered that I began this attempt after I was eighty-three years of age, with enfeebled health, failing memory, and but slight materials by me to assist it.

Plato died at the age of eighty-one, it is said, with pen in hand; and an account is given of another who wrote a history of his time at the age of one hundred and fifteen.

William Cullen Bryant is a living example of mental and physical vigor, at nearly threescore and ten, equal to the best days of early manhood, because of a sober and temperate life, and due attention to vital conditions while performing immense mental labor.

Mrs. Sarah J. Hale, now eighty-five, is as entertaining (and more instructive) with her busy pen, as she was fifty years ago.

It would not be difficult to name a hundred living persons of distinction who illustrate the principle that long life is consistent with great mental activity, and also with active and constant manual labor. But the final conclusion of the whole matter may be summed up in these words: *Hard workers often live to be old; idlers, seldom.*

In conclusion, I will add the testimony of my own personal experience; which is this. Thirty years ago I adopted the mode of life recommended in this work; and, although I have often felt obliged to labor inordinately, and have done much literary night-work, I have not, during the last thirty years, lost one day's work because of physical inability to do it, and have not at any time been in a mental condition that obliged me to decline literary work, when I have had time and opportunity to do it.

APPENDIX.

The following article, written by request for a newspaper, which, however, refused to publish it because of its "radicalisms," is appended to this work, as being a true exposition of the case of Mr. Greeley, and as applicable to many similar cases which are continually occurring. The writer is morally certain that many valuable lives have been and may be saved, by adopting the plan of treatment which is mentioned as applicable to the case of Mr. Greeley.

DEATH OF HORACE GREELEY.

BY R. T. TRALL, M.D.

"LET us have peace" in the dying hour. When the would-be assassin of the late Governor Seward was called on to "report" himself at the gallows, and "be hung by the neck until he was dead," he was offered the customary brandy to support him through the terrible ordeal. "No," replied the condemned malefactor, "I intend to die sober."

It is a horrible reflection on a false medical system, which mistakes the fever of stimulation for vital invigoration, that so few men of prominence in society are permitted to die in their "right mind." They are plied with stupefying narcotics, or delirium-inducing stimulants, until the brain reels and the recognitions become illusive, and finally, "the emancipated souls ascend to the bosom of their God" in a state of gibbering intoxication, or "dead" drunkenness.

We rarely read of the medical treatment of any distinguished person, without brandy and morphine, or their equivalents, being among the leading remedies. Precisely how this was with the late Horace Greeley we seem not likely to know, except inferentially, as the physicians who know the most about the matter, positively refuse to give any information except in vague generalities. Perhaps the people have no rights in this affair which the medical profession is bound to respect. But, it concerns the

living to know how Mr. Greeley was treated, and why he died. Can any one's life be safe if the doings of the doctors must be shrouded in mystery? If the treatment of any given case will bear criticism, what have the doctors to fear? If it will not, the people ought to know why. Is not the suspicion legitimate that Mr. Greeley's physicians *dare not* submit their medication to public judgment? It may be argued that non professional persons are not proper judges. Granted; but, cannot the learned physicians explain and defend?

I think it is not difficult to show that all of the professional opinions which were given of Mr. Greeley's disease were erroneous, and that all of the medication, so far as it has been published, was worse than useless. In making this sweeping statement I wish it distinctly understood that I bring no charge against the integrity nor intelligence of his physicians. I impeach the system, not the men. That being false, the treatment could not have been true; for physicians, like other persons, must practice according to their theories.

With regard to the diagnosis, we have five or six opinions from as many physicians: "acute mania," "inflammation of the brain," "paralysis of the brain," "hemiplegia," and "organic disease of the brain." The most eminent of the physicians who were called in consultation, were as contradictory in their opinions as they were celebrated for skill in *just such cases!* But, the history of the patient, and the causes and symptoms of the "nervous prostration," which all agreed was the essential condition, do not justify any one of the diagnoses. That Mr. Greeley had been excessively worked, and needed quiet, rest, sleep, is plain enough; and this was the whole case. But, as he did not incline to sleep, he was drugged to stupefaction, and therein was the fatal mistake. It was this first drugging that induced the subsequent alarming symptoms which so confounded the diagnosis of the physicians.

Nearly a year ago, the Prince of Wales was supposed to be dying. For several days he lay, as was supposed, at the point of death at Sandringham; and he was only saved by an incident which does not often happen under such circumstances—the discontinuance of the medicine. So long as the doses were swallowed, the symptoms continued alarming, and the accumulated doses finally occasioned so much "nervous prostration," that his four attending physicians, mistaking the effects of the medication for fatal complications, diagnosticated "goneness of one lung," and "perforation of the bowels." Had the illustrious patient been a politician instead of a prince, the doctors would probably have sought for the diagnoses in the head instead of the vitals, and doubtless have discovered as many impossible things as were ascertained in the case of Mr. Greeley. But, fortunately for the Prince, Dr. Gull was called in consultation, and the treatment opportunely changed from "brandy and other stimulants," to milk. And the milk "acted" marvellously! In a few hours thereafter the patient

was convalescent, and in twenty-four hours was out of all danger. There are two theories extant in relation to this wonderful change. I shall only state them and leave the reader to his inferences. One is that milk, under certain peculiar and extraordinary circumstances, is a medicine of peculiar and extraordinary virtues ; and the other is that, as soon as the patient had eliminated the drug medicines he began to recover. Those who adopt the latter theory say that the patient was never in any danger, except of being drugged to death, as was his father in 1862.

Humanity is naturally tough. Human beings do not die of overworked brains, want of sleep, fatigue, or "nervous prostration." And Mr. Greeley was perhaps the last man in all this nation to be seriously diseased, much less to die because of political disappointment, domestic affliction, losses of property, position, or friends. He was "a man of sorrows and acquainted with grief," as all true reformers and real philanthropists are. His great good heart, and mighty though sometimes erring head, were accustomed to pecuniary disasters, to bereavements that rive the soul, and he was familiar with both victories and defeats in moral, political, and social conflicts. Few men ever had a better preparatory education for all possible vicissitudes of fortune, and none ever more clearly realized or complacently contemplated the uncertainties of political controversies. That he worked hard for and earnestly desired to attain the highest position of honor and influence may be admitted. But, to suppose that failure maddened or inflamed his brain and demoralized his whole nature, is simply absurd. He was fully aware of all that could possibly happen in the immediate future, and fully prepared for it. To talk of Horace Greeley dying of "presidency on the brain," though he might have been mistaken or unwise, or sickening unto death because of the death of his wife—who had been dying of consumption for several years—is a libel on his name and fame. And add to these afflictions severe toil, night-watching, and the vexations of injudicious friends, selfish employees, and knavish and hypocritical associates, and still Horace Greeley was man enough to have endured the whole without dying.

The elephant, whose prowess fears not all the animals of the forest, may be destroyed by an infinitesimal insect. A man of powerful body and giant mind may die of a single grain of poison or of medicine. If Horace Greeley, after the presidential campaign was decided, and his wife's remains had been deposited in the "city of the dead," could have had undisturbed quiet for a few days, he would, in all human probability, before this time have resumed his proper place and sphere as editor of the *Tribune*.

The effects of prolonged watchfulness, excessive labor of body and mind, disappointed ambition, and personal grievances (and these are all the elements of the case), are, accumulation of blood in the brain, constituting cerebral congestion, and deficiency of blood in the surface and extremities. This general condition of unbalanced circulation is evinced by hot head or

pain in the head, with cold feet, rendering the patient sleepless, irritable, and semi-delirious. A little aggravation of this congestion would render the patient apoplectic; but there is nothing in this condition or in the attending symptoms, taken as a whole, on which to predicate "mania," inflammation," or "paralysis." Dyspeptics very frequently have a similar condition, with every one of Mr. Greeley's symptoms, for months, and yet recover. It is not unfrequent for dyspeptics who are not seriously, certainly not dangerously sick, to sleep so little and so fitfully that they imagine they do not sleep at all.

The medication that Mr. Greeley needed was simply hygienic. I think any competent nurse, left to his or her wits, without the aid or interference of physicians, would have cured the patient. If he had been left to himself, and all visitors kept away, he would in due time have slept from shear exhaustion, as patients do after a severe fever. And the sleep would have saved him, as it does them, when they are not annoyed by attendants. This is nature's method of balancing the circulation and restoring "the normal play of all the functions." It is a mistaken pathology that is always seeking the cause of deranged vital functions in paralysis or other affections of the brain. The brain is the most vitalized structure of the whole system, and cannot be paralyzed.

The following plan of treatment would have been proper for Mr. Greeley, and has been invariably successful in similar cases, in the hands of Hygienic physicians: He should have had a warm bath, just prolonged enough to bring the blood well to the surface, and then put to bed in a quiet, well-lighted and well-ventilated room, of an even and agreeable temperature. His feet should have been kept constantly warm with bottles of hot water, bags of sand, heated bricks, or something similar. So long as the head was hot and painful a cool wet cloth should have been applied to the forehead and face, covering the eyes so as to favor sleep. If the head was affected at any time with neuralgic or intermitting pains, without heat, warm wet cloths (fomentations) should have been applied until relief was obtained, and then the cool wet cloth resumed. All visitors should have been excluded. Nothing is more pernicious in such cases than meddlesome attentions, the constant calls of friends and neighbors, frequent interviewings of reporters, constant quizzing of curiosity-seekers, and perpetual examinations of physicians in watching the ever-changing phases of the multitudinous diagnoses. Mr. Greeley had enough of these annoyances to account for the "taking off," to say nothing of the abominable drugging. He should not have had but a single watcher, lest whispering might disturb him, and even that watcher should have occupied an adjacent apartment—never the same room; for in such cases of "extreme nervous prostration," the mere presence of another in the room may prevent the all-important sleep.

How different was the management in Mr. Greeley's case! The physicians would let him have no peace. Friends and neighbors were annoying

him continually. He was transported "from pillar to post;" and tested and experimented on till the last breath. "Did he know this person?" "Could he recognize Mr. Weed?" Did he know he was insane? Was he conscious of mania or paralysis? The two latter questions were probably not asked, but they are no more absurd than those which were asked. No wonder the tormented sufferer lost all power of normal recognition, and could only gibber incoherent phrases as one does in delirium tremens: "I died when I was born, and was born when I died." Left to himself, I repeat, Horace Greeley would have slept; and if his sleeping had not been disturbed, as it should not have been, he would in due time have awakened, and then, if his vital organs had been so exhausted that death was inevitable, he would have entered the dark valley of the shadowy land, in the full possession and use of every power and faculty of the immortal mind, as all persons do who die a "natural death."

The doctors did indeed recognize the maxim, "sleep or death," as applicable to Mr. Greeley's case. And now let us see how they tried to put him to sleep. Dr. Krackowizer, who first took the patient in hand, gave him, according to the Philadelphia *Press*, "energetic" treatment. The New York *Sun* of Dec. 6, tells us that this energetic treatment consisted of thirty grains of bromide of potassium daily. Verily it was energetic. Dr. Krackowizer claims that this was a moderate dose. Let us see what the highest authority (*United States Dispensatory*, page 1152) says of this drug: "When given in large doses (five drachms daily) M. Rames found it to produce a peculiar intoxication, attended with torpor and drowsiness. In one case this condition was attended by an insensibility so complete that the puncture of the skin with a suture needle was not felt, and the titillation of the conjunctiva and fauces with a feather produced neither winking nor a desire to vomit."

Dr. Krackowizer says the patient was more quiet for several hours after taking the first dose. No doubt. But it was the quiet of apoplectic stupor, instead of the quiet of recuperating sleep. All of the salts of potassium, (nitre, tartar emetic, etc.) are among the most debilitating agents of the materia medica. A few grains too many, administered in a single dose, have frequently occasioned death. True, many persons can bear, without dying, and without appreciable stupor, many times the quantity that Mr. Greeley is *reputed* to have taken. But in his condition of extreme nervous prostration, a small dose of an extremely depressing medicine may have had a great effect.

Dr. Hammond thought the treatment should have been just the reverse —stimulation. The celebrated Dr. Brown-Sequard, from Paris, who *didn't* "cure the Hon. Charles Sumner," thought Mr. Greeley had "paralysis of the base and top brain." Dr. Hammond said this could not possibly have been the case; and in his opinion the disease was just the opposite—"inflammation of the membranes and cortical substance." Dr. Brown-Sequard

said that one side of Mr. Greeley was paralyzed. Dr. Hammond states that this was not the case. Dr. Choate, who had the patient in his house for several days, refuses to say anything about the manner in which he treated him. Dr. Brown, of Bloomingdale Asylum, refused to tell the *Sun* reporter anything definite. And is this all the people are to know of Mr. Greeley's sickness and treatment from his five physicians? Perhaps it is none of the people's business. Possibly it may be altogether a private affair between the disagreeing doctors and the unfortunate patient. But the circumstances are vividly suggestive of the inquiry, whether society exists for the benefit of the medical profession, or whether the medical profession should exist for the benefit of society?

There is one other view of this case which concerns all persons who are liable to fall into the hands of the physicians. It is the usual, almost universal practice of the medical profession, to give persons in Mr. Greeley's condition, and all patients who are feeble or prostrated, alcoholic stimulants. Indeed, stimulation and alcohol have come to be very nearly correlative terms. Dr Hammond thought stimulants should have been administered to Mr Greeley instead of bromide of potassium. Perhaps they were by the other physicians, who keep their own secrets Be this as it may, there is a fatal delusion abroad on this subject of alcoholic medication To Mr. Greeley it was of no sort of consequence whether he took the recognized stimulant or the admitted depressant. Each is equally life exhausting. The stimulation of alcohol is nothing more nor less than a feverish disturbance, which has been mistaken for "supporting vitality." Alcoholic medicines are almost universally prescribed, because they augment the heat of the body and increase the circulation of the blood. But the truth is, they do not do it. They simply occasion a disturbance of circulation and temperature, and so does bromide of potassium. After a dose of alcohol some parts of the body will be warmer and others colder (as in all fevers), and some organs will have more circulation and others less (as in all fevers also). But the sum total of circulation and temperature is actually diminished, as in all febrile diseases. It is time this matter was understood by physicians, and they would understand it if they would look at the facts on record without prejudice. Dr. B. W. Richardson, of London, has demonstrated, by a series of careful and elaborate experiments, that all forms of alcoholic liquors are just the reverse of stimulants, so far as the whole *force* of the circulation, and the whole *amount* of animal temperature are concerned. Directly or indirectly they waste vital power, as every other poison does, whether the person who swallows it is sick or well. Hygienic physicians never administer stimulants in cases of debility, prostration, or "running down" after fevers, and that is one of the principal reasons why their patients so generally recover.

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