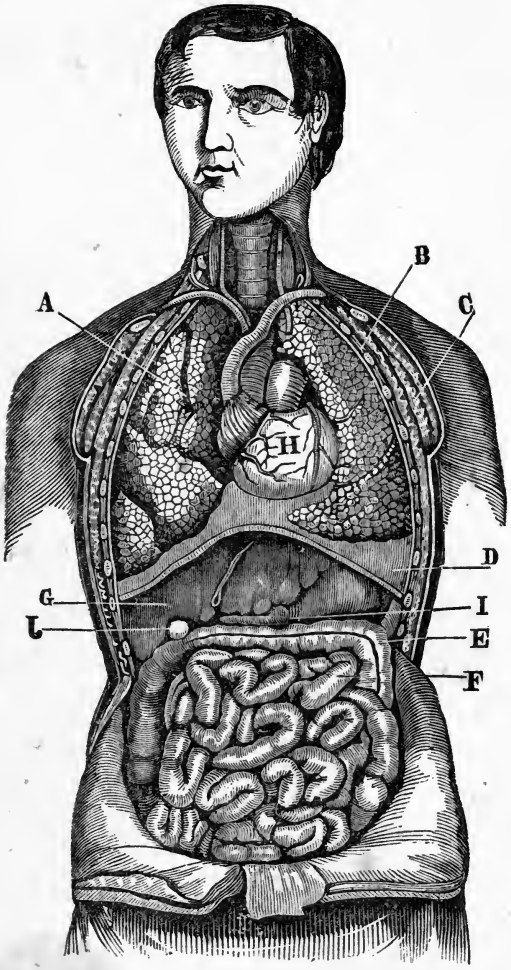

A
B
C
H
D
G
I
L
E
F

SEVEN LECTURES

ON THE

PHILOSOPHY OF LIFE,

AND THE

ART OF PRESERVING HEALTH.

By C. W. GLEASON, M.D.,
PROFESSOR OF THE INSTITUTES OF MEDICINE AND SURGERY, ETC.

"The first Physicians by debauch were made,
Excess began, and sloth sustains the trade:
By toil, our long-lived fathers earned their bread—
Toil strung their nerves and purified their blood;
But we, their sons, a pampered race of men,
Are dwindled down to threescore years and ten.
Better to hunt in fields for health unbought,
Than fee the doctors for a nauseous draught;
The wife for health on exercise depend—
God never made his works for man to mend."

DR. FRANKLIN.

Delivered at the Ohio Mechanics' Institute in Cincinnati

AND

REPORTED BY E. P. STONE,
PHONOGRAPHER.

COLUMBUS:
PRINTED BY SCOTT & BASCOM.
1852.

TO

W. J. Mullen, Esq.

PRESIDENT OF THE FEMALE MEDICAL COLLEGE OF PENNSYLVANIA.

AS A SLIGHT TESTIMONIAL OF REGARD

FOR HIS MANY VIRTUES

AND LONG CONTINUED EFFORTS TO AMELIORATE AND IMPROVE THE CONDITION OF THE UNFORTUNATE AND FRIENDLESS,

These Lectures

ARE MOST RESPECTFULLY DEDICATED BY

HIS FRIEND,

The Author

LECTURE I.

INTRODUCTORY.

ΓΝΩΘΙ ΣΕΑΥΤΟΝ—Know Thyself—was inscribed upon the oracle at Delphos by the ancient Sages and Philosophers, for, adds the modern poet, "the proper study of mankind is man." There is no object, Ladies and Gentlemen, in a material point of view, which is more worthy of our study and investigation than the structure, form and functions of the various organs of the human body. The study of this wonderful system is not only important, but it is intensely interesting; for as we advance in its investigation, we shall not fail to observe that man is indeed fearfully and most wonderfully made!

In view of the very great interest and immense importance of the subject, is it not strange that its investigation has so long been neglected by the great mass of our fellow men? Go where you will into our various institutions of learning, and you will there find the pupils engaged in studies of comparatively little importance, while that great and beautiful science which teaches us the nature of ourselves, and our relations to the external universe and the perfect system of laws which govern it, is passed by unheeded!

There are few objects, indeed, with which we are less acquainted than with our own natures, and yet we are continually acting as though we were acquainted with ourselves, our capacities, our wants, and the means of improving our moral, physical and intellectual condition. Is it, then, possible for the blacksmith to mend a watch, the machinery of which he is entirely unacquainted with, or for the statesman and philanthropist to improve the moral, physical and intellectual condition of mankind, without first rendering themselves perfectly familiar with the nature of that beautiful organization which enters into the formation of man, as well as the laws which regulate its development and maintain its healthy action down to the latest period of time which is assigned to man?

If we turn our attention, my friends, to the consideration of the various objects in the material universe which pass in review before us, we shall be struck with the wonderful order which is displayed in their developments, evincing design in their most beautiful adaptation of means to ends, and showing the necessity of a great superior and controlling *Intelligence* in their formation. The movements of all these various objects, in the animate and inanimate worlds, are governed by fixed and unchangeable laws, which were instituted by the Creator for the preservation of the beauties and harmony of nature.

The laws by which the winds blow, by which the tides of the ocean measure with inimitable exactness the hours of ever-flowing time — the laws by which the planets roll, and the sun vivifies plants — the laws which preside over the subtle combinations of chemistry, and

which measure the amazing velocities of light and electricity — the laws which regulate the productions of the animal and vegetable kingdoms, are all radiant with eternal beauty; and their contemplation fills us with awe and admiration, as we behold, reflected in their sublimity and grandeur, the wisdom and the power of their Creator! (Applause.)

"The inanimate worlds move and gravitate, and are chemically changed from form to form. The animate worlds live and reproduce their kind, and die, in obedience to fixed and unchangeable laws. These laws the intellect of man can discover and understand, and thus render his dominion coëxtensive with his knowledge. So far as we understand the laws of nature, we can bring all substances governed by them beneath their action, and thus produce the results which we desire. So far as we understand the Creator's laws, he invests us with his power. When knowledge enables us to speak as with the flaming tongue of lightning across a continent, is it not the same as though we had power to call down the swiftest angel from heaven and send him abroad as the messenger of our thoughts? When a knowledge of the sciences of astronomy and navigation enables us to leave any port we please on this side of the globe, and thread our labyrinthine way, among contrary winds, and through the currents and counter-currents of the ocean, and enter any port we please on the opposite side of the globe, is it not the same as though the Creator, for this purpose, had endowed us with his all-seeing vision and enabled us to look through clouds and darkness around the convex earth?"

To man was given dominion over the earth, and in

it he discovers a vast and perfect apparatus, adapted and designed to minister to his enjoyment and to aggrandize his power. The globe, with all of its dynamic energies, its mineral treasures, its vegetable powers, its life and action, is only a grand and divinely wrought machine placed in his hands, and on the condition of knowledge he may wield and use it as the artizan uses his instruments and appliances. Knowledge inaugurates us into the office of superintendent and director of the elements and all of their powers. By means of knowledge they may all be made ministering servants to our pleasures and our profit!

Such, my friends, is the true, philosophic relation in which we stand to this earth — to the perfect system of laws which govern it, and to the mighty and exhaustless energies with which its frame, and every organ of its frame, is filled. Gravitation, repulsion, caloric, magnetism, air, water, light, lightning: by means of knowledge we can control their powers and render them ministering angels to our profit and our pleasure.

The health and welfare of mankind also depend, to a considerable extent, upon a knowledge of and obedience to the physical laws. If man violates the law of gravitation, and leaps from the brink of the precipice into the abyss, he is dashed in pieces upon the rocks beneath, as a *punishment* for his temerity. If he thrusts his hand into the boiling water, in violation of the laws of heat, he burns and destroys his own beautiful organization. If he leaps from the deck of the vessel into the ocean, he is drowned; and if he violates the laws which govern the movements of electricity, and neg-

lects to rear the lightning rod upon his dwelling, the subtle fluid descends, and he falls a victim to his own *ignorance* and folly. The intelligent mechanic constructs his beautiful steam engine in accordance with these principles; every part is designed with a particular object in view, and is destined to occupy a particular place in the machine, and to move in accordance with *fixed laws.* When directed by knowledge, it flies along the iron rail with the speed of lightning, and the power of steam. But when directed by ignorance and presumption, it hurls its unworthy superintendent to destruction! (Sensation and applause.)

The constitution of the human being is composed of a great number of organs, which were constructed upon the most beautiful, chemical, mechanical, and dynamic principles, and is governed by a system of *organic laws*, upon the proper observation of which, the health of mankind depends. If we do not *understand* and obey the organic laws which regulate the healthy action of the nutritive system, we shall soon find disease manifesting itself in the stomach, the liver, or the intestinal canal, as a penalty which is inflicted upon us as a *punishment* for their violation! The circulation of the blood is carried on through the heart, arteries, capillaries, and veins, and if we do not comply with those laws, which regulate the healthy action of this system, we shall soon labor under the influence of weakness and exhaustion! If we do not comply with the laws of respiration, we shall soon labor under the influence of pulmonary consumption. The same is true in reference to the secreting, locomotive, and nervous systems. Their functions are all governed by fixed and *unchange-*

able laws, which man, in his intelligence, is capable of appreciating, comprehending, and obeying.

Not only man's physical, but also his *mental* and his *moral* natures, are governed by fixed and immutable laws. If we comply with the mental laws, we shall thereby secure the strength and perfection of our mental powers; and if we obey the physical, organic, mental, and moral laws, we shall not only secure health and happiness in this world, but also in that world which is to come. The social relations of man in all civilized society, are also regulated and governed by their own system of laws. Our various legislatures meet, from year to year, and enact these *civil laws*, and at the same time attach *penalties* to their disobedience. The civil government publishes its system of laws in the various towns and counties throughout each State, in order that every good citizen may become acquainted with their nature and penalty, as well as the necessity of their obedience.

But the natural laws differ from the civil laws in the certainty of punishment which follows the disobedience of the former, and the possibility of escape from the violation of the latter. If it appears in the evidence upon trial, that man violates the laws of his fellow man, *ignorantly* or *accidentally*, it is considered a mitigating circumstance, and not unfrequently his offence is forgiven. But the Creator is no respecter of persons. His "rain falls alike upon the just and the unjust." He grants no indulgence to the *ignorant* and *foolish* man. We are all, indeed, punished alike for the violation of the same law. If the wise man and the foolish man, the vicious and the moral, commit the safety of their lives to the dangers of a tempestuous

sea in an unworthy vessel, they find one common grave,

"In the deep bosom of the ocean buried!"

(Strong sensation.)

Now, God's natural laws cannot be obeyed, unless they are *understood!* We send our missionaries among the heathen and barbarous races, in order to make known to them the glorious truths of divine revelation! We build our temples of worship and employ teachers to expound the *moral law*, so that none may perish through ignorance, but come to the knowledge of the truth which is revealed to us in the Sacred Scriptures; while hundreds and thousands of human beings annually perish for want of that knowledge which the Creator has alone revealed to them through the study of themselves! (Sensation and applause.)

For ages, most of our attention has been directed to the improvement of man's *moral nature*, independent of his physical organization. Now the soul cannot exist in this world independent of the body, and the perfect system of laws which govern it; and it is equally incumbent upon us as a Christian and a moral duty, to preserve the one and obey the other. (Applause.)

The Bible reveals to us a most perfect system of laws for man's moral government, and those laws we believe to be divine, because they harmonize with man's nature, capacities, and wants. But it should not be forgotten that the great Creator who made the Bible, also made man, and the perfect system of laws which regulate his *physical*, as well as his mental and his moral nature; a knowledge of which he has only

revealed through the study of our own organization. The laws of *nature* are indeed the laws of God, and execute themselves whenever their integrity is violated either voluntarily or involuntarily, through ignorant presumption, or willful disobedience. Nor is there any difference in the sanctity of any of His laws; since they are all of them founded in justice, they are equally divine, and He expects all of his children not only to obey *one* but *all* of them, and if we do not, he has provided the means of punishment, in the form of pain and disease in this world, and anguish and despair in the next.

How exceedingly important, then, it is, that we should understand and obey these laws; inasmuch as we cannot hope to *escape* the penalty which is inflicted upon us as a *punishment* for their disobedience! You would not entrust the safety of your lives to the care of an ignorant engineer—to the care of one who was entirely unacquainted with the nature and power of the steam engine, as well as the laws which regulate its action. How foolish it is, then, for man to entrust his life, his health, and his happiness, to the direction of his *own* uninformed mind, to the guidance of one who is entirely unacquainted with the structure, nature and power of his own physical organization, as well as the laws which regulate its movements. (Great applause.)

Not long since, I was walking through your beautiful park, when I saw painted upon a board, attached to one of the trees, "all dogs caught within this park, will be shot:" says a friend of mine, "Doctor, unless dogs can *read*, they must be in great danger here."

Now God has not only written his laws upon the trees, but in the stars and flowers, and upon the constitution of man, and if the human being is not able to read them, he is even in greater danger than the dog, for the dog has his master to read for him; but man has no master between himself and his God! (Sensation.)

"Health, strength, and longevity, depend upon fixed and unchangeable laws, and not upon chance or accident. There is no arbitrary interference of higher powers with them. Primarily our parents, and secondarily ourselves, are responsible for our diseases, pain, and suffering. The Providence of God is no more responsible, because the virulence of disease rises above the ordinary powers of medicine, or because one-fourth part of those who are born, die before they complete the age of one year—one seventieth part of the time allotted to them by the Psalmist—I say the Providence of God is no more responsible for these things, than it is for picking pockets, or stealing horses!" Disease and pain come not by chance or accident; but are rather the penalties which are inflicted upon us, as a *punishment* for our disobedience of the organic laws, which we can only become acquainted with by the study of ourselves. "There is, indeed, no effect produced without a cause," and to admit such an unphilosophic assertion, would sap the very foundation upon which the Christian religion depends for its support.

Even the lightning does not deviate from its course, but moves in accordance with fixed and unchangeable laws, a knowledge of which, has enabled man to call down this swiftest angel of Heaven, and send him abroad, as the messenger of our thoughts! The mut-

terings of the thunder, are no longer regarded as an evidence of the wrath of an offended Deity, nor is the descent of electricity, in obedience to His unchangeable laws, regarded as a *special* dispensation of Divine Providence! Since the days of our own immortal Franklin, the Creator has revealed to man His laws, for the government of the wonderful movements of electricity, and the means of regulating its powers, of chaining the lightning and bringing it harmless from the clouds; and if man avails himself of this revelation which has been made known to him, and rears the lightning rod upon his dwelling, he secures its certain protection, as the reward of his fidelity to nature's laws. (Great applause.)

The miserable victim of intemperance, who blunts his senses, and drowns his reason in the circean cup, and then exposes his constitution to the frosty elements on a cold and dismal winter's night, as certainly violates God's organic and physical laws, and commits suicide, as he who voluntarily leaps from the brink of the cataract into the abyss below?

But a few years since, and small-pox was regarded as a special dispensation of Providence, but the revelations of God, in the discoveries of modern science, have disclosed to us, in the principle of vaccination, the means of robbing this fearful pestilence of all its terrors! (Sensation and applause.)

Many of our diseases, it is true, are hereditary, though never the result of chance or accident. Our parents may indulge their passions, appetites, and propensities to excess, and thus produce disease, pain, and suffering in themselves, and afterwards transmit

disease and debility to their unfortunate offspring. Color, form, features, scrofula, consumption, gout, rheumatism, idiocy and insanity, are all hereditary. "The sins of the fathers are visited upon their children down even unto the third and fourth generation," nor human law nor human device can break the entailment. "In these hereditary inflictions, nature abhors alike the primogeniture laws of England and the saliac laws of France. All of the sons, and all of the daughters are made inheritors, not in equal proportions, but, by a kind of malignant multiplication of the disease, each inherits the whole"!

Now what are the sins of the fathers which are thus visited upon their unfortunate offspring? "Sin" has been defined as a "violation of the laws of God;" and the "sinner" is one who lives in the daily or habitual violation of the physical, organic, mental, or moral laws of the Creator! Indeed, all pain, disease, and premature death, not only in this world but in that which is to come, result from the violation of the Creator's laws! Verily, "the wages of sin is death"!

The annals of medicine demonstrate that nearly one-third part of the diseases which afflict mankind are hereditary, and have been handed down from parents to progeny, in consequence of their violation of the organic laws! What an interesting fact is here revealed to the philanthropist! The thought that at least one-third part of the disease and suffering of those who shall live in the next century depend upon our conduct in this, is well calculated to fill our minds with the awful responsibility which rests upon us.

Many uninformed, but well-meaning men and wo-

men, have long thought that all pain and disease were providential, and designed by the Creator for the improvement of man's *moral* nature—"to wean him from the cares and anxieties of the world, and to render him more spiritual minded." They seem to have forgotten that virtue is *active*, and that good health is indispensable for its proper cultivation. "Good health is indispensable to almost every form of human enjoyment. It is the grand auxiliary to all usefulness; and if it is the duty of man to love the Lord his God, with all his heart, and soul, and strength, how much more abundantly may he do so, in the vigor of health, than under the palsy of disease." It is, indeed, astonishing that we have so long assented to the truth of such absurd ideas as these, in view of their direct tendency to immorality, in rendering mankind irresponsible for their conduct in eating, and in drinking, and in the proper regulation of their appetites, passions, and propensities. The organic laws hold mankind strictly accountable for their own habits, in eating and in drinking, and in all that relates to their conduct in the affairs and pursuits of life; and a knowledge of these sublime truths, and their practical application would prove a most powerful means for the regeneration of the world! "Verily the man who is" physiologically "wicked, shall not live out half his days;" nor is this the worst of his punishment, for he is more than half dead while he yet lives.

An honest deacon, living in the interior of the State of Pennsylvania, frequently held a discussion with a professional friend of mine, belonging to the same religious society—the deacon declaring that all pains and

disease were produced by the mysterious ways of Divine Providence, and the doctor as sturdily declaring that they were produced by mankind themselves, by violating the laws of health. One evening the deacon ate very heartily of buckwheat cakes and sausages, and was siezed during the night with a severe fit of colic. Under such circumstances, he sent for my friend, the doctor, who very promptly refused to go, sending him word, that if God had thought proper to afflict him, providentially, with the colic, it was his duty to grin and bear it, and not complain; at all events, he thought it was not his place to give medicine that would interfere with the operations of Providence! In the course of an hour or two longer, the servant returned again, declaring that his master could live but for a short time if he did not obtain relief from some source; and the physician knowing that God's laws were just and inexorable, and that he would not suspend them to relieve a thousand deacons, thought his brother had been punished enough for his folly, and concluded to try the effect of a little medicine. As he entered the room, he saw, at a glance, the nature and cause of the difficulty, and giving him a small quantity of tartar emetic, the way he put up the special buckwheat cakes and sausages, was a caution to all of the devotees of appetite! (Great applause.) The worthy deacon learned, from sad experience, to recognize God's laws for man's physical, as well as man's moral government!

Let it never be forgotten that for every offence against the laws of health, nature will bring you into judgment. That however graciously God may

deal with the *heart* of man, all experience proves that he never pardons the stomach, lungs, or brain. These must expiate their offences unvicariously! The human being cannot eat and drink to excess, and when at last overtaken with disease, lay all the blame upon Divine Providence, without the greatest blasphemy! The Creator never accomplishes his purposes by the suspension of his own laws. If he should suspend the law of gravitation, it would be attended with the destruction of the universe which was created and formed by his own Almighty power! Have you ever observed an instance of the suspension of this law? Did you ever know the madman that leaped from the brink of a cataract into the abyss, to be suspended in mid-air, contrary to the law of gravitation? Did you ever know a castle to rise as if by the influence of enchantment, in a single night, without the aid of mortal hands? Have you ever known the mountain torrent to change its course and run up hill? Certainly not. Such a result would reverse the order of nature, and annihilate the works of God himself! During the prevalence of the terrible blast, the old Greek sailor called upon Neptune, saying, "Oh! God, thou canst save or thou canst destroy, nevertheless I will steer my rudder true." Says Cromwell to his army, "trust in Providence, and keep your powder dry." Says Napoleon, "I have always observed that Providence favors the heaviest battalions."

The philanthropist who shall convince the world that health, strength, and usefulness depend upon fixed and unchangeable laws, and not upon chance or accident, will prevent more disease, pain, and suffering, than the

art of medicine has relieved since its discovery. (Strong sensation.)

The injurious consequences arising from the general neglect to study and obey the organic laws, may be seen in the frequency of premature death. How few there are at the present day, who live to attain the age of three score and ten, the time allotted to them by the Psalmist. The statistics of our country show that more than one-fourth of those born annually, die before they reach the age of one year, and more than half before they complete the age of ten!

Now, surely the all-wise and benevolent Creator never designed that this early mortality should be the lot of man; that more than half of his children should die before they come to years when they can understand and appreciate their own immortal nature and high destiny. Premature death, so far as we can understand it, defeats the great object which the Creator had in view, at the time when he created man, and endowed him with immortal faculties, and sentiments to cultivate and improve in this world, as a preparation for that higher and nobler sphere of action hereafter.

If we consult the annals of medicine, we shall discover that the causes of the premature death of countless millions, are within the control of human agency, and left in operation only in consequence of our ignorance of ourselves, and our relations, to external objects.

If these statements of the ancient sages and philosophers are truths, and that they are is abundantly proved from the observations of their modern disciples,

how exceedingly important it is that parents should understand them, inasmuch as they regulate the conduct of their offspring before they arrive at the years of discretion. They must minister to the wants of their bodies, they must control their action, and regulate their feeble powers and budding passions and propensities. The parents are indeed the judges of the organic laws, and of their obedience by their children, as much as the judges of our civil courts are of the civil laws, and it is equally incumbent upon them both, that they should understand the laws which they would execute. (Strong sensation.)

It has often been said that much of our health and strength in after life depends upon the treatment which we received from our parents in infancy. How shall parents discharge this high and important duty to posterity, unless they are first prepared for it by understanding something of the constitution of man, and the laws which regulate its action, together with the means of developing and improving his moral, physical, and intellectual condition?

The celebrity of the ancient Grecians and Romans, their progress in arms, arts and science, depended upon a knowledge of, and obedience to these laws and conditions. Hence their schools for physical education, their gymnasia, their Olympian games, chariot races, and gladiatorial contests, which "knit their limbs and purified their blood."

It was these schools for physical exercise and training that developed and strengthened their bodies, enabling them to subjugate the whole of the then known world, and in arms, arts and the sciences to win a fame

that has long been the theme of universal admiration and envy.

The sons and daughters of Columbia, who committed their fortunes and their hopes to the wilds of America, also educated their children in this Spartan school. It was their early toils and privations, their constant warring with the ruthless elements and their more savage foes, which developed their constitutions and invigorated their bodies, enabling them to carry on, to a successful issue, that great and glorious contest for the rights of man and the freedom of a nation.

If we contrast the female constitution of the present day with that of the mothers of the American Revolution, we shall observe its vast inferiority. How pale, weak and effeminate — how utterly incapable of performing those high and noble duties which nature and nature's God has assigned her, as the mother, the teacher and the companion of man! Go visit your neighboring cemeteries and inquire who it is that fills those new made graves — who sleep their last sleep beneath the cold and silent marble — and you will learn the fate of many a fond mother and her dearly beloved offspring, leaving scarcely a vestige to tell the melancholy tale of their sufferings.

How few females live to attain the full period of life allotted to mankind! Is it strange that old Dr. Beecher, the distinguished New England divine, when surveying the contrast of the past and present generation of females, exclaimed to the audience of young men that he was addressing, "for God's sake, young men, take good care of your old women, for you will have few old ones long"? (Sensation and applause.)

The injurious consequences which result from our neglect to study and obey the natural laws of the human constitution, may still further be seen from the fact that we are fast becoming a "nation of invalids." If you will station yourselves upon the corners of the streets and observe the citizens of this city as they move on before you, you will be astonished when you discover that at least nine out of ten labor under the influence of some ache or complaint which embitters life, and destroys the pleasures of existence. How many narrow chests and flushed countenances indicate incipient pulmonary consumption! How many anxious countenances and glazed eyes indicate nervous debility and mental imbecility! How many red noses, rheumed eyes and leprous countenances indicate that they have "loaned their stomach for a vintner's cess pool, or yielded it to the contaminating influence of the poisons of distiller or tobacconist!" How many devotees of appetite and victims of gout and rheumatism, in whose distorted joints you can almost hear the crack of the cork from the champagne bottle as they hobble on before you! How many distorted limbs and pale and sallow countenances indicate the prevalence of scrofula and humeral affections, produced from long confinement in impure air!

The sedentary avocations to which large numbers of delicate females are confined, in the principal cities of this country, occasion sad havoc in human health and no small deterioration in public morals. An incalculable number of females are confined at sedentary employments, in impure air, from early morning until dewy eve, and, indeed, too often from dewy eve until

early morning, engendering disease in themselves, and afterwards transmitting disease and debility to their unfortunate offspring. But large as is this class to which I have alluded, it is as a drop of water in the ocean when compared with the countless myriads of both sexes and of every age, pent up in the foul atmosphere of our countless factories throughout this country, inhaling alike the moral and the physical poison, which corrupts the mind while it enervates the body. "Can it be possible that the individual deterioration thus engendered, diffused, and perpetuated, shall not, in the process of time, effect the great mass of society at large? Unless these causes of deterioration shall be arrested by the general diffusion of physiological information, I think it is far from improbable, that some ten or twelve centuries hence, when New Holland shall have become a great and powerful empire, and the Indies and Islands of the Ocean a swarm of independent Republics, that some contemplative philosopher shall stand on the banks of the Potomac, as Gibbon stood on the tower of the capitol at Rome, musing and meditating on the decline and fall of a great and glorious Republic, and on the degeneracy of a free people, whose commerce, arms, and arts, and sciences, had long been the theme of universal admiration and envy!" I know not why America may hope to escape the fate of Greece and Rome, and of all the great nations of antiquity, unless she profits by their example, and avoids the cause of their decline.

"I fear that the same contemplative philosopher, when surveying the stunted forms, and pale and feeble constitutions of our unfortunate manufacturing population, will be led to exclaim:—

" ' 'Twas not the sires of such as these,
That dared the elements and pathless seas —
That made proud Briton's monarchs feel,
How weak their gold against Columbia's steel;
But beings of another mould —
Rough, hardy, manly, bold.' "

" I know that there may be, and I believe that there is something in the soil, genius, and Republican Institutions of the Anglo American race, that will maintain a most desperate resistance to these inevitable causes of national deterioration; but he must be blind, indeed, who does not witness the onward working of these causes in our own days!"

If we would then avoid the fate of the most illustrious nations of antiquity, if we would prolong our own individual existence, and increase our happiness, we must study the nature of ourselves, and our relations to external objects.

This is a duty which is equally incumbent upon the healthy and robust, who would prolong life, as well as the weak and the feeble, who would wish to regain health. If you have a large and powerful horse, and you wish that he should last a long time, you treat him with the greatest kindness and attention; you do not drive him too fast, and when he returns home covered with perspiration, you do not let him drink immediately, but cause the groom to rub and blanket him, in order that he may not take cold, and get rheumatism or stiffness in the joints. If you have a valuable watch, and you wish to preserve it for a long time, you use the greatest care in winding it, and keeping it from the dust and moisture, as experience has demonstrated this to be necessary to effect your ob-

ject. Now wh is it that man, with his boasted reasoning faculties, does not apply the same principles to himself? If fortunately he has inherited from his parents a sound and vigorous constitution, in the fullness of health he foolishly thinks that there is no end to his strength and vigor, and often abuses his organs by every species of excess, and when at last overtaken by disease, and the grave yawns to receive its unwilling victim, he sees the folly of his ways when too late, and dying, shrieks — "millions for a single moment of life." (Great sensation.) How often I have met the miserable victims of consumption or incurable disease, who were born with vigorous constitutions, but who, for a series of years, had violated every law of health, to get gold, or to stimulate their unnatural appetites and passions, with tears in their eyes, and a countenance marked with the lines of despair, inquiring if there was really no hope of relief, no possibility of escape from the impending penalty as a punishment for the disobedience of the organic laws of the human constitution, that they had so long set at defiance. If it shall ever, in the process of time, be the fate of any of those who are now within the sound of my voice, to be placed in similar circumstances, they will then realize the force and truth of the old aphorism, that "an ounce of prevention is worth a pound of cure!" Physiological information is the most important to those who are in the enjoyment of good health, for the *prevention* of disease. When the system has been undermined and prostrated by various excesses, it is often too late to apply the proper remedy for the preservation of life. Thousands inconsiderately "wait until

the horse is stolen, before they think of locking the stable!"

A knowledge of, and obedience to the natural laws of the human constitution, is also indispensable to the promotion of health and happiness, which are so intimately associated with each other. Do you labor under the influence of any disease, as for instance a felon upon your finger?—how utterly impossible it is for you to enjoy yourself during its continuance! Does the young lady experience the pains of toothache? —how nervous, irritable, and unhappy she becomes! Health is indeed the greatest of all earthly blessings. It is indispensable for almost every form of usefulness! "Strike out health from the list of regal prerogatives, and the imperial diadem becomes a crown of thorns! Without health, the armorial bearings and those glittering symbols of ancestral pride, and pomp, and noble birth, grow insipid, nay hateful to the eye of the possessor, as laughing in mockery at human suffering and pointing to the grave as the only certain refuge from human woes—the only asylum which opens its gates indiscriminately to the relief of the high and the low"

Without health, riches cannot procure ease, much less happiness. It would have been a cruel dispensation of Providence, if gold had been permitted to purchase that which is the poor man's chief wealth, and the want of which reduces the affluent to worse than indigence. The bed of sickness is indeed the greatest of all levelers, on this side the grave. Can the embroidered pillow, or the purple canopy, still the fierce throbbings of the fevered brain, or arrest the dire tortures of lacerating gout and rheumatism? Can fame

defy the stings of sickness? No, the plaudits of the multitude can no more assuage the tortures of pain, than can "flattery soothe the dull, cold ear of death." The renown of a thousand victories could not diffuse an anodyne influence over the pillow of Napoleon. The laurels of Marengo could not defend him from the depressing influence of a Saint Helena.

Can power, the darling object of ambitious minds, neutralize the stings of pain and compensate for the loss of health? No, indeed! A motion of that magic wand, the scepter, can cause joy or sorrow, sickness or health in the subject; but neither the diadem nor the purple can lull the aching head, or quiet the palpitating heart of the prince.

Is beauty inaccessable to sickness? Of all the gifts which Heaven can bestow, "the fortune of a face" is the most doubtful in value. It is a mark at which every malignant star directs its hostile influence—a light that leads both its bearer and its followers upon rocks and quicksands oftener than into the haven of repose. Between beauty and disease there is a perpetual warfare. They cannot coëxist for any length of time, and the latter is sure to be the victor in the protracted contest."

Disease also impairs man's usefulness. Health is often the poor man's only capital, upon which he must depend for his daily support. What a difference, then, there is in the prospects of the strong and vigorous young man, and the poor, miserable invalid? The one looks forward to the future with high hopes and fond anticipations of success in life, while the other is conscious of the exhausting influence of disease, and at most

can only hope to linger out a miserable existence and at last sink into a premature grave! How important it is, then, that a knowledge of the human system and the means of preserving health should be taught in all of our common schools—that it should be made the basis of the education of the rising generation. It is the duty of every human being to preserve the health of his body. The Creator has given us all the charge of our constitution—we must minister to its wants, control its powers, and regulate its action; and hence, it is our first duty to acquire a knowledge of the human system and the laws which govern it, as the means of accomplishing these results, for before we can make use of any other information, we must first learn to live, move and breathe. But if we visit many of our schools for the instruction of the rising generation, we shall observe that many of the younger pupils of the ages of ten and twelve years, have a good knowledge of Geography, and many of the kindred exercises. They can describe the physical character, soil and productions of the various parts of the earth, but not the "nature of the house they live in." They can tell you of the wonderful laws by which the planets roll in ceaseless harmony, but not of the laws of their own constitution!

Again, the study of science is far more interesting than the study of literature. Literature, for the most part, is mainly descriptive of the works of man, while physical science deals in the works of God; and the difference in their relative value is almost in proportion to the difference in their origin Physical science addresses itself to the noble faculties of causality, and

explains to us the natural relations between cause and effect, and thus divests the human mind of that credulity and superstition, which is so disgraceful to the age we live in.

Look around you but for a single moment, and observe what foolish notions prevail among the great masses of mankind, as to the causes of our diseases and misfortunes, as well as their proper mode of relief. If any one labors under inflammation of the eyes, produced by scrofula or exposure to cold and damp air, it is often cured by the quack doctor with the very philosophical remedy of rubbing them with the end of a yellow cat's tail. If a child has the nose bleed, caused by the rupture of a very small blood vessel, he stops it by tying a red string around the child's neck If the teeth cut through the gums with difficulty, they are softened by the use of a black string. If the teeth decay and ache, the pain is arrested by touching the nerve with a splint from a tree that has been struck with lightning. Has the child any disease of the throat? he often cures it by giving a little powder prepared by roasting a live swallow. Has it any internal fever? he breaks it by charms and spells. Is the man afflicted with paralysis? it may be cured, they say, by the king's touch, or by magnetic rings, bands and belts. Does he labor under an attack of diarrhoea or dysentery? he cures it by a disgusting remedy, known as powdered horse warts. If he unfortunately steps upon a nail, and it pierces his foot, he cures it by greasing the nail and laying it aside until the grease dries in. If his child is troubled with worms, he sends away for the quack, who spreads a little molasses along the child's spine, and when they

come up to feed upon it, he cuts their heads off by scraping the back with an old dull razor. (Three rounds of applause.)

But you will say that none but the most ignorant could be duped and cheated by such absurd remedies in the hands of the designing empiric. This is indeed true, but unfortunately they make up a large class in the community. Not many years since Dr. Chapman, the distinguished Professor of the Theory and Practice of Medicine in the University of Pennsylvania, accosted Mr. Swaim, the maker of Swaim's Panacea, in the streets of Philadelphia, asking him how it was that many of the most distinguished and meritorious members of the Profession in Philadelphia were starving in their garrets, while all the quacks and venders of patent medicine in the city were rolling in wealth and splendor. Swaim replied to the Dr. by asking him another question: "How many of those whom you have passed in the streets this morning, in making your professional calls, do you think know anything of the anatomy and physiology of the human body or the causes of their diseases?" To which question he replied, "not more than one in a hundred." "Well," says Swaim, "you may doctor that one, and I will doctor the ninety-nine with my inimitable panacea." (Applause.)

The better informed portion of the community, it is true, do not make use of these charms, signs and incantations or disgusting remedies, but the practice of taking all kinds of quack nostrums for every ache and pain, is equally absurd, and far more pernicious in its results. If the more intelligent portion of the community get an ache or complaint, produced by some

excess, instead of revolutionizing their conduct or changing their habits, they look immediately to the columns of the daily journal for a sovereign remedy. Here they will find long lists of vegetable pills, universal remedies, cod liver oil, and sarsaparillas, in infinite variety, and certified to cure all sorts of complaints by various respectable citizens, clergymen and others. After trying the various vegetable elixirs, and finding they do not answer, then they resort to cod liver oil or sarsaparilla, only to be attended with a renewal of the disappointment. Now suppose you were to treat an excellent watch, the machinery of which you were entirely unacquainted with, in the same manner. If it did not keep time, send out and get a bucket of water and pour through it, to wash the dust out; and afterwards pour into it a bottle of oil to oil it—would you expect it to keep time? Certainly not. How much less, then, may you expect your own beautiful organization to keep time after drenching it with panaceas, elixirs, bitters, and cod liver oil? (Applause.)

Even the intelligent physician says, "the public will be doctored, and if I do not give them medicine, some one else will." This is, indeed, unfortunately but too true for the welfare and happiness of society. The humane and intelligent physician, who would retain public confidence and be successful in his calling, can scarcely be honest to the dictates of conscience. If he is not continually doseing the patient with various remedies, the friends lose their confidence in his skill. In this respect the mass of mankind are much like the old Scotch woman, in her reply to the physician who had given, through a mistake, an over dose of

tartar emetic and killed her husband. When the doctor called the next day to pay his customary visit, and learned that it was all over with his patient, he expressed his regret, and the wife, sobbing with anguish, exclaimed: "Oh, Doctor, it is no fault of yours or the medicine either, for it wrought him powerfully to the very last!" (Tremendous applause.)

A friend of mine in the city of Philadelphia, one of our oldest and most conscientious physicians, was sent for to visit a gentleman's wife who suffered from dyspepsia produced by excessive eating and sedentary habits. The doctor made very light of the case, telling her that she did not require much medicine, and that she must eat less and exercise more, or take medicine, be sick, and probably die. Now such wholesome truths were not pleasing to a sentimental female suffering from indigestion. She wished to be thought very sick, and she immediately sent for another physician, well known in the same city for his quackish propensities. When he arrived he examined her pulse, and, with great gravity, sounded her lungs and listened to the pulsations of her heart, and, after asking her numerous questions about her health, he shook his head and asked why she did not send for him before, and declared that she labored under a complication of diseases, and that the case was one of the utmost gravity and demanded the most careful treatment. He thought that with great care and the use of some fashionable nostrum, she might recover. Of course he was employed, and after attending the case with the utmost assiduity for six months, she finally died, and he sent in his bill for $300, which the disconsolate husband thought was

quite reasonable, considering the number of visits which the doctor had made. The patient was doubtless killed by over medication!

Many simple minded people are easily imposed upon by high sounding terms, the meaning of which they do not understand; but they suppose that all of those who are capable of using them must necessarily be very learned. No one understands better how to take the advantage of this weakness than the empiric. If any of his patients ask him what is the cause of their complaint, he confounds them with a cloud of high sounding words, saying that "the only true and legitimate manner of accounting for this rare disease is the physiological defects in the membranous system. The obtuseness of the abdominal abdicator causes the cartilaginous compressor to coagulate into the diaphragm, and depresses the duodenum into the flandango. Now if the disease were caused by the vogation of the electricity from the extremities, the tympanum would also dissolve into spiritual sinctum, and the olfactory ossificator would ferment and become identical with the pigmentum. Now, as this is not the case, in order to produce your disease, the spinal rotundum must be elevated down to the spiritual spero. But, as I said before, in order to produce this disease the inferior ligaments must subtend over the digitorum sufficiently to disorganize the stericoletum." (Rounds of applause.) That is what I call an explanation as clear as mud! (Applause.)

Not long since a friend of mine was in company with one of these boasting empirics one evening, when he remarked that he had been recreating in the country

for a week or two, in order to recruit, as he had been quite exhausted with the cares of his extensive practice." This friend remarked that he knew it, as he had seen it announced in the papers. "In what terms, pray?" said the quack. "Oh, I only saw it announced in the papers that there were about seventy less deaths than usual during the last week!" (Laughter and applause.) Did the mass of mankind know that although fits of ache and pain may be relieved by the use of medicine, yet that the reëstablishment of health depends upon very different powers and principles, they would not place so much reliance upon the efficacy of medicine and neglect the natural powers of the human constitution as the means of curing its diseases.

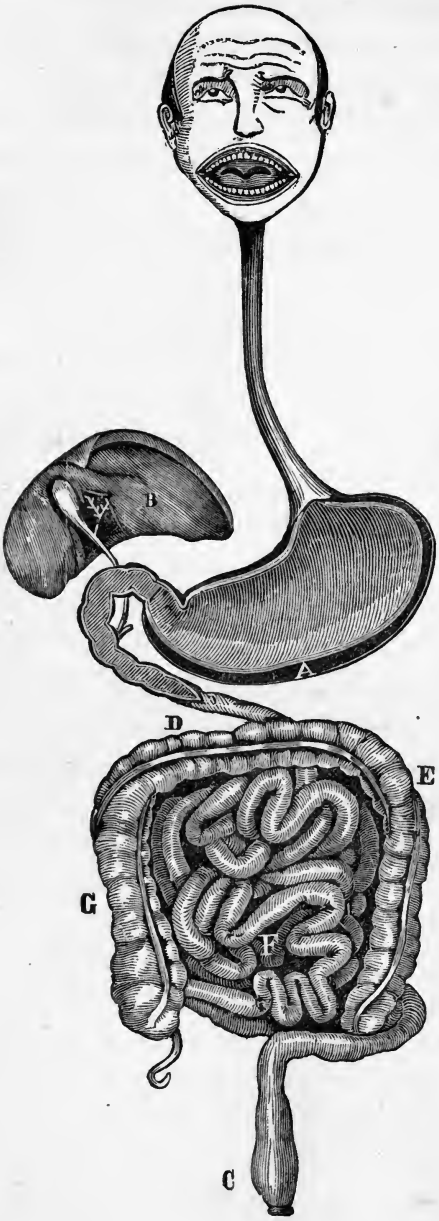
Even the physician is often estimated by the amount of medicine which he gives to his patients. A physician in the interior of Pennsylvania assured me that during the past season he was requested to attend a gentleman's daughter suffering from chronic inflammation of the stomach, a disease which requires very little medicine in its treatment. He attended her from time to time, and she finally recovered, and at the end of six months the doctor sent in his bill. The father refused to pay it, saying that it was too high, as he had given his daughter but little medicine. Now the physician was not foolish enough to quarrel with this gentleman and lose his practice, but received what he could get, and remarked to me, with a shrewd expression of countenance, "I think that family will have to take some medicine if any of them ever get sick again!" He was indeed obliged to give medicine in self defence. Only the other day a farmer called at the office of a

country physician in western Virginia, and asked for a shilling's worth of tartar emetic. The physician gave him a dose of it in a small paper. "What," says he, "you don't charge 12½ cents for that much, do you?" "Yes," says the physician, "that is a large dose." "Oh," says the farmer, "give me a shilling's worth while you are about it. Come now, don't be small." He then gave him half a drachm, and told him to put it into a tumbler full of warm water and after it had dissolved, to give his wife a table-spoonful at a time, every fifteen minutes, until it produced the desired effect. He did so, and had only given two or three doses when it vomited her powerfully. Now, as he surveyed the remainder of the medicine, he thought it was too good to be lost, and as he felt a little uneasiness at the pit of his stomach, he swallowed the rest himself, and narrowly escaped with his life.

Now, notwithstanding it is quite notorious that doctors will not take their own medicine, is it not really astonishing that the great mass of society will not profit by their example? Did you ever know a quack to take his own medicine, or a physician his own prescription? The influence of knowledge upon credulity and superstition is here seen in a strong light. A knowledge of the science of zoology has hunted krakens, phenixes and vampires from the animal kingdom. A knowledge of the science of astronomy has swept pestilential and war-portending comets, and all the terrors and follies of old astrology from the skies A knowledge of chemistry has made the notion of charms, and universal remedies, and the philosopher's stone, ridiculous and contemptible. And as a knowledge of the true

God has dethroned hundreds and thousands of false gods and cast them into utter oblivion, so will a better knowledge of the truths of physiology bury in eternal night many of the foolish notions which prevail among the masses of mankind, as to the causes and proper treatment of disease.

Scientific "truth is indeed mighty, and it will prevail." "Amidst the marvelous truths which science is yet to unfold, the wonders of Aladdin's lamp will lose their splendor; and posterity will look back upon those whose minds could be satisfied with the Arabian Nights' Entertainments, or stories of a fairy land, with as much pity as we look upon the savage, whose highest idea of regal adornment can be satisfied with beads of glass and jewelry of tin. The tricks of the juggler, the crafts of the sorcerer, and the deception of the empiric shall die out, for the children of men shall seek for the exhilarations of knowledge and amusement in the laboratory of the chemist and the lecture room of the philosopher, where nature, inspired by God, works miracles with fire and water, with attraction and repulsion, with light and lightning, at once kindling devotion and dispensing knowledge."


B
A
D
E
G
F
C

LECTURE II.

THE NUTRITIVE SYSTEM.

WE have assembled here this evening, Ladies and Gentlemen, for the purpose of taking into consideration the nutrition, growth and development of the human body — to observe the changes which our food undergoes during the process of digestion, and its final conversion into the blood which nourishes all parts of the system.

This subject is the more interesting to us inasmuch as a large proportion of almost every community labor under the influence of some disease or derangement of this system, which is produced by causes susceptible of removal, and left in operation only in consequence of our ignorance of ourselves. In infancy we are required to digest a large amount of food, for the purpose of gradually increasing, perfecting and developing all parts of our bodies, and at a later period to counteract that wonderful *change* which is constantly going on in the human system, displacing the old and worn out atoms of *bone*, *muscle* and *nerve*, with new tissues, which are developed out of the new material supplied by digestion, and thus, in a great measure, counteracting the tendency

to decay and exhaustion of our physical, mental and moral powers.

The evidence of this wonderful change of tissues may be seen in different parts of the body. If we examine the nails upon our fingers we shall often observe small white spots upon them, which soon disappear from off their ends as they grow and elongate. The scarf skin is continually pealing off on the outside and forming upon its under surface. While our hairs are continually growing at one end and wearing off at the other, similar changes are noticed in the bones and muscles, and it is thus that the human system is continually renewing itself, and preserving our mortal bodies unimpaired, in a comparative state of vigor, down to the latest period of time which is assigned to man!

In order that you may fully understand the nature of the nutritive system, it will be necessary for me, in the first place, to explain to you the anatomy and physiology of the apparatus which is concerned in its performance.

The digestive apparatus consists of a long digestive tube or canal, some thirty-two feet in length, and its appendages, the teeth, the salivary glands, the liver, and the pancreas; all of which exert their appropriate influence upon the process of digestion, and are well represented in the accompanying engraving.

It will be perceived that the cavity of the nose and the cavity of the mouth unite with each other behind the soft palate. In this cavity you will observe a number of bones, which form beautiful scrolls or shelves on each side, upon which the nerves concerned in the production of the sense of smell are distributed.

Through an opening behind these curved bones the tears empty into the cavity of the nose. These numerous partitions in the cavity of the nose have been constructed for the purpose of affording the greatest surface in the smallest compass for the distribution of the greatest number of olfactory nerves, concerned in the production of the sense of smell. These nerves, which are distributed in such large numbers upon the lining of this organ, are only useful for the purpose of enabling us to judge of the odoriferous qualities of various objects with which we are brought in contact. They cannot receive and convey to the human brain or sensorium any impression, productive of the sense of sight, hearing, taste or tact, and touch.

Numerous small hairs protrude from the lining surface of this membrane, for the purpose of arresting the earthy particles which float in the atmospheric air, and preventing them from penetrating through the air-tubes into the lungs and thus producing disease. Many persons, in different parts of this country, seem entirely to have mistaken the nature and use of so important an organ as the nose, and have turned it into a kind of *dust-hole*, for the use of the tobacconist, and often fill its cavity so full of snuff that it is impossible for them to breathe through it, and are consequently compelled to breathe through their mouth. The snuff-taker, with his nose full of snuff, may be seen in almost every community, with his mouth half open, and his tongue a little protruded, to enable him to breathe through it, like a turkey in the month of August. (Applause.)

Not long since I was requested to visit a lady, in

the city of Philadelphia, who had not spoken distinctly for the last thirty years, for the purpose of removing what was supposed by her friends to be a polypus from the nose. Upon examination I detected the nature of the difficulty, and, with a small salt-spoon, speedily removed from the nasal cavity about a wine-glass full of yellow matter, composed of snuff and the secretions of the nose, which had been accumulating for the last thirty years. (Sensation.) It was no wonder that her nose "felt stopped up" and she could not speak plain. When this lady saw the amount of *material* which had been removed, she raised her hands in astonishment and exclaimed, "Doctor, if you tell any of my friends what you removed from my nose, I will never forgive you as long as I live." (Continued applause.)

Sometimes when the snuff accumulates in this way, it produces an unpleasant fullness far back in the nares, accompanied with coughing and sneezing for the purpose of removing it. At such times considerable quantities are detached from the posterior nares and tumble back into the meat pipe, and are swallowed into the stomach, destroying its functions. (Great applause.)

You will observe, far back in the posterior nares, the mouth of a tube about the size of a goose-quill, which extends to the cavity of the ear, for the purpose of conveying to the inner cavity of this organ atmospheric air. If this is closed up during inflammation of the throat, it induces partial or total deafness. This is the reason why we hear with difficulty when laboring under the influence of a common cold, when accompanied

with swelling of the throat. Sometimes in scarlet fever, the disease of the throat extends along the lining surface of this tube to the cavity of the tympanum, occasioning offensive discharges from the ear. If the ulceration causing these discharges is not arrested by the use of appropriate remedies, it will often cause total or partial deafness as the young child advances in life.

In the cavity of the mouth we find the teeth, thirty-two in number, which are so useful for the purpose of comminuting or reducing our food to the finest consistence, and rendering it fit to be swallowed into the stomach. These useful organs are the only portions of the bony system which are brought in contact with foreign substances, and for the purpose of protecting them from the injurious influence of the atmospheric air, or the friction resulting from chewing, they have been surrounded with a dense coating known as the *enamel.* If this coating is fractured by being brought in contact with very *warm* or *cold* substances, which suddenly expand or contract it, and the air is allowed to come in contact with the ivory or bone beneath, it immediately takes on the process of decay, which can only be arrested by covering it with gold leaf or other dense material, for the purpose of excluding the atmospheric air.

If you value good teeth and would preserve them, you must be careful and never bring in contact with them any very warm or cold food. The practice of sipping hot tea and coffee, or eating hot breads and meat cannot be too severely condemned, inasmuch as it invariably destroys the teeth in a short time. All savages that drink from the bubbling fountain and sub-

sist upon the simplest fare, have excellent teeth even when advanced in life. Such is the condition of the African, and the slave upon our southern plantations; but when indulging in similar habits to the white races, they soon lose their teeth. The cow and other domestic animals, when feeding upon the blades of grass which they crop from the hill-side, preserve their teeth for a long series of years, but when fed with warm food in *fashionable* life, in our large towns and cities, soon find them dropping out. This natural law which seems so plain, in reference to the teeth, is generally neglected by the great mass of fashionable society, and with what fearful consequences, may be seen by examining almost any young lady's mouth.

> ———"What pity, blooming girl,
> That lips so tempting to the lover
> Should not, beneath their ruby casket, cover
> One tooth of pearl; but like the rose
> Beside the church-yard stone,
> Be doomed to blossom, over many a mouldering bone."

The tongue, which is situated in the mouth, is composed of a number of muscles running in different directions, and covered with a soft and delicate mucous membrane, which is continuous with the whole of the intestinal canal. This organ, as will be observed, is far larger than is generally supposed, which accounts for the well known fact that it is not easily fatigued, but in some persons, moves like a kind of perpetual motion, and is indeed "an unruly member." It is said to be especially useful to the female, although I have not noticed any increased development of this organ in the opposite sex. (Applause.)

Near the base of the tongue, and on either side, between the two curtains or folds of the soft palate, you will notice two small bodies known as the tonsils, which sometimes become enlarged, rendering it necessary that they should be excised and removed, to enable the person so affected to read and speak distinctly. The operation is exceedingly simple and is not attended with any danger.

Beneath the skin, on either side of the face, in front and below the ears, you will notice important glands or bodies which secrete the saliva or spittle, which is carried into the mouth through two tubes beneath the skin on each side of the face. Other bodies of a similar character will be observed beneath the angle of the lower jaw and the tongue. These glands secrete from fourteen to sixteen ounces of spittle, and empty it into the mouth during an ordinary repast, which softens the food and renders it fit to be swallowed into the stomach.

The meat pipe, or gullet, is a long, cylindrical and elastic tube, which commences at the base of the tongue, and passes down behind the windpipe and terminates in the stomach. It is composed of numerous elastic, muscular fibres, which run in different directions, enabling it to be distended and contracted with the most extraordinary facility—and down whose dark and narrow channel, scores of fat oxen, sheep, fish, and fowls, cart loads of bread, and potatoes, and vegetables, tons of beer, puncheons of brandy, barrels of tea and coffee, and rivers of water, are continually rushing to that abyss from which they shall never return. (Applause.)

The amount of food and drink introduced into the human system through this canal, would, if gathered together, exceed the bounds of human credibility, and overwhelm us with amazement! If a human being should live to attain the age of threescore and ten, and should eat two pounds of beef, only a moderate dinner for a *gourmand*, he would consume over fifty oxen of a thousand pounds each; and if he were to eat at the same time, at least thirty-six ounces of dry vegetable matter, he would consume nearly sixty cart loads of a thousand pounds each. If he were to drink six glasses of ale, three glasses of brandy and six cups of tea and coffee, he would require one hundred and fifty hogsheads of ale, twenty hogsheads of brandy and more than one hundred and twenty-five hogsheads of tea and coffee, besides cold water enough to float a frigate. (Great sensation.)

The meat pipe or gullet terminates in the stomach, which is the great central organ concerned in digestion. It is situated in the upper portion of the abdominal cavity and immediately beneath the lower ribs of the left side, the greater portion of it being situated to the left of that point known as the "pit of the stomach." It is composed of three principal coats, and will hold about three pints at a time, upon an average, and is capable of being distended indefinitely by indulging in excess in eating and drinking.

Indeed, were we to visit any of the well stocked grocery stores along Market street, and observe the variety of materials drawn from the animal and vegetable kingdoms to pamper the appetite of man—especially in highly *civilized* life—we should be lost and bewil-

dered with amazement! A single glance around these shelves, groaning beneath the productions of every clime, must compel us to admit that the powers and capacity of the human stomach are immense! These pickles and preserves; these spices and condiments; these Scandinavian tongues and Westphalian hams, and above all, these sausages of Bologna and Germany, are alone enough to poison the vulture, the shark, and the jackal, and if they did not kill directly these natural gourmands, they would most assuredly people the air, the ocean, and the wild woods with as exquisite dyspeptics, or perhaps hypochondriacs, as ever paced Broadway, or ever made the grand tour of our fashionable watering places, under the delightful influence of that fashionable disease known as the "*blue devils.*" (Applause.)

The outside coat of the stomach is a serous membrane, and is reflected over the exterior surface of the whole of the intestinal canal. It secretes a small quantity of serum which lubricates the outside of the bowels and prevents them from being injured. Sometimes this membrane takes on diseased action and secretes large quantities of this fluid, producing dropsy of the abdomen.

The middle coat of the stomach is composed of three strong bands or strips of muscular fibres, which pass around the stomach in different directions, some from one end to the other, others are distributed around it in a circular manner, while others again pass obliquely from side to side. These bands of muscular fibres, which cross each other in this manner like a net-work, are enabled to contract during digestion, so as to cause

the walls of the stomach to be brought in close contact with the food which it contains. By contracting alternately at one end of the organ, and then at the other, the food is forced from one end of the stomach to the other once in about two minutes and a half. Immediately beneath the lining membrane of the stomach, you will observe numerous minute follicles, which secrete considerable quantities of gastric fluid, which is slightly saltish and sour to the sense of taste, and is known as the rennet in the inferior animals. It is this fluid which possesses the most remarkable solvent powers in the inferior animals, being capable, in some instances, as in the ostrich, of dissolving pebble stones, nails, buttons, &c.; and in man, bone, gristle, and the hardest animal and vegetable substances. If a small quantity of this wonderful fluid is mixed with a little water, dropped into milk, it soon curdles, and then digests it. Liebig, and other distinguished chemists, have proposed to prepare a fluid from the stomach of the ox similar to the rennet diluted in wine and used for culinary purposes, to be used in dyspepsia, and various forms of difficult digestion. In the small end, or pyloric extremity, the mucous membrane forms a circular fold, like the ribbon in the mouth of the ladies' work bag, which closes the stomach during digestion, and prevents the crude food from passing out into the small intestine, before it is dissolved or digested. This pyloric valve is a kind of sentinel that watches the process of digestion, and opens and allows the food to pass into the small intestine, as soon as it is reduced to the thickness and consistency of flour paste If we eat anything that is difficult of digestion, as, for instance,

a piece of dried apple, it may remain in the stomach for twenty-four hours without being dissolved; and still this faithful guard or sentinel will not allow it to go down into the small intestine. Children have often been known to retain in their stomachs small pieces of orange peel, raisins, and other dried fruit, for eight or nine days, producing much pain, and frequently convulsions; and at the end of that time vomit them up as fresh as they were when first taken into the stomach, or death relieves them from their sufferings!

The next portion of the intestinal canal is called the duodenum, or second stomach. It is about twelve inches in length, and is chiefly interesting to us as being that part of the digestive system which receives the bile. It extends from the pyloric valve down beneath the liver, and terminates in the small intestine in the centre of the abdominal cavity. The liver is the largest gland in the human body, and is situated beneath the ribs of the right side, opposite the stomach. It is constantly engaged in secreting an alkaline principle from the blood, known as the bile, which is collected by means of numerous tubes, and emptied into the gall bladder, where it is retained until such times as it may be required to facilitate the process of digestion. The biliary tube, which runs from the gall-bladder to the intestinal canal, does not empty into the stomach, as many persons suppose, but into the duodenum, six or seven inches below the opening of the pyloric valve. If this simple truth were generally known, what an influence it would have upon the price of tartar emetic! (Applause.) How many thousands of poor unfortunate invalids have had to *puke*,

for want of a little information. Not much more than one-half of our old routine physicians themselves know whether the bile is poured into the stomach or small intestine; and when their patients eat and drink too much, they *puke* them, and tell them that their stomach is bilious. (Great applause.) Such physicians are generally afraid the people will learn *too much* from listening to my lectures, and examining my models; but I think there is more danger of their learning something else — *how much* such physicians know themselves. (Shouts of applause.)

No bile can be introduced into the stomach unless the natural action of the intestinal canal becomes inverted, and its contents pass upwards into the stomach, instead of downwards into the small intestine; and consequently not one emetic is now given by the intelligent physician for this purpose, where fifty were given only twenty years ago! If the stomach has been overtaxed by excesses, instead of an emetic, low diet and rest are enjoined, with the most decided success.

When the food has been thoroughly digested in the stomach, and reduced to the finest consistence, the pyloric valve opens, and it passes into the duodenum, and at the same time the gall-bladder, being stimulated to action by its presence, empties its contents into the small intestine, where it unites with the digested food, and immediately separates it into two principal parts. The nutritious fluid is of a creamy consistency and color, and floats on the upper surface, while the excrementitious matter sinks beneath it. As soon as this precipitation takes place, these two principles pass forward into the small intestine, where the chyle, or nutritious principle, is absorbed. The nutritious portions

of our food are not absorbed, as many suppose, by the small veins of the intestine, but by a special system of lacteal vessels, which arise in large numbers in the *villi*, or small conical elevations upon the lining surface of the small intestine, and after forming numerous unions with each other, finally terminate in a long membranous sac, situated on the anterior surface of the spinal column, and which communicates with the large jugular vein in the neck by means of a long cylindrical tube about the size of a goose quill, called the thoracic duct. This portion of the small intestine, where the nourishment of the food is absorbed by the lacteals, is about twenty-five feet in length, and its inner surface is thrown into numerous folds, rendering it more than five times as long as the outside, so as to afford the greatest possible surface in the smallest space, for nutritive absorption to take place. If it were not for this beautiful mechanical arrangement, the lacteals would not be capable of absorbing more than one-fifth of the nourishment of our food. and there would be great want of economy in the expenditure of material for the nutrition of the human body. The all-wise and benevolent Creator foresaw all this, and has most beautifully adapted this mechanical means to ends, so as to secure the nutrition and development of the human body, with the smallest possible expenditure and loss of material. Indeed, if it were not for this most curious mechanical contrivance, we should be compelled to eat all the time in order to get enough, and the gourmand must certainly die of starvation. (A laugh.)

When the digestive system is in a healthy state, the

chyle or nourishment which is absorbed by the lacteals, is about the color and consistency of cream. It is transmitted along the thoracic duct, which passes up behind the heart, and finally empties into the large vein in the neck, just at its junction with the jugular vein. The chyle is here mixed with the dark, impure or venous blood, and is transmitted by the heart to the lungs, where it is cleared, purified, and colored a bright red or scarlet color, and afterwards distributed through the numerous arteries to all of the different parts of the human body. It will be observed that the nourishment of our food is finally converted into blood in the lungs. It here has breathed into it the breath of life, which renders it a vital, living fluid, capable of nourishing all parts of our bodies!

The remainder of the food, after the absorption of its nourishment, passes into the large intestine, called the colon, and is finally thrown out of the system.

Having thus rapidly examined the structure and functions of the apparatus concerned in the digestion of our food, it remains still further for us to investiate the laws which regulate its action, in order that we may understand and obey them. It has been often said that "knowledge is power," but it is only truly so just in proportion as we are capable of applying our information to some useful purpose; such, for instance, as the improvement of the moral, physical and intellectual condition of mankind. That knowledge is the *most* useful which contributes *most* to the promotion of our welfare and happiness! What, then, are the laws or conditions upon which the healthy action of this system depends?

1st. It is a natural law, that the wants of the system limit the powers of digestion.

The gastric follicles secrete only enough fluid to digest what food the human system requires, and if a larger quantity is eaten, it will remain in the stomach until such time as it may be required in the animal economy to sustain its vital action. It becomes, then, a matter of great importance for us to ascertain, if possible, what circumstances determine the wants of the system; since by obeying them, we shall in a great measure secure exemption from many of the pains and sufferings of dyspepsia—that disease which is the bane and misery of countless millions! Many observations and experiments have recently been made by the British army and navy surgeons, with a view of determining, if possible, the amount of food required by man, in order to secure the highest state of physical, moral and mental perfection in these branches of the British service. From numerous carefully conducted experiments, it has been concluded that man, while in active service or labor, requires about thirty-five ounces of dry animal and vegetable food each day, in order to attain his greatest efficiency. Of this amount, ten ounces should be animal, and about twenty-five ounces of vegetable matter, consisting of peas, beans, flour, &c. The introduction of this diet scale into the British army and navy, is said to be attended with the most remarkable success in diminishing the numbers upon the sick list.

The training of men for pugilistic encounters, gladiatorial contests, and for the display of great feats of physical strength, shows that our ordinary diet scale

may be reduced with great advantage on the score of strength. Indeed, were it true that strength depended upon the amount of food consumed, then the vulture would be stronger than the eagle, the jackal than the lion, and the gourmand than the temperate and abstemious. Gluttony is synonymous with idleness, indolence and stupidity! When the vulture, the jackal and their scarcely less human brother, the inebriate and debauchee, have engorged themselves, their whole vital energies are, at least for a time, expended in the digestion of their food. The vulture seeks his mountain lair, the jackal his den, and the epicure, drunk with wine, and stupid with feasting, seeks his softly cushioned arm-chair, where, overcome with the lethargy of sleep, he expends his immortal, mental powers and sacred affections in stupid and inglorious repose. Such persons live only in order that they may eat—and not eat in order that they may live, and attain the highest objects of life. Their chief end is to "glorify their stomach and enjoy it." Would you appeal to the conscience of such a person?—you must appeal to their *stomachs* and not to their brains. (Applause.) And would you understand the means of making the most eloquent and successful appeal?—you will find them in sparkling champagne, turtle soup, and lobster salad. (Laughter and applause.) Few legislators can withstand so *righteous* a petition, or such a moving appeal to their consciences. If you wish a bank chartered, or a divorce for *convenience*, ply the members well with champagne and hot suppers: these are the most persuasive arguments to persons of such habits.

Nor are the members of many of our Christian churches less susceptible to such influences. Visit, if you please, with me, the village church, on a pleasant Sabbath afternoon—observe the listening positions and attentive aspect of the audience. What are so many of the members doing with their eyes shut, and their mouths wide open?—swallowing the sermon? No; but digesting the cold turkey, roast beef and plumb pudding that they have eaten for dinner. (Applause.) I have often thought that ministers addressing such an audience were much like Napoleon in his efforts to reduce a huge *mud* fortress, which he encountered in Egypt. If it had been constructed of stone, he could have battered it down with his cannon; and if it had been made of wood, he could have burnt it with his red-hot shot; but there it stood before him a great impassive mound of earth in which the balls of his cannon were buried at every discharge, without producing the least influence upon its garrison! It is easy for the preacher to address feeling and mind with argument, but far more difficult to convince cold turkey and gristle with most persuasive eloquence! Not only must the preacher be prepared to sow, but his hearers must be prepared to receive the good seed. (Applause.)

It is frequently supposed by the great mass of mankind, that excessive fatness is indicative of high health. The death of millions of young children may be traced to this fatal mistake. How often do we observe mothers feed their dear little children in order to "make them grow fast," or until they become so fat that they can scarcely see out of their eyes; and when such a one

becomes, like the fat ox, a burden to itself, all of the friends observe, "what a healthy child!" and pinch its cheeks and tickle its ribs to make it laugh Do such children generally live to attain the age of manhood? No indeed! By far the largest majority sicken under this stuffing process and die. The greatest mortality in infancy is to be found among this class of "fat, healthy children." They die of cholera infantum, inflammatory affections, and the effusion of water upon the brain. When the child sickens and cries out under this stuffing process, what does the mother do? Why she thinks it cries because it is hungry, and stuffs it the more; and when its little stomach becomes so full that it runs over, and the food runs down the corners of the child's mouth, the mother scrapes all up with the spoon and crowds it down again. (Applause.)

This natural preparation (holding up an infant's stomach,) shows you the size of the child's stomach at birth. It will not contain, as you will observe, more than about one table-spoonful of nourishment at a time; and yet the fond mother would think that her young infant "would starve to death if it did not eat at least half a tea-cup full of cracker-stuff," or other food! Is it strange, under such circumstances, that its stomach is often out of order, and that "it wants a little magnesia to sweeten it," &c. — that it becomes cross and irritable — that it has fits and convulsions, and infantile cholera, and scores of diseases that are so destructive to human life? The only wonder is, how such children live at all. If they had not prodigious vital and recuperative powers, they must all fall a sacrifice to this insane custom! (Great sensation.)

When children sicken and die from such causes, parents console themselves and relieve their *consciences* from all responsibility in preserving the health of their own offspring, by laying all the blame upon the shoulders of Divine Providence, when in reality they have destroyed their children themselves! It is high time that parents should understand that the Creator holds them strictly accountable for the preservation of the health of their children. The position of a mother necessarily involves the greatest responsibilities and the highest and noblest duties, and if she is not qualified, by thorough physical, moral and mental education and training, to discharge them, hard indeed will be the fate of her unfortunate offspring.

2d. All organs, when diseased, require rest, in order that they may restore themselves.

The importance of observing this principle is generally recognized in reference to inflammatory affections of the eye. No one afflicted with disease of the eyes, would think of using them in reading, &c., because they soon learn from experience that the use of them, under such circumstances, is followed by increased pain and inflammation. The same law holds good in reference to all of the organs of the human body, when diseased. Excessive action, under such circumstances, increases the pain, inflammation and disease. If you suffer from indigestion, produced by functional or organic derangement of the stomach, you should not forget that this organ requires rest, in order to recover its exhausted energies. The failure on the part of the great mass of mankind to recognize the truth and importance of this principle, is one of the reasons that

dyspepsia proves so often incurable. If the dyspeptic becomes diseased and exhausted from over-eating, so that his stomach cannot digest even the smallest quantity of the simplest food, without producing pain, he foolishly imagines that it can only be strengthened by giving it more labor to perform. "English factory children have received the commiseration of the world because they were scourged to work eighteen hours out of twenty-four; but there is many a theoretic republican who is a harsher Pharaoh to his stomach than this—who allows it no more *resting* time than he does his watch—who gives it no Sunday, no holiday, no *vacation* in any sense. (Applause.)

What would you think of the master who should compel his slaves to *labor* after they were fatigued and exhausted, in order that they might be refreshed and restored? You would certainly think that the only suitable place for such a man, would be a lunatic asylum! Nor is the practice of eating large quantities of the simplest food when the stomach is diseased and exhausted, more reasonable or less fatal in its results!

Last summer I was requested to visit a sturdy mechanic, laboring under chronic inflammation of the stomach, brought on by excessive eating. I prescribed a very low diet and rest, and some cooling mucilaginous drinks, and in a few days he had so far recovered as to be able to move about the house, and told his wife that he thought if he could only eat something he would soon get strong and well. She asked him what he would prefer for his dinner; and he replied that he could not think of anything that he thought he would

relish as well as apple dumplings. She cooked half a dozen for dinner, and after they were carefully prepared, he sat down to the table and began upon them, and in a few moments managed to dispatch five, before he had even time for thought or reflection. Upon looking up he saw his little son sitting beside him, and looking wishfully at the last dumpling. The father's feelings were a little touched, but the impression produced by the remaining dumpling was a little the strongest, and so patting his little son upon his head, he observed, "poor papa is sick!" and quickly swallowed the last one, and scarcely escaped with his life! (Great applause.)

If the physician could only sew up the mouth of his patients, leaving only a small opening at one corner, there would be little trouble in curing the various forms of indigestion; and hence I say to you, that in the cure of these affections much more depends upon the patients themselves than upon the physician!

3d. It is a natural law that the quality of the food of man must be adapted to the nature of his stomach. The food of man should be sufficiently coarse and stimulating, in order to call the stomach and gastric follicles into healthy action, and carry on the process of digestion without the production of pain and disease. If our diet is composed of fine material, such as oil, sugar, starch, and fine flour, sweetmeats, &c., they will not stimulate the stomach sufficiently to cause its follicles to secrete the gastric fluid, or rennet, in sufficient quantities to dissolve the food, and hence the Esquimaux and Greenlander, who subsist upon whale oil and the fat of the polar bear, are compelled to mix

them with earth, in order to adapt them to the powers of the digestive system.

Observation and experience teach us that sweet and oily substances are extremely difficult of digestion, and the latter more especially when submitted to a high temperature, as in the preparation of the various kinds of cakes and pastry, &c.

> The languid stomach
> Curses e'en the pure, delicious fat, and all the race of oil;
> Far more the oily aliment relaxes its feeble tone;
> The insoluble oil, so gentle late, and blandishing,
> In floods of rancid bile o'erflows: what tumults hence,
> What horrors rise, 't were nauseous to relate.

Fresh butter, in moderate proportions, when combined with wholesome vegetable matter, generally agrees with the dyspeptic; but when old, rancid, or melted with food, should always be carefully avoided. Nor can I condemn in too strong language, the practice of giving young children large quantities of sweet food—inasmuch as it almost always induces weakness and debility of the digestive organs; if not in infancy, it will lay the foundation of dyspepsia in after life.

The dyspeptic should also carefully avoid all kinds of salt meat, fish, pork, cabbage, pickles, and preserves, all *fresh* breads and cakes, if they would recover from their disease. All fresh bread should undergo a chemical change, analogous to the process of fermentation, after it cools in the pantry, before it becomes fit to eat, or it will undergo a similar process in the human stomach before it digests, producing flatulent eructations, sourness of the stomach, &c.

The dyspeptic will do well to carefully examine the following table, exhibiting the comparative digestibility

of the various kinds of food, and select his diet from those which appear to be the most wholesome:

TABLE,

SHOWING THE MEAN TIME OF DIGESTION OF THE DIFFERENT ARTICLES OF DIET.

Articles.	Preparation.	Time.	Articles.	Preparation.	Time.
		h. m.			h. m.
Apples, sour, hard,	Raw,	2 50	Meat hashed with vegetables, -	Warm'd,	2 30
———, mellow,	Raw,	2	Milk, - -	Boiled,	2
———, sweet, do.,	Raw,	1 30	—, - -	Raw,	2 15
Bass, striped, fresh,	Broiled,	3	Mutton, fresh, -	Roasted,	3 15
Beans, pod, - -	Boiled,	2 30	———, -	Broiled,	3
Beef, fresh, lean, rare,	Roasted,	3	———, -	Boiled,	3
———, dry,	Roasted,	3 30	Oysters, fresh, -	Raw,	2 55
—— steak, - -	Broiled,	3	———, -	Roasted,	3 15
——, with salt only,	Boiled,	3 36	———, -	Stewed,	3 30
——, with mustard,	Boiled,	3 10	Parsnips, - -	Boiled,	2 30
——, fresh, lean,	Fried,	4	Pig, sucking, -	Roasted,	2 30
——, old, hard, salted,	Boiled,	4 15	Pigs' feet, soused,	Boiled,	1
Beets, - - -	Boiled,	3 45	Pork, fat and lean,	Roasted,	5 15
Bread, wheat, fresh,	Baked,	3 30	——, recently salted,	Boiled,	4 30
———, corn, -	Baked,	3 15	———,	Fried,	4 15
Butter, - -	Melted,	3 30	———,	Broiled,	3 15
Cabbage head, -	Raw,	2 30	———,	Raw,	3
———, with vinegar,	Raw,	2	—— steak, - -	Broiled,	3 15
———, - -	Boiled,	4 30	Potatoes, Irish, -	Boiled,	3 30
Cake, sponge, -	Baked,	2 30	———, -	Baked,	2 30
Carrot, orange, -	Boiled,	3 15	Rice, - -	Boiled,	1
Catfish, - -	Fried,	3 30	Sago, - -	Boiled,	1 45
Cheese, old, strong,	Raw,	3 30	Salmon, salted, -	Boiled,	4
Chicken, full-grown,	Fricas'd,	2 45	Sausage, fresh, -	Broiled,	3 20
Codfish, cured, dry,	Boiled,	2	Soup, beef, vegetables, and bread,	Boiled,	4
Corn, green, and beans,	Boiled,	3 45	——, chicken, -	Boiled,	3
—— bread, - -	Baked,	3 15	——, mutton, -	Boiled,	3 30
—— cake, - -	Baked,	3	——, oyster, -	Boiled,	3 30
Custard, - -	Baked,	2 45	Suet, beef, fresh,	Boiled,	5 30
Dumpling, apple,	Boiled,	3	——, mutton, -	Boiled,	4 30
Ducks, domesticated,	Roasted,	4	Tapioca, - -	Boiled,	2
———, wild, -	Roasted,	4 30	Tripe, soused, -	Boiled,	1
Eggs, fresh, - -	Boiled hard,	3 30	Trout, salmon, fresh,	Boiled,	1 30
———, - -	Boiled soft,	3	———,	Fried,	1 30
———, -	Fried,	3 30	Turkey, domesticated, - -	Roasted,	2 30
———, -	Raw,	2	———, - -	Boiled,	2 25
Flounder, fresh, -	Fried,	3 30	———, wild, -	Roasted,	2 18
Fowl, domestic, -	Boiled,	4	Turnips, flat, -	Boiled,	3 30
———, -	Roasted,	4	Veal, fresh, -	Broiled,	4
Goose, - -	Roasted,	2 30	———, -	Fried,	4 30
Lamb, fresh, -	Broiled,	2 30	Venison steak, -	Broiled,	1 35
Liver, beef's, fresh,	Broiled,	2			

4th. Our food should be eaten with deliberation, and thoroughly masticated and mixed with the saliva while in the mouth, so as to adapt it to the capacity of the stomach.

The stomach, as you will observe, (holding up a natural stomach,) is a thin membranous sac, and is not adapted to digest large masses of coarse and crude food, and consequently our food should be thoroughly chewed, and reduced to the finest consistence while it is yet in the mouth, before its introduction into so delicate an organ as the stomach.

Those animals which do not chew, but *swallow* their food, like the turkey and the ostrich, have large membranous craws beneath the skin, in their breasts, which receive the food, and after it has been softened by the juices, it is carried into the gizzard, a kind of mill, where it is ground to the finest consistence, and then into the stomach. Unfortunately for the welfare and happiness of the dyspeptic, no analogous mechanical arrangement exists in the human system; and if we eat our food ostrich fashion, unless we have gizzards, we shall be badly off for the means of digesting it. (Applause.)

In the human being the digestive process commences in the mouth, and terminates in the stomach; and unless the teeth perform their part of the process in a proper manner, the stomach has a double duty to perform, which not unfrequently exhausts its energies, and finally induces incurable disease. My very extensive experience and observations during the last ten years, prove conclusively that more indigestion is produced by rapid eating than by all other causes combined.

There is perhaps no other country on the face of the globe, where we find this protean malady of so frequent occurrence! The American people have often been termed a "nation of dyspeptics!" And why? Simply because they are so active that they have not even time to eat!

The American people are distinguished as an active, sanguine race, busily engaged in the great battle of life, in the turmoil, toil and strife of trade and commerce, and in transferring the standard of civilization from the frozen shores of the Atlantic to the golden sands of the Pacific. They appear upon the stage of life like a brilliant meteor, and disappear with the flash of the comet! "They go ahead!" as the saying is, "and live like lightning and die like lightning." (Applause.) If they stop to eat, it is only when compelled to do so, by the craving wants of nature, and then they eat as though their lives depended upon the completion of the repast in about ten minutes!

Go station yourselves in the spacious dining saloons of some of those palaces that float upon our numerous inland seas and rivers, in the fashionable summer season, and behold how the *elitè* eat their food, and you will no longer be astonished that dyspepsia is marked in indelible lines upon nine-tenths of their countenances!

As the well known gong, in the hands of the sable waiter, "peals forth its thunder," announcing that the dinner is ready, you had better stand aside, for fear you may get run over; while in they rush, like a cloud of hungry vultures descending to their prey—every one casting an anxious glance down the long

table that groans beneath the weight of viands spread upon its ample surface; and hastily seating themselves opposite the largest turkey, brandish the knife, and prepare for action. With an agitated and nervous hand, each quickly helps himself to everything upon the table within convenient distance, and then commences the process of *swallowing*—a feat of dexterity that would do honor to the most adroit juggler of ancient or modern times. In the first place, he cuts a large potato into four equal parts, so as to have them ready, and then, after cutting a large piece of meat, and placing it upon his knife, with a most skillful and rapid movement it is deposited in his mouth, and before he shuts it, for fear of losing time, in flies a quarter of potato; and then he stretches up his neck, and rolls his eyes in terror, for fear of suffocation, and with a desperate and convulsive struggle, *bolts* the whole mass into his stomach. (Shouts of applause.) This practice is so common in this country, as to be designated by foreigners, "the American habit of bolting, not eating, their food."

But some will say that they have not sufficient *time* to eat their food like rational human beings, and so they must eat it and run like a turkey. (Applause.) It is certain that if we do not *voluntarily* find sufficient time to eat our food in a proper manner, we shall be *compelled* to find time to be sick, and perhaps die. If you are so thronged with business and the cares of life that you do not find time to eat your dinner in a proper manner, you had better go without it until supper time, or until you finish your employments; and not insanely sacrifice your health merely for the pleas-

ure of eating! A man who is too busy to take care of his health is much like a mechanic who is too busy to take care of his tools.

5th. After digesting our food the stomach requires rest in order that it may recover its exhausted energies.

The observations of Dr. Beaumont upon Alexander St. Martin, whose stomach was perforated by the discharge of a gun loaded with slugs, while engaged in military service on the north-western frontier, leaving an opening so that he could see the food during digestion, establish, among many other interesting facts, that about three hours are required to digest an ordinary repast. During all of this time the stomach is in constant *motion*, moving the food from one end of it to the other, and mixing it with the gastric fluid until it is finally dissolved or digested.

Now it is a natural law that all action is attended with a loss of power, if not followed by rest; and inasmuch as the stomach cannot rest during digestion it must be allowed to remain empty until it recovers its exhausted energies! The habit of frequent eating is injurious in two ways; first, it keeps the stomach in constant employment, thereby preventing the necessary rest; and, second, it deranges the process of digestion by mixing fresh, crude food with that which is nearly digested. If you were engaged in making mortar for building purposes, and after you had it nearly prepared and fit for use, some stranger should rudely mix with it a quantity of fresh clay, you would be compelled to go through the same process again; and so it is with digestion. Hence the impropriety of eating oftener than once in six hours.

This law should be strictly observed in infancy as well as in after life. Young infants, during the first few days, should be allowed to nurse as often as once in three hours during the day, but never during the night, if the mother values her own happiness as well as that of her offspring. Children acquire habits while very young, and if the mother allows them to nurse during the night they will always want to.

The practice of giving children pieces between whiles is exceedingly pernicious, and not only destroys their health, but also their appetite for their regular meals. Fruit, nuts, raisins and candy should never be eaten between whiles, and only moderately at the time of the usual repast.

6th. The condition of the body and mind exert a great influence upon the digestive powers!

If you examine figure 1, fronting the title page, you will observe that the two great cavities of the chest and abdomen appear to be very closely filled with the vital and nutritive organs, in constant motion. Now if we bend forward, in sitting or standing, we diminish the size of these two great cavities, and thus compress the stomach and prevent it from acting!

You have often observed while engaged in any sedentary employment, and bending forward, what relief would be afforded by straightening up once in a while. How often the young lady who is engaged leaning forward, sewing, is compelled to raise up, on account of the pain and uneasiness in the side, produced by pressing these organs against each other!

The erect position of the body will be carefully maintained in sitting or standing, in proportion as you value the blessing of good health.

Again: the human brain is connected with the stomach by means of two very large nerves, which run down on each side of the neck, and then along the meat pipe to the stomach, giving off numerous branches to the heart and lungs, &c. If you fall and injure your head, or jar the brain, how soon it makes you sick at the stomach. Vomiting often follows the slightest concussion or injury of the brain! Indigestion is often caused by nervous debility, produced by strong physical, mental, or moral excitement, and it should be carefully avoided by the dyspeptic. Gentle exercise of the feelings in pleasing, social conversation, will equalize the circulation of the blood, and communicate a healthy stimulus to the digestive functions; and hence, when the husband and father has completed his frugal repast, he should take his children upon his knees and play with them, and converse with his wife, if he would relieve the cares of life, and promote the healthy action of the various organs of his body. It is these little acts of kindness, which contribute more powerfully than pills and panacæas, to promote the health and the happiness of his family!

7th. It is a natural law that the habitual use of all stimulants which first excite and then debilitate the vascular and nervous systems, impairs the vigor of the digestive powers.

Strong coffee is much worse than black tea, for the dyspeptic, and all others laboring under the influence of weak digestion, and should be carefully avoided. The experiments of Dr. Beaumont, before mentioned, show that the habitual use of spirituous liquors, inflames the lining surface of the stomach, and injures

its functions; and consequently, the inebriate is rarely free from the pains of indigestion.

Nor is the habitual use of that nauseous Indian weed, tobacco, less injurious in its tendency or fatal in its results. Tobacco is a powerful sedative, emetic, and narcotic, and has recently been declared by Orfila, the President of the French Academy of Medicine at Paris, to be the most subtle poison known to the chemist, except the deadly prussic acid! A piece of the dried leaf of tobacco of the size of a dime, when given to a child a few years old, will produce vomiting, and the most alarming weakness and general prostration. If the smoker, who smokes his half-dozen of the best Spanish, would hold the clean, white surface of a sheet of letter paper over the smoke of a single cigar, as it curls up in majestic clouds from his mouth, and afterwards scrape the yellow oil of tobacco from its polished surface with the point of his penknife, and insert it beneath the skin on the nose of a mouse, it would kill it in a few moments! A few grains of that dark sediment which may be obtained in any old German pipe, when placed upon the end of a dog's tongue, is almost immediately destructive of life. Its active principle, nicotina, has recently been used in Germany by the Count De Bocarme, for the purpose of committing one of the most atrocious murders on record! Indeed, no chemical fact is better established than that the active principle of tobacco is one of the most subtle and deadly poisons known. It is even more fatal than arsenic, opium, corrosive sublimate, or mercury. (Sensation.)

But you will inquire, if these statements are chemi-

cal facts, how is it that so many can use it without immediately destroying life? The answer is, because nature has benevolently given us great powers of physical endurance, and not because the poison is innoxious. The law of *toleration* is of the greatest importance to the miserable victim of appetite and passion. It enables us to gradually increase the quantity of opium, day by day, from one grain on up to a single drachm at a dose: to gradually increase the dose of tartar emetic, from one grain to sixty, without producing vomiting: to increase the amount of whisky, from one table-spoonful, up to a gallon a day, without producing great intoxication, and it also enables us to begin with a small quantity of tobacco each day, and gradually increase it, day by day, until at last we become accomplished and fashionable chewers, and can chew a plug a day! (Great sensation.)

Now does this law of habitual accommodation, prove that all of these virulent poisons are not injurious to the constitution of man? Certainly not! These interesting facts prove that the vital powers are indeed prodigious, and that they are constantly endeavoring to overcome all morbid and injurious influences, from whatever source they may come; and although the habitual use of these well known poisons may not prove suddenly destructive to human life, they do not the less certainly produce their legitimate influence upon the human system by producing dyspepsia, rheumatism, epilepsy, apoplexy, paralysis, palsy, nervous debility, idiocy and insanity. During the last six years, I have prescribed for more than ten thousand cases of chronic diseases in the United States; and I

am thoroughly convinced, from very extensive observation, that more cases of the above diseases are produced by the habitual use of tobacco, than from any other known cause. A physician in the town of Brighton informs me that he has attended thirteen cases of paralysis, during the last six months, produced by it. It exhausts and destroys all of the vital and nervous energies, and is the more dangerous inasmuch as its destructive influences are gradually and almost imperceptibly developed. Dr. Howe, the superintendent of the Massachusetts Blind and Deaf Asylum at South Boston, says that the habitual use of tobacco paralyzes the optic and auditory nerves, and is one of the most common causes of blindness and deafness. I have repeatedly met with cases of diseased eyes that had resisted all ordinary treatment with success, which were speedily restored by ceasing to chew and smoke. In consequence of its peculiar influence upon the nervous system, it blunts the moral sensibilities, and impairs the nervous energies, and weakens the mental faculties. Indomitable energy and success in life are closely associated with each other. Let the young man look around him in society and mark well the *habits* of those whose fortunes he would covet, or whose fate he would avoid. Have you ever known a young lad that commenced to chew tobacco at the age of ten or twelve, to attain great eminence in society, by the aid of his own genius and energy? (Sensation.) I have never known a single instance of a young lad who had acquired this pernicious habit in early life who ever attained great physical, mental or moral excellence — who ever became distinguished far above the great mass of mankind. The

habitual use of tobacco in early life softens the bones, weakens the muscles, and impairs all of those vital energies which are so essential to success in after life. Its active principle is taken up by the absorbents of the mouth, and permeates all of the tissues of the human body, completely saturating the whole system with its peculiar properties, so that we may detect its odor in the breath, and its presence in all of the secretions.

I knew a young clergyman in the interior of Pennsylvania, the sheets of whose bed were as yellow as saffron every Saturday night, from the tobacco which had exhaled through his skin during the week; indeed, his bed was a perfect smoke-house, and his body was perfectly smoked and dried until it was as yellow as a smoked herring! (Great applause.)

Dr. Lawson, the surgeon general of the United States army, who accompanied Gen. Scott to Mexico, informs us that the wolves, the buzzards, and the jackals would not eat the smoked flesh of the smoker, until they had eaten up all of the fresh ones among the slain. Now, I would ask all of those who persist in smoking and chewing, how they can expect these refined young ladies, or rather angels, as they call them, to accept and cherish, love and obey, what even the buzzards would reject as worthless! (Tremendous applause.)

The habitual use of tobacco also weakens the nervous system, and renders one cross, morose and irritable, and often produces delirium and insanity. One of the worst cases of delirium tremens that ever I attended in my life, was a member of the "Sons of Temperance,"

and his disease was produced by the inordinate use of tobacco. This disease, which I call the "tobacco tremens," is far more common than is generally supposed.

Dr. Woodward, of the Worcester Insane Asylum, and Dr. Brigham, of the Utica Insane Asylum, both inform us that tobacco is frequently a cause of insanity and idiocy. Now, if these statements do not arrest the attention of the tobacco chewer and smoker, let him consult his own feelings, and he will, in a large majority of instances, find enough to convince the most incredulous as to its injurious influence upon his body and mind.

But again, the influence of tobacco is not only injurious, but it is a useless and filthy practice, impairing our self respect, and rendering us careless of all personal appearances in our social intercourse with the world around us. If any of the consumers of this vile Indian weed doubt the truth of this observation, let them visit with me, if they please, the house of the young lady for whom they have experienced "the tender passion." Perhaps we shall find her engaged in the ordinary duties of housewifery—making pies, for instance, with the allspice and other spices spread over the fruit upon their upper surface, and, at the same time, a little *cinnamon* which she has just taken from *another box* carelessly left upon the surface of the upper lip. (Applause.) Or, perhaps we shall find her kneading up the bread, with the yellow drop hanging in doubtful security at the end of the nose. (Applause.) Or you may be like a friend of mine, not long since, in the city of Pittsburg, who was very fond of apple dumplings. He persuaded his landlady one

day to prepare some for dinner, and he noticed while she was engaged in helping him to a liberal allowance, that there was a yellow drop hanging to the end of her nose immediately over his plate. He says he looked up when she handed it to him and found the drop was gone, and he soon ascertained that all of his appetite had gone with it. He was seized with a dreadful rolling sensation at the pit of his stomach, and he was compelled hastily to leave the table. (Rounds of applause.)

Suppose you should call some fine evening very unexpectedly, as I did the other day, upon a certain young lady, and detect her "enjoying her comfort," as they call it in some parts of the country; that is, rubbing her teeth with an old snuff rag, with her sleeves rolled up, until the saliva and snuff run down and drop off from her elbow — should we not think that she was very lady-like and refined? What would you give for the matrimonial prospects of such a young lady? Don't all speak at once, for there are enough of the same sort left! (Applause.) Now what think you must be the feelings of these young ladies, could they observe you in the village bar-room, leaning back in your easy chair, with your feet cocked up at an angle of about forty-five degrees, engaged in nursing an old filthy long-nine cigar? Would they think "your mother knew you were out," or would they send you back to the nursery until you were old enough to wean? (Rounds of applause.)

Not long since, a friend of mine in one of the most pleasant villages of the sunny South, called one day upon a young lady to whom he was engaged to be

married, for the purpose of paying his respects to her. Having arrived at the lady's residence, on this occasion he forgot his usual custom of depositing his quid of tobacco at the foot of the door steps; and, having rung the bell, the young lady attended the summons herself, and as she opened the door her dear Charles rushed forward to imprint the expected salutation; and as smack went the kiss, squirt went the juice of tobacco all over the side of the lady's face—informing her, for the first time, that he was in the habit of using it merely "for the sake of his health." (Applause.)

When our fashionable chewers and smokers get a little older they throw off all bashfulness—become extremely polite and refined in their way, and if you have a good carpet on the floor, they will show you how much at home they are in your house, by spitting great mouthsful of fœtid saliva upon the floor; and then, as if to cap the climax, rub it in with the foot! (Great applause.)

Again: see how economical these nice young men are of this "health-invigorating" vegetable. How careful the young man is to take his quid out of his mouth before eating his dinner, and secretly deposit it in the bottom of his vest pocket (a laugh); and, after he has eaten his repast, see how anxiously he fumbles his pocket for this most precious morsel, in order that he may return it to his mouth again! (Great applause.) Some neat housewives provide large earthen spittoons for their dear loving husbands to spit in, in order that they may preserve the carpet. Did any of you ever examine one of these American notions—(for, indeed, they are almost entirely unknown in foreign countries,)

the character of its contents—those huge quids, "old sodgers," &c., floating in their appropriate element? Can you imagine anything more appropriately termed the filth of filthiness? And who, pray tell us, wash and cleanse these spittoons from time to time, for our genteel and nice young men? Why, their dear little angels, to be sure! (Applause.) Now, if I was one of these ladies, and had a husband that insisted upon his right to chew tobacco, I would not provide for him a clean spittoon, but I would get a large gourd, and cut a hole in it, and tie a tow string to it, and suspend it around his neck, so that he could be just as independent as he pleased, and spit in it just when he pleased, without the least inconvenience; and when he wanted an emetic, all that he would have to do would be, to look in it, and see it reflect his own image! (Rounds of applause.)

But some will say: Doctor, I chew for the benefit of my health, or to preserve my teeth, or to keep me from growing too fat, &c. Well, now, if you really believe that tobacco is good for all of these things that you say it is good for, why don't you teach your wives and your daughters to smoke and chew too, so as to preserve their health, &c.? (A laugh.) It strikes me that your conduct is very inconsistent, inasmuch as you very generally deny the ladies' right to preserve their own valuable lives by the same means which you make use of for the preservation of your own! The truth is, every tobacco consumer has a secret knowledge that its use is injurious to his health, and hence his opposition to its use on the part of his family; and the only reason why he does not break off the habit is,

because he has not sufficient independence and resolution to enable him to do so. He is a *slave*, bound for life! A slave to his appetites and passions—having the means of freedom, and yet he will not be free! (Great sensation.) How often I have been amused in listening to the half-cracked voices of some of our young lawyers, delivering an oration on the fourth of July. When they become a little warm in defending the right of the United Colonies to freedom and independence of Old England, I have often noticed the yellow juice stealing down the corners of their mouths; and I have thought to myself—young man, with all your patriotism, you scarcely know what *freedom is*. That man only is truly free who has conquered his appetites, passions, and propensities. As long as his appetite subjects his reason and his moral sentiments, he is not a freeman, nor is he independent. (Sensation.) Talk of independence! Why he is not even independent of his tobacco box, which subjects him to the most abject slavery known in modern times! Not the slavery of brute force, but a slavery that is infinitely worse—the slavery of the passions over the human will and understanding!

Oh let me entreat the younger portions of this audience, who are just commencing to form habits for life, to pause and reflect ere they put on the yoke of this modern tyrant, who enslaves the mind and all of the highest feelings and attributes of humanity! Look around you in society, and mark well the habits of those whose fortunes you would desire, or whose fate you would abhor!

Even as we walk these beautiful streets, we behold

numerous examples of the results of a vicious and ill-spent life, and a life of practical righteousness! "Here, behold the patriarch, whose stock of vigor three score years and ten seem scarcely to have impaired. His erect form, his firm step, and elastic limbs, and undimmed senses, are so many certificates of good conduct; or, rather, so many jewels and orders of nobility, with which nature has honored him for his fidelity to her laws. His fair complexion shows that his blood has never been corrupted; his pure breath, that he has never yielded his digestive apparatus for a vintner's cess-pool; his exact language and keen apprehension, that his brain has never been drugged or stupefied by poisons of distiller or tobacconist. Enjoying his appetites to the highest, he has preserved the power of enjoying them. Despite the moral of the school boy's story, he has eaten his cake, and still he has kept it! As he drains the cup of life, there are no lees at the bottom. His organs will reach the goal of their existence together. Painlessly, and as a lamp burns down in its socket, so will he make his exit.

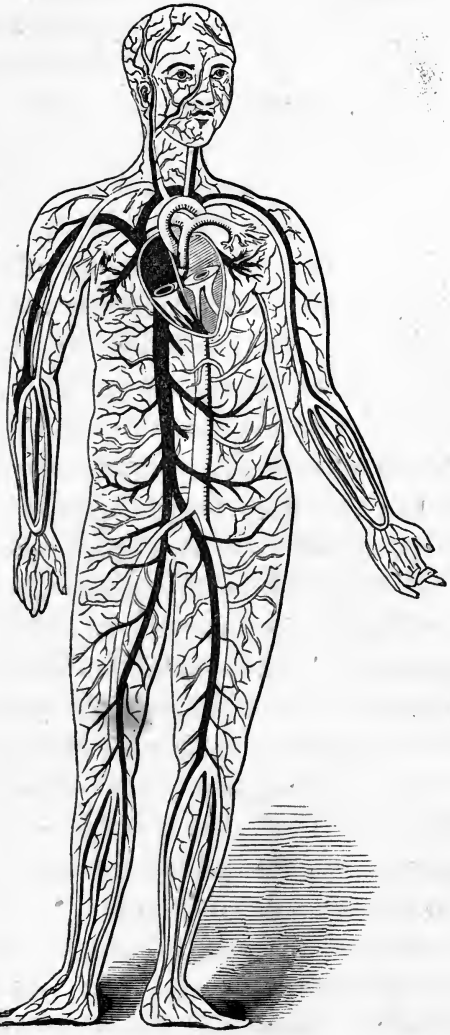
> "Like an old clock, worn out by eating time,
> "The weary wheels of life at last stand still —

and a little imagination would transform him into another Enoch, translated from earth to a better world without the sting of death!

"But look again at an opposite extreme, where an opposite history is recorded. What wreck so shocking to behold as the wreck of a dissolute man; the vigor of life exhausted, and yet the first steps in an honorable career not taken; dead, but, by a heathenish custom of society, not buried! Rogues have had the

initial letter of their title burnt into the palms of their hands: even for murder, Cain was only branded on his forehead, but over the whole system of the debauchee or the inebriate the signatures of infamy are written. How indignant nature brands him with the stigma of opprobrium! How she hangs labels over his person, to testify her disgust at his existence, and to admonish others to beware of his habits and example! How she loosens all his joints, and sends tremors along his muscles, and bends forward his frame, as if to bring him upon all fours with kindred brutes, or to degrade him to the reptile's crawling! How she disfigures his countenance, as if intent upon obliterating all traces of her own image, so that she may swear she never made him! How she pours rheum over his eyes, sends foul spirits to inhabit his breath, and shrieks as with a trumpet, from every pore of his body, *behold a beast!* Such examples may be seen in the streets of our cities every day; and, if rich enough, they may be found in the saloons and at the tables of the "upper ten;" but, surely, to every man of purity and honor, to every man whose wisdom as well as whose heart is unblemished, the wretch who comes cropped and bleeding from the pillory and redolent with its appropriate perfumes would be a guest far less offensive and disgusting.

"Now let the younger members of this audience, rejoicing in the vigor of health, and in the manliness of their proportions, look upon these two pictures, and say after the likeness of which model they design that their own erect statues and sublime countenances shall be configured."



LECTURE III.

CIRCULATION OF THE BLOOD.

YOUR attention is invited, Ladies and Gentlemen, this evening, to the consideration of the circulation of the blood, and the organic laws which regulate the healthy action of the heart, arteries, capillaries and veins. If we examine many of the lower animals, we shall not find any special system or apparatus concerned in the circulation of the nutritious fluids from one portion of their bodies to the other. In the centipede or caterpillar we observe two small pulsating blood-vessels, which distribute their blood from one end of the animal to the other, without the agency of any heart or central organ; and if we examine the frog, a little higher in the scale of animal life, we shall find a perfectly formed heart, which contains but two chambers or cavities; whereas in man and all of the higher animals it is a double organ, containing four cavities, of which the two upper ones are called the auricles and the two lower ones the ventricles, and connected with them two kinds of blood-vessels, called the arteries and the veins, which contain two kinds of blood, called the red and the black blood.

The human heart, which is the great central organ

concerned in the circulation of the blood, is, as you will observe, situated much higher in the cavity of the chest than is generally supposed, from the fact that its pulsations are felt on the left side. If you will open your right hand and place the ends of your fingers upon the left side of the chest, where you feel the pulsations of the heart, and then let your wrist point towards your right shoulder, your hand will then cover the position of your heart. It lies diagonally across the chest, with its apex directed towards the left side and its base towards the right shoulder. Through the lamentable want of information which prevails in reference to the proper location of this vital organ, some most ludicrous mistakes are made by invalids. Not long since one of the daughters of the Green Isle called upon me, professionally, saying, as she entered my office, "Och! Doctor dear, I have got sich an impression at my heart!" and at the same time pressing her left side with both her hands. (A laugh.) Upon inquiry, I soon learned that she had eaten too freely of "cod-fish and praties." (Applause.)

You will not fail to observe the close connection between the heart and the stomach. The apex of the heart is only separated from the stomach by the walls of the diaphragm or midriff, and both organs are supplied with branches from the same nerves; and hence the intimate sympathy which exists between the stomach and the heart. When the stomach is diseased or deranged, its disease is reflected along these nerves to the heart, causing palpitation, determination of blood to the head, apoplexy and sudden death. More disease of the heart is produced from derangements of

the *stomach* than from all other causes combined; and hence the necessity of persons predisposed to these affections paying particular attention to their diet and to the laws which regulate the healthy action of the digestive system. The heart is invested with the pericardium or heart-case, which serves the purpose of fastening the base of the organ to the spinal column, and maintaining its proper position, while at the same time its lining surface secretes a serous fluid which lubricates the exterior surface of the heart, and prevents the occurrence of friction from its constant pulsations.

The heart is about six inches in length and four inches in diameter. It is composed of numerous bands of fleshy substance or muscular fibres, which are distributed in different directions, crossing each other in such a manner as to enable them to contract with great force and power upon the column of blood contained in its chambers and vessels.

If we open this beautiful organ, we shall observe that it contains four distinct chambers; two of which are situated in the right side and two in the left. The right side of the heart is connected with the veins, and contains the dark, impure and venous blood. Its walls are much thinner than those of the left side, and it is continually engaged in forcing the blood into the lungs on each side of the heart, while the left side is continually forcing the blood upwards into the head and arms, and downwards into the lower extremities. In this beautiful mechanical arrangement we have displayed the most beautiful adaptation of means to ends, showing the necessity of a great superior and controlling intelli-

gence in its formation. Nature, indeed, is always economical of material, and in no part of the system of man do we find organs, except we have the evidence of design in the adaptation of these organs to their functions, displaying the intelligence and power of the divinity, and leading the human mind, as it investigates and reflects upon them, almost imperceptibly, through nature up to nature's God. If we examine the chambers of the heart, we shall find a funnel-shaped opening or valve situated between them, in such manner as to open and shut when the blood is forced by the contractions of the heart from one chamber to the other. These valves are composed of thin, transparent and flexible membranes of a silvery whiteness, and open and shut every time the heart beats or contracts. Sometimes, in old people, and especially those who have had frequent attacks of muscular rheumatism, these valves become ossified, or converted into bone, inducing disease of the heart and great derangement of the circulation of the blood.

Having called your attention to the nature of the apparatus concerned in the circulation of the blood, it remains still further for me to explain to you its functions and mode of operation. The veins which arise in the head and arms finally terminate in one large vein, called the descending vena cava; while the veins from the feet and lower extremities terminate in another large vein, situated in the abdominal cavity, called the ascending vena cava. These two large veins, containing all of the dark, impure, or venous blood, terminate in the right upper chamber of the heart. As the right upper chamber of the heart opens, it re-

ceives two ounces of this dark blood at a time, and forces it down through the valve into the lower chamber. The valve then closes, and the right lower chamber of the heart forces the black blood out, through the pulmonary artery, into the lungs, where it is purified and changes its color. It will be seen, from observation, that the right side of the heart is only concerned in circulating and sending the dark blood to the lungs. The left upper chamber of the heart opens and receives the red arterial blood from the lungs, through the pulmonary veins, and forces it down, through the left valve, into the left lower chamber, which, in turn, forces it out through the great aorta and its numerous branches, to all parts of the body. Thus you will observe that the heart forces the blood out through the arteries to the different parts of the body, while it returns through the corresponding veins to the heart again. The force or power of the human heart is estimated to equal from forty to sixty pounds. It may be compared to a kind of hydraulic engine, continually forcing the blood out through the main artery and its numerous branches; and if any of these branches should be accidentally cut or divided, all of the blood contained in the arteries would be forced out through the opening, producing death. Now, as such accidents are continually occurring in different parts of this country, and as death frequently takes place from the hemorrhage, it becomes a matter of the highest interest and importance for us to acquire a knowledge of the means of stopping bleeding, in case of the accidental injury of our bodies. Ignorance upon this subject is the more inexcusable, inas-

much as such knowledge is so easily acquired in a short period of time! If you examine the heart, you will observe that it gives off only one large artery, which bends around over the top of this organ, forming a beautiful arch; and from this arch you will observe two branches ascending the neck, towards the head and face. These branches arise from this arch, in front of the root of the neck, and wind around it as they ascend towards the ear, where they divide into two principal branches, one of which enters the cranium or skull, to nourish the brain, and the other ascends just in front of the ear, and separates into several branches, which are distributed to the parts on each side of the head. Now if any of you have fully come to the determination of cutting your own throats, I hope you will not do it so clumsily as the great majority do, by cutting immediately under your chin, in front, for, as you see, it is a long distance back to the ear, where the arteries are, and you would make an ugly wound without doing yourself much harm! Now don't suppose for an instant that I want you to cut your own throats merely for the sake of pleasing me, but if you are determined to do such a disagreeable and foolish act, you should cut lower down, and it wont hurt near so bad. (Great laughter.) But don't suppose for a moment that I am going to encourage people to commit suicide; on the contrary, I am going to prevent it by diffusing anatomical information. None but a foolish or an insane man would ever think of destroying his existence by violence. Physicians know too much, and not too little, to commit suicide!

If you wish to arrest the hemorrhage from any of the small arterial branches above the ear, on each side of the head, you must place your finger, or any hard substance, upon the main artery, in front of the ear, on the side that is injured, and press against the blood vessel. In this way you will stop the circulation to the parts above, and arrest the bleeding.

In the same way, bleeding may be stopped from any of the small arteries below the eye, on each side of the face. All of these small arteries that are distributed to the outside of the nose, the lips, and muscles of the face, spring from one main artery, that passes up over the under jaw, about half way from its angle to the point of the chin. If you place a penny upon the surface of the skin, over the jaw, as above indicated, and press gently against it with your thumb and finger, you will speedily arrest the circulation of the blood through this artery, and, of course, control the hemorrhage from the parts above.

If you examine the anatomy of the arm, you will ascertain that all of the blood which is distributed to the muscles of the fore-arm, the wrist, hands and fingers, passes through one main artery, which curves around beneath the collar bone, and makes its appearance beneath the skin and cellular tissue, on the inside of the arm, six inches below the external extremity of the collar bone, where it may be felt pulsating like the artery at the wrist. If you accidentally injure your fingers, hand, or wrist, or any of the parts below the elbow, you may stop the bleeding by pressing gently against this main artery.

You will also observe that the large abdominal aorta

divides into two large branches, which descend to the lower extremities, where they divide and subdivide into a great number of very small branches, which are distributed to the toes, the instep, the ankle, &c. If you cut your foot, or injure any of these numerous arterial branches below the knee, the flow of blood may be arrested by gentle pressure upon this large artery, which may be felt immediately beneath the skin, on the inside of the thigh, where it escapes from the abdominal cavity.

It is a much easier task for the youngest boys and girls in this audience to learn the positions of the principal blood vessels in their systems, and thus be enabled to control hemorrhage, in case of accident, than it is for them to obtain a knowledge of the principal rivers which run through the United States; and which do you think would be of the greatest practical importance—to know one's self, or to know all about the State of Ohio, or the various States of the American Union? Is it not passing strange that such practical information, so easily obtained, should so long have been neglected by the great mass of mankind; especially, when it is remembered that there is no knowledge which adds so much dignity to the human mind and heart as self-knowledge! Not long since, a young lad, the son of a poor widow woman, residing in a distant part of the county of Philadelphia, was returning to his home from the High School under the charge of Professor Hart, where he had been taught the principles of human physiology; and as he was walking along the road, his attention was attracted by the cries of distress which came from a number of

Irishmen that were engaged in making an excavation for building purposes. Upon inquiring what was the cause of their distress, he soon learned that a large stone had fallen down from above and cut off the arteries in the wrist of one of their comrades, and he was bleeding to death. Nothing daunted, this intrepid young lad stepped forward and immediately grasped his arm and pressed upon the main artery, and stopped the bleeding from the wound immediately, as if it had been touched by the magician's wand. (Applause.) When they saw that the young man had saved the life of their comrade, they were almost ready to worship him, declaring that he was an angel sent down from heaven! Such, my friends, is the awe and respect which the possession of true knowledge produces in the uninformed mind. Even the untutored savage looks with wonder and amazement upon the philosopher who, by means of superior knowledge, is enabled to control the elements, and thus produce the results which he desires.

If we examine the blood, by the agency of a microscope, we shall find that it contains numerous small circular disks, called blood corpuscles, which contain a considerable quantity of iron in their centres, enabling them to become the vehicles for the introduction of oxygen and the expulsion of carbonic acid gas from the system. It is a well known chemical fact, that iron has a strong affinity for oxygen, which soon converts it into the red oxide or rust of iron. Now when these small bodies are sent out by the right side of the heart, with the venous blood, to the lungs, and are brought in contact with the air which we breathe, the iron

which they contain unites with the oxygen of the atmosphere, which changes its dark color to a bright red; and, upon returning again to the heart, these red blood corpuscles are distributed through the arteries to all of the different parts of the human body. The vital air, which we respire, does not stop in the lungs, but is carried by these small bodies, contained in the blood, to all of the different tissues of the system, for the purpose of consuming their old worn out particles, and thus preventing their accumulation, and at the same time producing the necessary supply of animal heat. It will thus be seen that the human body is a kind of volcano, continually on fire, and the lungs and arteries are the ventilators and flues through which the air is introduced for the purpose of fanning its smouldering embers. But, you will say, if this is true, why is it that the system does not explode and burn up? The answer is, because the ventilators are not large enough to let in sufficient air. If they were, the body would ignite and burn up in a few moments. If you kindle a fire in a furnace and close the damper, the fire burns slowly; but if you attach the bellows and blow in a steady stream of fresh air, the fire burns brilliantly and produces the most intense heat; and so, also, with the human body. If you breathe fast, and introduce great quantities of air through your lungs, the heat of the body is increased in a corresponding ratio. All of the oily and sweet food which we eat from time to time, is not used to make bone and flesh, but simply as fuel to supply these *vital fires.* Consequently, the more of such food we eat, and the more exercise we take, the warmer the body will be-

come. The Esquimaux and the Greenlander are compelled, from necessity, to subsist upon the oil of the whale and the fat of the polar bear, in order to preserve their lives in those cold regions; while the same food, if used in this country, will produce many inflammatory affections. During the winter season, our appetites crave large quantities of fat meat, rich gravies, butter, &c., and who has not noticed how the stomach loathes the same kinds of food during the month of August?

> "The moist cool viands, then, and the flowing bowl,
> From the fresh dairy virgin's liberal hand,
> Will save your head from ache or pain,
> Though round the world the dreaded fever
> Rolls his wasteful fires."

If you would, then, be free from fevers and various affections accompanied with inflammation, which prove so destructive to human life during the warm season of the year, you must avoid all gross food of an oily or saccharine character, as the use of such diet will increase the temperature of the body and strongly predispose you to all such affections. And again, if you labor under the influence of fever, accompanied with increased heat of the body, you may diminish this increased heat by eating only the smallest quantity of bland food, like rice-water, or a little slippery-elm tea. If you continue, under such circumstances, to eat the usual quantity of various kinds of food, you will but add fuel to the flames which already consume you, and hasten the rapidity of the advance of this fatal disease. If your house were on fire and you wished to put it out, would you do so by pouring oil on the flames?

Certainly not; but you would rather remove all combustible material, so as to diminish the violence of the conflagration, and, if possible, save the dwelling; and so also of the house we live in. When this fair fabric is attacked with the flames of fever, all food but adds fuel to the raging conflagration which burns within us, and abstinence affords us the only true means of saving the dwelling and curing the disease.

The human heart beats about seventy times each minute, four thousand two hundred times an hour, and about a hundred thousand times every twenty-four hours, during the length of our lives. Every time that the heart beats, it forces out of each of its cavities about two ounces of blood, or one hundred and forty ounces each minute, two hogsheads full an hour, and about eight tons of blood every twenty-four hours. The amount of blood contained in the human body, is estimated to equal about twenty-eight pounds, and, consequently, it all passes through the heart once in two minutes and a half.

The heart is, in many respects, one of the most interesting organs of the human body. The ingenuity and skill displayed in its formation will excite the wonder and admiration of the most profound philosopher. Its untiring industry, and the amount of labor which it performs during the period of three score years and ten, will almost exceed the bounds of human credulity. And yet, strange to say, it never stops to sleep or rest, but labors both night and day. How vastly superior in this respect it is to any machinery which is the result of mere human ingenuity! It is also frequently in poetical language, spoken of as the seat of the affec

tions, for the reason that many of our mental and moral feelings and sympathies seem to expend their chief influence upon this organ.

The Bible speaks of the heart of man as being "desperately wicked," &c., but this observation, in my opinion, does not refer to man's *carnal*, but to his *spiritual* heart. Our spiritual heart is the center of our feelings, while our carnal heart is incapable of any sensation whatever, and is only useful to circulate the blood. Some of our mental emotions, or passions and sympathies, appear to expend their chief influence upon one organ, and some upon the other organs of the human body. We read of "the breathlessness of despair," and in the Sacred Scriptures of the heart leaping for joy, and the bowels of compassion, &c. Anger, jealousy and revenge, exhaust and depress the action of the heart and arteries, and thus become the cause of many fatal maladies!

Observe but for a moment, the form and features of him whose constitution is convulsed with all of the fierce passions of those demons, anger and revenge! How his skin withers and his countenance pales, as the blood recedes from the surface and sinks into the deep seated organs, engorging the heart and lungs, rupturing their delicate tissues, and frequently producing sudden death; or by the frequent recurrence of these passions, finally inducing chronic organic diseases of a painful character, and fatal tendency! Says Dr. James Johnson: "The nature of many of the maladies of the body, clearly illustrates the mental and moral causes from which so many of them have sprung. Thus the brain or organ of the mind being kept in a

state of over-exertion or over-excitement, by emulation competition, anger, anxiety, tribulation and sorrow, naturally exhibits the effects of such a condition in its own functions or in the functions of other organs with which it is linked in the closest bonds of sympathy.

The fury of politics, the hazards and anxieties of commerce — the jealousies, envies, and rivalries of the professions — the struggles and contentions of trade — the privations, discontents, and despair of poverty — to which might perhaps be added the terrors of superstition, and the hatred of sectarianism: these are the chief foundations of our moral ills, and these mental perturbations induce, directly and indirectly, a large proportion of the diseases of the body!

Diseases of the heart were so little attended to previous to the old French revolution, as to be scarcely noticed by medical writers. The portentous scenes of that eventful period called forth such a multitude of examples of that fatal disease, that a volume was soon written on the subject, by Corvisart; and the mental excitation which has continued ever since, has perpetuated the tendency to affections of this organ, which are now among the most prominent and dreadful of human afflictions! In a democratic republic, so full of incentives to action, and rewards for achievement, the emulation of youth gradually slides into the ambition of manhood. That which was in early life only a laudable desire to excel in literature, the arts and sciences; if not carefully repressed, becomes in manhood a passion for outstripping and eclipsing our neighbors in rank, wealth, estimation, power, and all the thousand

objects and pursuits of ambition! These passions and feelings were, no doubt, wisely conferred upon man, though too often unwisely exercised, and have been differently viewed by different philosophers. By some, they have been deduced from heaven itself, and represented as glowing in the breasts of kings and heroes. These, however, were not the sentiments of a man who climbed its giddy heights — fathomed its treacherous depths — and tasted its dangerous sweets!

> "Cromwell! I charge thee fling away ambition!
> By that sin the angels fell!"

The hero of Macedon found the reward of his ambition in the Granicus, Hannibal in exile, Cæsar in the senate, Sidney on the scaffold! And Sweden's "mad monarch" touched the goal of his ambition at Pultowa—Wolsey in disgrace, and Napoleon in captivity!

Ten thousand *illustrious* victims of ambition might be cited, whose shades might possibly be soothed by the celebrity of their fates; but who could number the myriads who have fallen sacrifices to passion, without the consolation of sympathy from friends, or the honor of a record in history! In every gradation of society, from the minister who steers the vessel of state, down to the reckless driver of the cab or the omnibus, ambition, in one or another of its protean shapes, is the ruling passion, which too often destroys the body, and endangers the soul!

But again: it affords me the greatest pleasure, as a physician, to be able to testify to you that the habitual exercise of all of the moral sentiments, exerts a benign and soothing influence upon the physical constitution of man, and tends to prolong his existence to a green

old age. Under the influence of the habitual exercise of these kindly emotions, the heart leaps for joy, and sends the blood with a thrill of rapture into all of the minute blood-vessels of the system. Who, indeed, has not felt that glow of pleasure and satisfaction which follows the act of charity? It is such a spirit and conduct as this, which blesses the *giver* as well as the receiver! Cultivate, then, the sentiments of veneration, benevolence, love, hope, charity, and the kindest feelings towards all mankind.

The vigorous and healthy action of the organs concerned in the circulation of the blood, is indispensable to the maintenance of our highest physical, mental, and moral powers. The blood is the vital and nutritive fluid which stimulates all of the different organs to perform their appropriate functions. If we compress the main artery which carries the blood into the arm and hand, these parts wither and decay. If we diminish the amount of blood sent to the brain, this organ dries and withers, and the mental and moral powers decline in a corresponding ratio! And hence it becomes a matter of the greatest interest and importance for us to understand the laws which regulate its healthy action.

1st. It is a natural law, that compression of the chest diminishes the action of the heart, and impedes the circulation of the blood! If you will examine the bony frame-work of the chest, you will observe its great delicacy and susceptibility of compression. Now the heart and lungs, as you will observe, are so arranged as accurately and closely to fill every part of its internal cavity; and if the dress fits closely to the ribs, and

is lined with inelastic brown linen, and filled with pieces of whalebone or hickory wood, it forces the ribs in against the lungs, diminishing the size of the cavity of the chest, and impeding the freedom of the motions of the heart. If the great majority of our fashionable belles and beaux, could look down beneath this mass of bones and buckram forming the waist of a dress made in the latest style, and witness the struggles of the heart to perform its appropriate functions, it would fill them with well-founded alarm for its fatal consequences!

Observe, if you please, for a moment, the ribs of this natural chest, while I press with my hands against them, in imitation of the influence which is produced by the close-fitting garment. What, think you, must be the awful consequences of diminishing the size of the cavity of the chest, which is filled with your vital organs? Can it be possible that such habits should fail to produce pulmonary engorgements, consumption, and premature death?

The amount of pain, disease, and human suffering which is produced by this foolish fashion, can scarcely be imagined except by those whose calling renders it necessary for them to be familiar with diseases and their causes. The heart dilates and contracts, or opens and shuts, every time it beats or pulsates; and if the ribs are forced inwards against it, the effect must be to enfeeble its powers of action, and diminish the vitality of all of the different organs of the body.

How often you have noticed its blighting and withering influence upon the vital functions and voluntary powers, in churches and fashionable assemblies, where

the chests of the fairer portion of humanity were clad, not in steel armor, but in the habiliments and trappings of fashion, depressing and diminishing the action of the heart to such a degree as to render it incapable of transmitting a sufficient amount of blood upwards to the base of the brain, to maintain the voluntary powers; causing them, in many instances, to faint and fall upon the floor! Now, all of the good old ladies in this assembly understand the cause of this fainting as well as I do; and you will generally see them, when such accidents occur, seize the young lady under each arm, and hurry her out of the meeting-house, at the same time glancing around slyly, to see if any of the young men are watching them to ascertain what is the matter; and the moment they get behind the door, the way the strings and the hooks and eyes fly —— (tumultuous applause.) These fashionable ladies that dress too tightly may always be known in any church, because it makes them so weak that they cannot stand up until the prayers are through without fainting, and consequently they are compelled to sit down, as they become exhausted. Now, is it not monstrous blasphemy, that human beings should go up to the temple of worship of the living God, with chests dressed so tightly that their eyes stick out like cups and saucers, from the danger of suffocation? (Great applause and sensation.) What, think you, must be the influence of this habit, when long continued, upon the moral, physical, and intellectual powers of woman? The mind and the moral sentiments are not independent of matter, during this life, and until they become so, we must beware of all those fashions and habits which enslave but to destroy this beautiful temple of the living soul!

It is a fact not well understood by the votary of fashion and folly, that whatever diminishes the powers of the human heart, also diminishes the amount of blood sent up to the base of the brain, and consequently, that small waists and small brains are most intimately associated with each other! (Sensation and applause.) Examine the long catalogue of female poets, philanthropists, and scholars — those who have written works that have rendered their names illustrious, and have twined around the brow of woman the halo of glory — such as the works of a Madame de Stael, Mrs Cook, Lady Blessington, Mrs. Hemans, Mrs. Sigourney, and others equally distinguished — works that shall live so long as time shall last, as proud monuments to the genius, beauty, and goodness of woman. If you will examine the busts and portraits of these illustrious women, you will find nothing of that delicate imbecility and beautiful weakness so characteristic of the daughters of modern fashion and folly! They all had large hearts, and "great coarse waists" to contain them! (Applause.)

Oh, I tell you, my young friends, however lightly we may think of this subject, we are all deeply interested in the improvement of the condition of woman; for it is woman that determines the condition of the race. Color, form, features, consumption, gout, rheumatism, scrofula, idiocy and insanity are all hereditary. They descend from the mother to her offspring — nor human law nor human device can break the entailment! Thank Heaven! man, in his selfishness and power, cannot degrade woman without degrading himself!

"The woman's cause is man's;
They rise or sink together, dwarfed or god-like,
Bond or free. If she be slight, ill-formed, miserable,
How shall men grow? We aid them both
In aiding her: * * *
* * * the parasitic forms
That seem to keep her up, but drag her down.
Leave her to bloom
From all within her — make herself her own;
To give or keep, to do and be all that not harms
Distinctive womanhood."

The mothers of America must determine the sons of America. If they be mere creatures of sentiment and fashion, their children will be corresponding men!

2d. It is a natural law, that the habitual exercise of all of our physical, moral and mental powers, stimulates the heart and arteries, and promotes the healthy circulation of the blood.

If we recline in a horizontal position upon a mattress, the heart beats slowly; and hence this is the proper position for all of us to assume in febrile affections, attended with vascular excitement. If we sit or stand, the heart beats faster, and if we walk, run, or labor, the number of its pulsations is increased in proportion to the activity of the body.

The habitual exercise of all of our intellectual faculties and moral sentiments, determines the blood towards the head, which stimulates and develops the brain, and promotes the healthy action of the nervous system. Observe but for a moment the influence of feeling, thought, sensation, and passion, as you comtemplate the orator and poet, who,

"With lips tipped with the fires of Heaven,"

pours forth his thoughts in words of burning eloquence!

How the large blood-vessels upon his forehead and temples are distended with hot and generous blood, stimulating and arousing all the dormant energies of the human mind!

Man is indeed the creature of action. From the period of his birth until he disappears from the stage of life, the various organs of his body exhibit one continuous round of busy employment, and however unpleasant it may be to the indolent, still they must learn that there is no excellence which can be secured, either physical, moral or mental, but by unceasing exertion! Who, indeed, discovered this vast continent —who spread beneath these western forests, the peaceful hamlet of the husbandman, but the hardy and adventurous? Who rear these western cities as if by the influence of enchantment? Who have constructed these magnificent temples of worship, and caused these western wilds to flourish and blossom like the rose? Who have covered the surface of our numerous inland seas and rivers, with whitening sails of busy commerce, but the active and industrious? Again, look around you, but for a moment, and observe who fill with credit, your public offices of honor and profit? Many of your most illustrious citizens were but yesterday the sons of poverty and toil! By their own ceaseless exertions they have mounted, step by step, until they have reached the uppermost round upon the ladder of fame. By trimming again and again the midnight lamp, they have ascended the steep and rugged declivities of the mount of science, and are now reaping the rich reward of their industry in the honor and applause of their countrymen! What they have done can also be accomplished by you.

———"In the lexicon of youth,
Which fate has reserved for a bright and glorious manhood,
There is no such word as *fail!*"

Idleness and indolence, are indeed, the greatest physical, mental and moral curses. They are the pale and withering pestilence which dries up the fountain of life and envelops the noblest sentiments and faculties of man in an impenetrable cloud of darkness!

Poets and metaphysicians may talk of genius and the innate powers of the human mind; but that quality which renders one man more successful than another, is the genius of industry which overcomes all obstacles and accomplishes all results! (Applause.)

3d. It is a natural law, that the purification of the blood depends upon the healthy action of the skin, lungs and various secreting organs!

It is the prevailing opinion, among the great masses of mankind, that many of the diseases which humanity is heir to, are produced by impurities of the blood, for the removal of which, immense quantities of medicine are taken in this country, producing a vast amount of human suffering. So extensively prevalent is this foolish idea, that the blood is cleansed and purified by means of roots and herbs, that a swarm of hungry wolves, in sheep's clothing, have not scrupled to avail themselves of it in order to deceive and rob the uninformed. Indeed the aggregate amount of patent medicines, all purporting to cleanse and purify the blood, which are made in our principal cities and distributed throughout the land by means of numerous agents, would, if collected together, exceed the bounds of human credibility! From the shores of the

Atlantic to the golden sands of the Pacific, these numerous agents may be seen busily wending their way, some in splendid equipages, stopping only at the principal towns to deposit their loathsome poisons, falsely labeled Balsams and Elixirs of Life, Indian Vegetable Pills, and Panaceas, &c., while others, in more humble circumstances, walk basket in hand, calling upon the inhabitants from house to house, leaving, whenever they can get permission to do so, their infernal preparations, requesting the people to *try* them, and if they don't like them they will call and get them again, during the next year. They dont say who will bury the dead if the medicines happen to kill them! (a laugh)—or perhaps they think, as "dead men tell no tales," there is no danger. If one of the children gets an ache or pain, from eating too much, the mother is sure to remember the Doctor's pills; and if the child recovers after taking them, the medicine is sure to get the credit of performing the cure. One of these traveling pill peddlers assurred me, not long since, that he should clear over ten thousand dollars a year in this way.

Now the profession themselves are responsible for the prevalence of many of these notions, and for the spread of this quackery, imposition and deception. Indeed they have long taught the people that their blood was too thick and impure, and that it must be thinned and cleansed by bleeding and taking physic, especially in the spring of the year. I remember very well, when I was a young rogue, how my parents used to hold my nose to make me take molasses and sulphur every spring, because "the Doctor said it was good

for the blood!" (Applause.) But somehow or other, those children who took the most medicine were always unwell! Now if we undertake to inform these medical wiseacres of the danger of following such advice, they cry out, like the high priests of old, that the craft is in danger, by the spread of information which teaches the public how much many of these old medical grannies know! (Applause.)

The reason why those children who are constantly taking medicine are always delicate and sickly, will not appear so strange, when I explain the influence of these agents upon the human system.

Emetics, when taken into the stomach, do not purify the blood, as many suppose, but act as mechanical irritants, often inducing inflammation and a long train of gastric derangements, which are fatal in their results! At first, an emetic appears to stimulate the lining surface of the stomach, increasing its peristaltic or rolling motions; second, it secretes large quantities of ropy mucus, to protect its lining surface from the irritating and injurious effects of the emetic; thirdly, if the dose is sufficiently large, the stomach collects all its energies, and contracts spasmodically for the purpose of expelling it from the system!

The use of an emetic, then, must, under any and all circumstances, be considered a serious evil, and only justifiable to remove a greater evil — as for instance, when you eat and drink enough to produce serious disease, or when you swallow poison, or anything which would endanger your life! The same is true of all cathartic pills, and panaceas, and bitters. When taken into the stomach, they exert an influence upon its lining

surface analogous to that produced by a blister when applied to the skin, irritating and inflaming it, and causing it to secrete large quantities of ropy mucus, for the purpose of protecting it from its injurious influences. It is in this way that the system is relaxed or debilitated. In all this confusion and turmoil, produced by the use of physic, there is no purifying influence exerted upon the blood. That wonderful fluid is purified, as you shall see in my next lecture, by the skin and lungs, and not by the bowels. What, then, shall we say of the trade of these pill peddlers and empirics, who, by means of specious representations, and the publication of lying certificates, succeed so well in robbing the credulous and unsuspecting invalid of the scanty earnings of many a hard day's toil beneath the burning rays of a summer's sun? What shall we say of the wretch who deliberately bottles up his poisons, knowing them to be such, and sends them out into the community, who are entirely ignorant of their nature and influence, merely for the sake of amassing a princely fortune, to build palaces, and riot in the splendors of affluence! Is it not infamous enough to deal out to healthy and strong-minded men, that which will despoil them of their reason, and blunt their moral sensibilities? And how much more so is the conduct of the empiric, who would avail himself of the weakness of the uninformed, and of the great mental anxiety of the diseased and distressed, to raise fond hopes by his false and flattering advertisements, in order that he may the more successfully deceive and destroy!

The great mass of mankind are unacquainted with the restorative powers of the human constitution, and

hence their superstitious reliance upon medicine for the relief of every ache and complaint! It is an old aphorism, that "Physicians will not take their own remedies." And why? Simply because they are better acquainted with themselves, and the nature and causes of disease. It is almost an invariable rule, that the physicians who take the least medicine, give the least to their patients. Ask these Dr. Moffats, Townsends, Brandreths, Jaynes, &c., if they take their own medicines, and you will be astonished at their reply. When physicians get sick, they stop eating, and rest until the vital powers recover their exhausted energies, and the wheels of weary life move on! (Sensation.)

Medicine has been termed by Dr. Johnson, "the art of amusing the patient, while nature cures the disease." (Applause.) Physicians must prescribe a little medicine, in order to retain the confidence of the patient and his friends, and give nature time and opportunity to perform the cure! The mind and moral nature exert a great influence over disease. Faith, indeed, in medicine, "will remove mountains" of disease! And confidence, when assisted by exercise, diet, fresh air, cleanliness, and proper regimen, has enabled all systems of medicine to perform marvelous cures! The use of medicine also renders the patient more careful to follow the proper regimen or course of diet and exercise essential to effect a cure of his disease, and it also satisfies the mind. Whenever I have occasion to prescribe a rigid system of diet and abstinence on the part of the patient, to cure any disease, and I think there is any danger of the patient's failing to follow the directions, I usually prepare a little burnt flour

or sugar, and tell them to be sure and take it just three times a day, half an hour before eating, and to be careful and not eat any buckwheat cakes and sausages afterwards; as this powerful medicine is incompatible with grease, and I do n't know what it might do to them. (Great applause.) In this way I have often succeeded in performing most wonderful cures, when all other systems of medicine had failed in the hands of others! Nature cured my patient, and I got all the credit.

Again: there is another very prevalent idea in almost every community. And that is, that Indian Doctors know a great deal about medicines, and consequently are enabled to perform some most wonderful cures; and hence the public have arranged, to attract their notice and gain their confidence, numerous advertisements of quack nostrums, representing some poor unfortunate invalid, with at least one foot in the grave, and an Indian medicine man, holding an herb in one hand, and extending to him a bottle in the other; conveying the idea that this wonderful medicine was originally prepared by the Indians, who first discovered its great virtues, &c. Now Washington Irving, Humbolt, Catlin, and other Indian travelers, tell us that the Indians know little or nothing of the virtues of vegetable remedies. They have no "Indian Doctors," but *prophets*, who do not cure disease with "Indian vegetables," as they are called, but by the magician's spells, charms, incantations, amulets, &c., which they wear next their persons, or suspend around their necks!

But so extensively prevalent is the opposite idea, that we have even now, in many of our chief cities and

towns, numerous spurious Indian doctors, who profess to have studied among the Indians, and to have learned from them the art of curing disease. If you observe these gentry carefully, you will discover that they display much more brass than copper in their composition. They generally understand very well the weak points of the community, and deliberately plan and study how to impose most successfully upon their blindness, credulity and superstition. By preserving the most profound secrecy and mystery in all of their movements, they soon acquire, among a certain class, a reputation for knowledge and wisdom. Now, let me observe to you, that wherever you discover much secrecy and mystery, there you will be sure to discover some fraud and humbug. Truth dreads not, but rather seeks the light, in order that it may display its beauty and perfection; while, on the contrary, error, deception and fraud survive and flourish only in secrecy and darkness!

These Indian doctors gather their medicines only when the *sign* is right, because they know, from the unprecedented success of Dr. Roback, Madame Adolphe, and others of fortune-telling notoriety, that many people still believe in that barbarous relic of old astrology. Indeed, in some parts of the State of Pennsylvania, so extensively prevalent is this vulgar idea, that many of the inhabitants, only a few years ago, before "the common school master came abroad," would not put a roof on their houses when the sign was up, for fear that the moon would draw all the nails out of the shingles (applause); nor would they plant their corn when the sign was down, for fear the moon would draw the young sprouts down through, and they might come

out on some other person's farm on the other side. (Great applause.)

When these wonderful doctors gather the bark from the forest trees, to prepare their emetics, they are careful to strip the bark upwards towards the limbs, or "agin natur," as they call it; and when they wish to prepare their cathartic remedies, they strip the bark downwards, or "with natur," so that it may operate as physic! (Applause.) I don't know what it would do if they should strip the bark around the tree, but judging from experience, I should think it would be highly dangerous. (Great laughter.)

Is not the boasted success of such quackery, deception and nonsense a humiliating commentary upon the intelligence of the age in which we live?

> "The world is generally averse
> To all the truth it sees and hears;
> But swallows nonsense and a lie
> With greediness and gluttony.
> Surely the pleasure is as great
> Of being cheated as to cheat."

Is it not humiliating that we, who boast of the progress of ideas, and of the improvement of the age, must, to-day, in the noon of the nineteenth century, forget the teachings of our Baldwins, our Bartons, our Marshals, and our Darlingtons, and other distinguished botanists, and go back to the North American savages to become acquainted with the virtues of the vegetable kingdom?

But some will say, Doctor, I *know* that these remedies are useful, and that they cured my complaint. Now, all that such a person *knows* is, that he has taken the remedy and is well. Perhaps his disease was cured

by the recuperative action of the vital powers, in spite of the remedy and in spite of the disease. Experience is often false and credulity blind. Says Prof. Jackson: "Fifty medical facts are often forty-nine medical lies." Experience alone can never be trusted, when unaided by extensive observation and correct physiological information. A large proportion of every community must have seen the danger of entrusting their lives to the care of an unskillful, experimenting physician; and yet, without the least physiological information, they will not hesitate a moment to experiment upon themselves, by trying every medicine which they can hear of, or find advertised in any of the public journals.

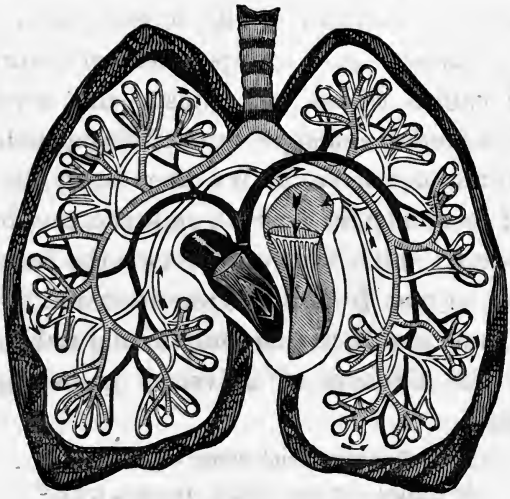
> "Man first creates, and then he fears the elf—
> Thus others cheat him not, but he himself:
> He hates realities, and hugs the cheat,
> And still the only pleasure is — in the deceit."

The pernicious habit of taking medicines in this way, for every imaginary ache and complaint, without any knowledge as to the nature of the difficulty, or the proper mode of relief, often reminds me very forcibly of the anecdote, related by the Chevalier d'Alembert, of a man who had accidentally fallen into a deep well, and whose friends thought of getting him out by filling the well up. Some ran and brought huge stones, and others blocks of wood, which they cast down into the well, greatly endangering the life of their friend. And so it is in this indiscriminate use of medicine. If any of you feel a little unwell, your friends tumble down into you, first a box of pills, then a bottle of sarsaparilla, then cod-liver oil — enough to kill a well man. If, under this very *philosophical* treatment, you happen

to get well, they say—what a marvelous cure! what a wonderful remedy! But if one of these remedies happens to kill you, they fold their hands and draw on a long face, and declare that it is a visitation of Divine Providence. (Great applause.)

Now, ladies and gentlemen, what shall be the great remedy for the dispersion of this blind credulity and superstition, but the diffusion of correct scientific knowledge? It is the study of science which unfolds the reasoning faculties of the human mind; and an improved knowledge of the operations of nature around us, will banish fairies, and ghosts, and witches, and a belief in dreams and signs from all respectable society. If we would not have the ivy creep upon the ground, we must erect a trellis for it to embrace, and by embracing, ascend: and if we would detach the human mind and heart of man from the superstition and folly of the age, we must unfold to them higher and nobler objects, and by the diffusion of universal knowledge, show them that

> "The only amaranthine flower on earth
> Is virtue: the only lasting treasure, truth."



LECTURE IV.

RESPIRATION.

Ladies and Gentlemen: —

LAST evening I had the pleasure of calling your attention to the nature and functions of the apparatus concerned in the circulation of the blood; and this evening I propose to examine the Respiratory Organs, their structure, nature and uses, as well as their diseases—causes, means of prevention, and cure.

If we examine many of the lower series of animals, we shall observe that they do not appear to possess any special organs which are subservient to the purposes of respiration, but their skins are so soft and porous that they do not appear to afford any impediment to the free absorption of air, and the exhalation of the impurities of the blood.

In the lizard, we observe the simplest form of respiratory organs, consisting of simple membranous sacs or air bags, which open and shut during respiration, introducing and expelling the atmospheric air. In the turtle, we find that these membranous sacs are divided by means of numerous thin and delicate partitions, into many distinct chambers or cells, each cell

having its distinct air-tube communicating with the windpipe.

In man and all of the higher animals, you will observe that these air-cells are increased in number and are smaller than a millet seed, each one of which is attached to its air-tube, enabling it to receive its portion of air during respiration.

The lungs of the lower animals, which are so exceedingly simple, are caused to move by the stimulus which is communicated to them by the atmospheric air; but as they become larger and more complicated in their structure, they are moved by the agency of the diaphragm and the bones and muscles of the chest which are thrown around them.

In order that you may fully understand the nature and the importance of the functions of respiration as well as the laws or conditions which regulate their healthy action, it will be necessary for me to explain to you the anatomy of the chest, in whose cavity the lungs are placed.

The chest is composed of the breast bone or sternum which is situated in front, and the ribs upon each side, with twelve curiously shaped bones, called the dorsal vertebra, situated behind the chest and forming a portion of the spinal column. The breast-bone, as you will observe by examining this skeleton of the human being, at birth is composed of several pieces of bone united together by means of cartilaginous or gristly matter, which is very transparent and elastic. As the young child advances in life, these several pieces of bone unite, forming the sternum, which is united with the ribs on either side by the intervention of sev-

eral pieces of cartilage, rendering their anterior extremities exceedingly elastic and movable during life, and capable of yielding upon application of the slightest pressure.

The ribs, as you will observe, do not appear to pass directly around the chest like the hoops of a barrel, but they descend downwards and forwards, at an angle of sixty or seventy degrees. So that a little pressure upon their anterior extremities will arrest their motions, and greatly interfere with the functions of respiration.

As this skeleton is that of a male, you will not fail to observe that there are twelve ribs on each side, and if one was taken out of the left side of old Father Adam to make Mother Eve, it has been restored again in all of his dear children. (Applause.)

The cavity of the chest, in which the vital organs are placed, is separated from the cavity of the abdomen by means of the midriff or diaphragm, which is a kind of movable partition. The diaphragm contracts and descends downwards against the stomach and liver, to the extent of about three inches, during each full inspiration, thereby increasing the size of the cavity of the chest to a corresponding degree, and causing the air to rush in through the nostrils, distending the lungs, which move in the vacuum which is thus created.

The air-tube, which transmits the air into the air-cells of the lungs, is composed of a large number of cartilaginous rings, connected together by means of fibrous matter, and lined with a soft and delicate mucus membrane, which secretes a considerable quantity of mucus, lubricating its lining surface, and preventing

the inhalation and exhalation of the air from producing friction and irritation. The commencement of the air-tube in the throat, which is larger in the male than in the female, is called the larynx or Adam's apple, from the general prevalence of the vulgar idea that Adam swallowed the apple whole, which Eve gave him, down as far as this point, where, in consequence of his wickedness, it stuck fast in his throat, and in the throats of all of his sons, down even to the present day! (Great applause.)

The windpipe terminates, as you will observe, behind the breast-bone, in two principal branches, which soon divide and subdivide into a great number of bronchial tubes, which traverse all parts of the lungs, and finally terminate in the air-cells!

You will observe that the bronchial tubes are not situated, as many persons suppose, in the throat, but in the lungs! They are the seat of that disease known as bronchitis, which depends upon irritation and inflammation of its lining surface, produced by checked perspiration, reacting upon the bronchial mucus membrane, predisposed to disease from its peculiar morbid irritability, and by all of the causes in general, which tend to produce irritation and inflammation.

These small bronchial tubes and air-cells, are also the seat of that disease which is known as asthma, depending upon the spasmodic closing of the air-cells and tubes, so as to exclude for a time the atmospheric air, and causing laborious and difficult respiration. Many persons are predisposed to frequent attacks of this distressing disease; and this predisposition depends upon general debility of the nervous system, accom-

panied with peculiar irritability of the pulmonary system. In many instances the peculiar predisposition to this affection is hereditary, and in other instances it is engendered by a false or neglected system of physical education in infancy!

Tubercular or pulmonary consumption, that pale and withering pestilence, which is estimated to destroy at least seventy thousand victims in this country every year, is located in these delicate pulmonary air-cells. It depends upon the deposit of large quantities of grayish material in the air cells, called tubercular matter, which is quite firm and consistent at first, and in the course of time it is softened by the process of inflammation, and coughed up and expectorated, leaving a cavity which heals, or ulcerates, and causes the death of the person so affected. This tubercular matter is also found deposited in the necks, and other parts of the bodies of scrofulous children, and these lumps are known as kernels in the neck, and by others as scrofula, or king's evil. Indeed tuberculosis, or consumption, and scrofulosis or scrofula, are regarded by the best modern authors, as identical. And it is generally believed that true pulmonary consumption can only exist in a peculiar strumous or scrofulous habit. Such persons are always strongly predisposed to this fatal disease!

Consumption is not produced, then, as many suppose, by taking cold, but by all of those causes which produce humeral affections and impurities of the blood. You have often observed that during a single inclement season, several persons will contract severe colds and some of those affected will soon recover, while the

others sink into a gradual decline and finally die of extreme exhaustion. The lungs of those who recover are free from all tubercular matter, and those who decline and die of pulmonary consumption had tubercular matter in their lungs, predisposing them to the active or acute form of the disease whose rapid progress was hastened by the cough and inflammation.

Now, inasmuch as it is a well known fact, that the second and third stages of pulmonary consumption are beyond the reach of remedies, it becomes important for us to detect this disease long before the cough and hectic flush and night sweats manifest themselves, so that the appropriate hygienic remedies may be applied before it is too late. This may be easily done by a thorough physical examination of the chest.

Healthy lungs are empty, or like a barrel that contains nothing but air. Now any good mechanic can tell whether a barrel is full or empty, by gently striking the end of it with his fingers, and so also, upon the same principle and by similar means, can a good physician tell whether the lungs are empty or not. If they are empty and contain nothing but air, there is produced the hollow sound by gently striking with the ends of the fingers the exterior of the chest! Again, these physical explorations of the chest may be rendered still more certain by listening to the respiratory murmur produced by the passage of the air along the air-tubes. If these tubes are closed or filled by the deposit of tuberculous matter, of course there will not be any sound produced. If the natural sounds can be distinguished, it is an evidence that the lungs are in a sound and healthy condition.

If you examine these healthy, natural lungs, you will find that they are as soft as velvet and exceedingly elastic, (here the Doctor exhibited the lungs.) They appear very small, because they contain no air; but if I apply this brass tube to my mouth and blow them up, you will observe the immense amount of air which they are capable of containing. Now when the air-tubes and minute cells are filled with tubercular matter, the lungs become solid and heavy, and are rendered incapable of containing air, as you will observe in this natural preparation of diseased lungs, which I removed from a person who died of pulmonary consumption. In some parts of these lungs you will find this tubercular matter almost as hard as burnt limestone, and in other parts, of a cheesey consistence; in other parts you will find large cavities produced by the softening and expectoration of the tubercular matter. When the disease has extended even thus far, if the constitution is strong, the vital powers may cause adhesions to take place, and the patient may recover, but these instances are extremely rare.

The great objects of respiration are to stimulate, cleanse and purify the blood. The atmospheric air which we breathe, is composed of oxygen or vital air, united with nitrogen and carbonic acid gases. The oxygen of the atmosphere is exhaled by the leaves of the vegetable kingdom, while the carbonic acid gas is exhaled by the lungs of animals. The lungs of the animal kingdom are continually absorbing oxygen, which changes the dark, venous blood to a bright scarlet red, while the leaves of plants are continually inhaling carbonic acid gas! Thus these two kingdoms

seem wisely to have been constituted by the Creator to balance and sustain each other, not only supplying food, but also air for each other to breathe!

If we exhale pure oxygen gas it produces a degree of stimulation amounting almost to intoxication, and hence it is diluted with nitrogen in the atmospheric air, adapting it to all the purposes of respiration.

During respiration, the anterior ends of the ribs are raised up by the action of the intercostal muscles, and at the same time the central portion of the diaphragm drops down to the extent of about three inches, causing the air to rush in through the air-tube, distending all of the little air-cells in the lungs to their utmost capacity. The right lower chamber of the heart then contracts, and forces the black, impure and venous blood out into the small net-work of blood vessels on the outside surface of the air-cells, when it throws off its black material or carbonic acid gas into the air-cells, and at the same time absorbs the oxygen of the atmospheric air, instantaneously changing its color from the darkest venous hue to the brightest scarlet red. The aggregate extent of surface afforded by these numerous air-cells for the purification of the blood, is said to exceed twenty thousand square inches! Over this vast surface, all of the blood which is contained in the human body passes every two minutes and twenty-eight seconds, and is completely cleansed and purified, and has "breathed into it the breath of life," which renders it warm and stimulating to all of the different organs of the human body!

In all of the inferior animals, where little or no provision is made for respiration, the blood is cold, and

their motions are torpid and inactive; as in the earth-worm, snail, and many of the reptile series. Many of the superior animals also hibernate or secrete themselves in dens, during the winter season, and become torpid and inactive, for want of fresh air and active respiration. Indeed, there is the most intimate relation between the capacity for respiration and the activity of all the inferior as well as the superior animals. If we examine the little humming-bird — whose delicate, gossamer wings move with a velocity scarcely distinguishable, as it sips the nectar from flower to flower — we shall find that it possesses immense lungs, in proportion to the size of its body. These lungs, which move with the most extraordinary activity, enable it to inhale large quantities of air, which warms and stimulates its blood, and infuses the most astonishing energy and power into its delicate system.

Again: look at the noblest bird of Columbia, the grey forest eagle, who laughs with scorn at the power that is displayed by the steam engine, as he mounts to the clouds, amidst the lightning and whirlwind!

The grey forest eagle — oh! where has he fled?
Does he shrink to his eyrie, shivering with dread?
Does the lightning blind his eye? has the terrible blast
O'er the wing of the sky-king a fear-fetter cast?
Ah! no; no; the brave eagle thinks not of fright:
The wrath of the tempest but rouses delight.
To the flash of the lightning his eye casts a gleam;
To the shriek of the wild blast he echoes his scream —
With front like a warrior spread to the fray,
With clapping of pinions, is up and away.
Aye, away! away soars the fearless and free;
Reckless of the sky-strife, its monarch is he.
The lightning darts round him — undaunted his flight:

Still upward, high upward he wheels, till his form
Is lost in the black, scowling gloom of the storm!

If we examine the anatomy of the eagle, we shall observe that its lungs are enormous, in proportion to the size of its body. They not only are adapted to receive vast quantities of air, but their larger extremities are pervious; so that the air not only passes into, but through them, into all of the tissues, and even into the bones and ends of the quills of the animal; so that its whole system may be said to be subservient to the purposes of respiration.

The same law also prevails in reference to man, as well as all of the inferior animals. Those that have the largest capacities for respiration, are always the strongest and the most active. Among the domestic animals, the horse affords a remarkable example to illustrate the truth of this observation. Observation and experience have taught the farmer, that the one who possesses a deep and broad chest is always the strongest, and the most capable of performing great feats of physical strength. If he is asked to purchase one of these animals with a narrow, wedge-shaped chest, he says, at once, "Sir, your horse is foundered, and he is good for nothing!" Well, now, there are thousands of our fashionable young ladies and gentlemen who are also foundered, and, according to the same rule, you can easily estimate their value for any useful purpose. (Applause.)

Experience has taught man to look with respect upon the broad chest and manly proportions of his fellow-man, while, on the contrary, the narrow chest and stooping figure are associated with weakness and effeminacy.

Again: longevity, or the length of life, also depends upon the size and capacity of the lungs, both in man and the inferior animals. Thousands of insects live but to attain an ephemeral existence of a few moments; others live only for a few short months, while the eagle almost bids defiance to the influence of time and its changes!

> Ah! that eagle of freedom! age dims not his eye:
> He has seen earth's mortality spring, bloom and die;
> He has seen proud nations rise, flourish and fall,
> But mocks at time's changes, and triumphs o'er all.
> His presence ever shall bless his own native clime,
> Till the foot of the archangel is placed on time!

Nor is man, indeed, any exception to this general law of nature; and although few live to attain the age of the patriarchs of old, it is not because nature is less kind, or because nature's God has changed, but rather because our present highly artificial and fashionable mode of living is at war with principles of longevity.

Now then, inasmuch as it is clearly demonstrated, that whatever injures and weakens the lungs, also weakens and destroys the body, and prostrates the mental and moral powers, which depend upon it for their healthy manifestations, it becomes a subject of the greatest interest and importance for us to understand the laws which govern the development of these organs — laws which are generally disobeyed, because imperfectly understood.

1st. The stooping or bent position in sitting and standing, diminishes the size of the chest, and impedes the movements of the respiratory organs!

If you examine the trunk of the human body, (fig. 1,) you will observe that its two great cavities are filled

to repletion with the vital and nutritive organs. Now if we bend forward, the effect is to diminish the size of these cavities, and of course to compress the pulmonary organs, and impede the freedom of their motions. The truth and importance of this proposition may be seen from a simple experiment which you may at any time try upon yourselves. If you wish to inhale a deep and full inspiration, you involuntarily place your body in the erect position, throwing the anterior walls of the chest outwards and upwards, so that you may distend the lungs to their utmost capacity.

Again: the shoulder blades are imbedded in the muscles upon the posterior walls of the chest, and move freely backwards and forwards, as we change the position of our bodies in sitting and standing. When we bend forward, the shoulder blades and shoulder joints slide forward upon the upper portions of the sides of the chest, throwing their whole weight upon the ribs, and diminishing the freedom of their movements. The attention of females, and others engaged in sedentary and inactive employments, is particularly directed to the nature and importance of this law. From much observation upon this subject, both in this country and in Europe, I am of the opinion that much nervous debility, and many cases of indigestion and pulmonary consumption, are produced by this pernicious and vulgar habit of stooping or bending forward, while following various mechanical employments, as in writing, sewing, &c. Parents who value the health and welfare of their children in after life, cannot be too particular in correcting this pernicious habit in infancy.

2d. It is a natural law, that the dress worn by the human being should not be so tight as to diminish the size of the chest!

If you examine this natural chest, in which the lungs are located, you will observe that it is as elastic and compressible as a willow basket. Now, if a small or tight dress is applied to this chest, it will force the ribs inwards, decreasing the size of the cavity, and producing corresponding weakness of body, and decay of mind! If you would witness the truth of this observation for yourselves, ask the young lady who is dressed in the most approved fashion, to attend an evening party, ball, or levee, if she will romp and play with you, or engage in any innocent amusement requiring active exercise. How soon she is out of breath, fatigued, and exhausted. Indeed all active exercise at such parties is considered vulgar and coarse. And why? Simply because fashionable young ladies' waists, compressed in bones and buckram, are not capable of enduring the fatigue and exertion! The chests of many of them are compressed into so small a space, that they gasp for breath, and their eyes stick out like cups and saucers, even while they sit still! (Applause and sensation.) It is hard work for them to live and do anything more than fan themselves, and converse about the last sickly novel that has emanated from the press!

And why is it, young gentlemen, that the fairest, and in many respects the most interesting portion of humanity, are so ready to sacrifice their strength and happiness to the dictates of this custom and fashion? Some cruel young knight of the mustache has de-

clared, it is because they love to be squeezed! (Laughter and applause.)

But no, gentlemen! it is because the Creator has strongly implanted in their hearts the desire to please those gentlemen of the opposite sex, whose most momentous thought is to determine in their minds whether the locks of their hair shall hang lower before or behind — whether they shall curl or hang straight — whether the whiskers shall come down under the chin or stop half-way. The most perfect character for a woman, in the estimation of these "nice young men," is to be characterless — fine by defect, beautifully weak, so that they shall be compelled to lean upon *them* for support. (Applause.) Very few young gentlemen would dare to outrage and insult the feelings of fashionable young ladies, by telling them they were the very pictures of health! It is so coarse and vulgar for a woman to be healthy, in the estimation of these would-be "lords of creation"!

Fashion is determined by a foolish and idiotic public opinion, and not upon principles of morality, health and beauty. The Chinese mother causes her infant to endure all of the pain and agony produced by a tight fitting shoe, in order that the feet of her offspring may be small and beautiful as they advance in life! When a Christian or civilized people contemplate the Chinese women's small, deformed, and decrepid feet, which are so destructive of all freedom, grace and beauty of movement, they are astonished and disgusted!

Among certain tribes of North American Indians, it is fashionable to have flat heads; and the cruel Indian mother, in order to secure so desirable, because fash-

ionable an end, binds up the head of her infant, while the bones are yet soft and elastic, between splints of wood, until she produces, in *our* estimation, the most hideous deformity!

In Algeria, among some of the barbarous tribes, it is fashionable to be fat and fleshy, and the mother feeds her daughter upon a certain fattening diet, and if, at the age of eight or nine, she weighs three hundred pounds—a whole camel load—she is considered the very climax of beauty, fashion, and perfection, and brings the highest price in the market, as a wife for some "love-sick young swain!" (Applause and laughter.)

Among certain Asiatic tribes, it is considered a great mark of beauty to have a very long nose; and in early life, while this organ is yet soft and gristly, the anxious mother pulls it several times a day, until it is half a foot long! Again, among other tribes it is considered fashionable, and beautiful, to have very long chins. And the mother, by dint of daily manipulations, like those of our fashionable young exquisites with their whiskers, succeeds in stretching them out until they might possibly hang their breakfast upon them! (Great applause.)

Now, you may think that it will do very well for us to laugh at the fashionable folly of these poor ignorant barbarous races, who thus deform and destroy their own beautiful organizations. But what shall we say of enlightened, Christian, and civilized ladies and gentlemen, who are guilty of a fashionable custom of deforming the beautiful image of the Creator, by squeezing it until it looks like an hour-glass—or rather like a

meal-sack with a string tied around the middle! (Applause.) We read that man is created in the image of God himself, and poets and painters have imprinted upon the ideal form of angels, *woman's* form and features; and yet — will it be credited in some future or purer age? — they are ashamed of the image of the God they worship, and would render it a little more fashionable by the use of strings and whalebones! (Great sensation.)

But, says the votary of fashion, small waists are beautiful! And says the savage, small flat heads are beautiful. What, then, is the standard of beauty? If you will read Hogarth's works, or Sir Joshua Reynolds' chaste and classical lectures upon "the art divine," you will discover that *nature* is the standard of beauty, and that all of those beautiful creations of genius, which almost speak from the canvass, are but the successful combination of the most beautiful principles of nature.

All of those objects whose outlines combine the greatest number of curvilinear lines are regarded as the most beautiful. The surface of the earth is beautifully diversified with hill and dale. The stream meanders over the meadow—the ivy creeps upon the ground—the oak sends forth its sturdy branches, not at sharp angles, but in graceful curves. In the "human form divine," we behold the greatest number of these graceful curvilinear outlines, clearly demonstrating that it is by far the most beautiful object in external nature.

That paragon of artistic excellence and female beauty, the Venus de Medicis, which has long excited the

admiration of the world, is replete with these graceful lines.

"So stands the statue which enchants the world,
So bending, strives to conceal the matchless form,
The boasted beauties of exulting Greece"!

It is this celebrated statue which is considered by all living artists, as the *ne plus ultra* of female perfection and loveliness, which artists visit from all parts of the world in order that their hearts and minds may be inspired with the enthusiasm which fired the ancient masters!

"Here, too, the goddess lives in stone,
And fills the air around with beauty.
Within the pale I stand, and in that form and face behold
What mind can make, when nature's self would fail;
And to the fond idolators of old, envy the innate soul
Which such a form could mould."

If you visit the gallery at the Louvre, or the Vatican at Rome, you will there behold the master works of a Raphael, Guido, Michael Angelo, and Rubens, the greatest artists that the world has ever known. As you contemplate their matchless forms, that seem almost to speak from the canvass, your eye will seek in vain for the waist of the modern fashionable belle! They painted for posterity, and they knew that their pictures and works of art would live far down in future ages, as time should roll on, only in proportion as they were the faithful transcribers of the eternal principles of nature!

Who, then, are responsible for this false but fashionable public opinion, so inimical to the health and welfare of the race, so opposed to the spirit of progress and improvement, but its authors, these foolish young

men, who fill the giddy heads of young ladies with the most extravagant adulation and fashionable nonsense? If the modern female exercises in the open air, or gymnasium; if she runs, leaps, jumps and plays, in accordance with her instincts; and secures, as the legitimate result of this exercise, rosy cheeks, and a healthy, robust and well-formed body, this false and idiotic public opinion esteems her too coarse and vulgar! Our fashionable young men say, that "she is as large as an elephant," or that "she looks like a great, coarse, stupid, country girl," or some other equally stupid and insulting remark. These gentlemen call upon these fashionable young ladies, and tell them that they have a great compliment for them, from a gentleman. Of course they are all expectation to hear it, and at last, after a little persuasion on the part of the ladies, they are induced to tell it: "Charles Webster says that cousin Sarah has the smallest and most lovely waist that he ever saw in his life." "Oh, what a compliment!" says cousin Sarah, and she surveys herself in the mirror, to ascertain if it is really so. I think the strings will get a double pull after that! (Applause.)

In the saloon, or upon the promenade, the pale and sickly, with the broken backs and deformed waists, engross the whole attention of our fashionable young men; while the noble woman who has dared to let the rays of the summer sun kiss her rosy cheek — who has lived in accordance with her own nature and wants, is passed by on the other side!

Is it strange that, failing to receive the countenance of those whose good opinion she most highly values, she should become discouraged, and say to herself, "All

of the gentleman say that I am too healthy and coarse. Well, I guess I willput on the strings, and hooks and eyes, and eat pickles, drink vinegar, and pull away, until I get so weak that I can faint at the sight of a spider, or go into fits at the sight of a mouse; then all of the nice young men will protect and flatter me." (Rounds of applause.)

You see, gentlemen, that all such waists are made to order, merely to suit the market, and because we will not have any other. If gentlemen should say to the ladies, "natural waists or no wives," the way the strings, and hooks and eyes would fly — (great laughter,) and if the ladies would only say, "no tobacco or no husbands," what would become of the trade of the tobacconist? (Sensation.)

But you need not be alarmed; there is really no danger; for when a young gentleman goes out at the present day, to select himself a companion or partner for life, he does not stop to ask what is the size of her lungs, or heart, or brains, but how large her papa's purse is. If it contains fifty or one hundred thousand dollars it covers up a multitude of defects! (Applause.) And yet if they were about to purchase a cow, a horse, or even a pig, they would wish to know whether they were of good stock, whether they had fine lungs, were healthy, &c. *Here* the *purse* is concerned; but *there* the *best* interests of posterity! We improve the races of the domestic animals, we cultivate flowers, and plants, and take much credit to ourselves for holding agricultural fairs, for the purpose of displaying our success in these departments; while we leave our lean, pale, and scrofulous children, "that are scarcely worth

raising," at home, in cruel neglect! (Sensation and applause.) When I have visited these numerous exhibitions, and have beheld these fine fat oxen and horses, this beautiful display of fruit, flowers, and vegetables, and have remembered that all of these treasures were the result of careful cultivation, I have wondered if the time ever would come when man would bestow the same care and attention on the cultivation of his fellow-man, that he does now upon the beasts and brutes of creation! If that day ever shall come, it will witness a rapidity of progress and human improvement which will seek in vain in history for an example!

3d. It is a natural law that all constriction by means of dress, or otherwise, which interferes with the upward and outward movement of the ribs, also induces debility of the respiratory organs!

It is not only necessary that the dress should not be worn so tightly as to decrease the size of the chest, but it should be sufficiently loose to admit of the free and easy movement of the ribs. If the dress is composed of inelastic material, and filled with pieces of whalebone to make it set smooth, and is then closely fitted to the ribs, it would impede their motions, although it does not decrease the size of the chest. The chest increases and decreases in size at each inspiration and expiration, and if the garments fit too closely to the chest, and are composed of inelastic material, they as effectually destroy the purposes of respiration as though they decreased its size. There is, then, the same danger in wearing a dress of this description, which is securely fastened with numerous hooks and eyes, that there was in wearing the old fashioned boned

and stringed instrument of fashionable torture, which has been hunted from all reasoning and reflecting society!

At the close of my lectures in different parts of this country, ladies often assure me that *they* do not dress too tightly, but that they know of several that do dress in this improper manner; that *their* waists are naturally very small, &c. And, as if to confirm the truth of the assertion, they place their fingers under the point of the waist of the dress, and raise it up a little, and say, "Doctor, see how loose it is." Now, unfortunately, this is no criterion to judge by at all. Your lungs are not, unfortunately for the success of this experiment, situated in the cavity of the abdomen, beneath the point of the bodice of the dress, (laughter); but they are situated high up in each side of the cavity of the chest! If you would ascertain how far your lungs extend downwards on each side, you may easily do so by measuring downwards six inches from the middle of the collar bone. You will observe that the lungs are not much more than half as long as is generally supposed, and that they do not extend much below the point where you feel the heart pulsating.

The only safe criterion which will enable you to determine whether the dress which you wear is too tight or not, is the following experiment. Now, ladies, I do not wish you to try this experiment here this evening, in the presence of so large a number of young gentlemen, for fear of what might happen! Indeed I know that the trial of this experiment is often attended with an explosion that is extremely dangerous, unless you are concealed behind the door! (Laughter.) When you

go home this evening, and wish to ascertain the influence of your dress in checking the freedom of respiration, stand upon your feet in the middle of the room and raise your hands from your sides until they are higher than your shoulders; and while you maintain them in this position, if you can draw in a deep and full inspiration without feeling that the dress constricts the chest a little along the ribs, under the arms, you can safely pass this natural ordeal and have the pleasure of knowing that you are not, by the indulgence of a foolish fashion, producing for yourselves, inexpressible pain and anguish, and perhaps premature death! It is perhaps proper for me to say, in connection with this subject, that there is not one fashionably dressed female in one hundred, that can successfully pass this ordeal!

The annexed outline of the celebrated Greek Slave, by Powers, the distinguished American artist, represents the *ne plus ultra* of female perfection and beauty of physical development. This statue has been exhibited in the chief cities of Europe and the United States, and has been visited by thousands of ladies and gentlemen, and drew the first *prize* at the recent World's Fair, where it was regarded by thousands with very great interest, on account of its singular beauty and perfection. Many of our tight-waisted fair friends, would do well to model their chests after this beau ideal of female perfection.

Powers' Greek Slave.

While lecturing in a neighboring town upon this subject, only the other day, a gentleman, having an only daughter at home, observed to her after listening to my lecture one evening: "My daughter, let me see if you can pass the Doctor's ordeal safely!" "Oh! yes," says she, "papa, I can." And she raised up her hands and drew in a full breath; and such an explosion, as she burst off the whole of the hooks and eyes from her dress! (Applause.) So be careful, ladies, and not try any of these experiments in the presence of gentlemen! In reference to dress, the female would do well to follow the directions of the poet to the painter.

"Free o'er the limbs the graceful vesture cast,
The light, broad folds in grace majestic place,
And as each figure moves a different way,
Give the broad plaits their corresponding play,
Yet devious oft, and swelling from the part,
The flowing robe, with ease should seem to start;
Not on the chest in stiff adhesion laid,
But well relieved by gentle light and shade.

4th. It is a natural law that the exercise of the lungs, within certain limits, increases their size and power!

The lungs, when subjected to the power of the human mind and moral sentiments, are much like the clay in the hands of the potter, capable of being moulded into the beautiful vessel so faultless in its proportions! At birth, we possess but the rudiments of these organs, and by exercise, as we advance in life, they are capable of being unfolded and developed, until they become large, strong, and powerful! And so also of the rudiments of the human mind and feelings; they

are innate or Heaven-born; but the transcendant powers of the statesman, poet, and scholar, as well as the sacred sentiments and affections of the philanthropist, depend upon the education or cultivation which we have received in infancy! Strike out common schools; shut up our religious temples and seminaries of learning, and rapid will be the march of man back to a state of mental and moral imbecility and barbarism! What is true of our mental and moral, is also true of our physical nature. Close the play-grounds and the gymnasium, and deny access to the green hills and rich valleys to the youth of our land, for physical education and manly exercise, for the development of the young and feeble powers of their physical organization, and rapid will be the decline of the health, strength and beauty of the American race!

The lungs may be called into action directly and indirectly, by physical exercise. If the young lady sits or reclines upon the sofa, her lungs move slowly, and the number of inspirations is diminished. If on the contrary she runs, romps and plays, her lungs are far more active, and a larger quantity of air is introduced into the system. Idleness and indolence are often the parents of pulmonary consumption; and this is the reason why this disease is so often the scourge of the wealthy and the affluent. They frequently neglect the development of their chests, and the education of their lungs, by wholesome exercise in the open air.

If your sons and daughters have weak lungs, remove the debility by well-regulated physical exercise. Encourage your daughters to play the graces, or drive the hoop and jump the rope, in the open air. Such exer-

cise calls into action the muscles of the arms and chest, increasing the size of its cavity, and developing the lungs and vital organs. If this kind of physical training were better attended to in infancy and youth, there would be comparatively little danger of consumption, as we advance in life!

Many of the most learned and distinguished members of the medical profession have arrested a strong predisposition to this disease — not by shutting themselves up in warm rooms at a temperature of sixty or seventy degrees, and taking sarsaparilla and cod liver oil — but by taking their staff in hand, with a knapsack thrown over their shoulder and wending their way across the broad Alps or Alleghanies. As they ascend the steep and rugged declivities of these mountain ranges, they will be compelled to arrest their steps frequently in order to inhale the fresh breezes; and as they wipe the perspiration from their brows they will feel a freedom from that uncomfortable tightness across the chest, which they had not experienced for many months! The celebrated Dr. Liston, the distinguished British Surgeon of London, was, during his lifetime, in the habit of rowing a boat upon the Thames one hour every morning for the purpose of improving his chest and developing his lungs, and, as he often declared, with the most astonishing success. When Dr. Parrish, of Philadelphia, was attacked with pulmonary consumption many years since, he did not shut himself up in the house, and begin to take various quack nostrums. No; he had seen the results of that practice long enough, and knew that it was death! He went out upon his farm in the open air and worked

it off in a few months; and dying several years afterwards, his medical friends found upon examining his chest, the large cicatrix or scar produced by the healing of the ulcerated cavity, demonstrating that they were not mistaken in the nature of his disease!

If we would then preserve the health and strength of our lungs as we advance in life, we must daily exercise them in the open air. And especially will this be the more necessary among those who are engaged in sedentary and inactive employments. The retired merchant, after having secured wealth as the result of his toil and close attention to business, erects for himself his country mansion and determines to enjoy the remainder of his life in ease and affluence, and is often disappointed in his expectation, by the premature development of pulmonary disease.

5th. It is a natural law, that grief, melancholy, and despair depress the mind, and decrease the action of the lungs.

If you observe the long, infrequent, and fitful respiration induced by grief and despair, you cannot fail to understand what must be the exhausting and debilitating influence of such emotions! "The breathlessness of despair," which we read of in the poets, often causes the most complete and perfect exhaustion, terminating in fits and convulsions! Can it be possible that such powerful mental shocks, expending their chief influence upon the pulmonary organs, shall not, in the process of time, develop disease of a fatal character? The disappointments of ambition, and the despair and melancholy produced by misfortune, together with the disagreements and jealousies of domestic life, I fear, but too often induce this fatal disease.

The ingratitude which woman experiences from man, is a subject on which I have often meditated with painful feelings.

Says Dr. Johnson, in his work on the "Economy of Health," "Had not the God of nature added instinct to reason, in the human female heart, the race of man would long since have ceased to exist! The pains, the penalties, the toils, the cares and the anxieties of our mothers, on our account, are not repaid by any thing like an adequate degree of gratitude, on the part of their offspring. Nothing, indeed, can compensate the female parent for what she undergoes, on the part of her children; and boasted reason would sink under the task, or shrink from the duty, had not the omniscient Creator infused into the mother's heart the irresistible instinct of the lioness, which prompts the savage animal to die in defence of its progeny! In the savage beast, the instinctive feeling soon ceases, and reason being absent, all sympathy between parent and progeny ceases also. But not so with the human female parent. The primary instinct is never entirely obliterated, but cherished by the nobler gift of reason. Is it not strange that the ancient poets, when deifying so many of the meaner attributes of human nature, forgot maternal affection? They have clothed in the robes of divinity the barbarous monster who slaughtered the children of Niobe, when they ought to have deified the paternal agony which the mother felt, and which even the marble yet breathes forth!" The immortal poet, Campbell, has personified this same maternal love of offspring, in one of the most beautiful forms, under which he delineates his "angel of life," his favorite hope.

"Lo! at the couch where infant beauty sleeps,
Her silent watch the mournful mother keeps;
And weaves a song of melancholy joy—
'Sleep, image of thy father; sleep, my boy!
Thy fame, thy worth, thy filial love, at last,
Shall soothe this aching heart for all the past;
With many a smile my solitude repay,
And chase the world's ungenerous scorn away.'"

That it is the instinctive love of offspring, rather than the hope of a return of love and filial duty, which fills the mother's breast with the musings so beautifully described by the poet, I firmly believe. Indeed, I think that the poet himself has proved it; for soon afterwards he breaks forth thus:

"So speaks affection, ere the infant eye
Can look regard, or brighten in reply."

There is another train of reflection which the poet causes to pass through the mind of the mother, while gazing on her unconscious babe, and which I believe to be more natural—certainly more sublime and disinterested than that which he has already portrayed.

"And say, when summoned from the world and thee,
I lay my head beneath the willow tree,
Wilt *thou*, sweet mourner, at my stone appear,
And soothe my parted spirit lingering near?
Oh! wilt thou come, at evening hour, to shed
The tear of memory o'er my narrow bed—
Breathe a deep sigh to winds that murmur low,
And think on all my love and all my wo?"

In that passage, ladies and gentlemen, there is a thought worthy of an immortal being, and in itself indicative of immortality! Oh, let us cherish the virtues and the love of woman; for, indeed, she cannot receive sufficient gratitude for what she has suffered on account of her offspring!

6th. It is a natural law that pure, fresh, atmospheric air is essential to support healthy respiration.

The lungs of the human being will contain about one gallon of air at a time, about one-half of which is inhaled and exhaled every inspiration and expiration. We breathe about twenty times each minute, and every time we breathe, we introduce and discharge from the lungs about two quarts of air, or ten gallons per minute. We breathe 1200 times per hour, and inhale 600 gallons of fresh air. We breathe over 28,000 times in twenty-four hours, and inhale more than 14,000 gallons, or 50 hhds. of fresh air in the same length of time. We exhale or breathe out of the lungs about 26 cubic inches of carbonic acid gas, or impure air, per minute, or 1460 cubic inches per hour, and more than 17,000 cubic inches every twenty-four hours of our lives.

From these statistics, you can form some opinion of the immense importance of the perfect ventilation of all sleeping apartments, public buildings, and dwellings occupied by human beings. If this room were closed so as to be air-tight, a room large enough to seat a thousand persons, we should all suffocate and die in a few hours! Catch, if you please, a fly from the window, and enclose it in this small glass phial, and then seal it with a little sealing wax, so that its mouth shall be air-tight, as I now do this one, and you will see that the fly will die in two or three minutes! Again: catch a beautiful humming-bird, an animal whose lungs exhaust large quantities of air, and inclose it in this small glass jar, which is air-tight, and as soon as it has ex hausted or breathed all of the vital air, which takes, as you will see, but a few moments, it droops and dies! (Great sensation produced by these experiments.)

Now what, think you, must be the influence of the same conditions upon the human constitution? Some two years since a steamer left the port of Dublin for Liverpool, with a large number of emigrants and passengers; and a storm coming on during the night, in the noise and confusion usually attendant upon such occasions, the hatches were closed down, and more than seventy passengers were suffocated, and perished for want of fresh air during the night! Their cries of distress, and screams of despair, were not heard, owing to the prevalence of the storm! The melancholy consequences of violating this natural law, were remarkably exemplified by the confinement of the English prisoners in the Black Hole, or dungeon of Calcutta, a large number of whom perished for want of fresh air during the night; and those who survived until morning, were soon seized with malignant and putrid diseases, which proved fatal in a few days! Carbonic acid gas, or impure air, is heavier than the atmosphere, and sinks into the valleys, caves, old wells, grottos, cellars, &c. It is often dangerous, for this reason, for persons to descend into wells or caves, without first throwing down a bundle of lighted straw or faggots, which warms the poisonous air, and renders it lighter, so that it ascends and is expelled! When we first breathe out, or exhale this gas, it is lighter than the surrounding atmosphere, but as soon as its temperature is equalized, it sinks again to its natural position. Those emigrants who select the lower berths on board our packets, are for this reason much more liable to nervous or ship fever, than those who occupy the upper berths, because they are continually, during the night, inhaling the

impure air that has been exhaled by their more fortunate friends above them! In many instances, the physician is startled from his slumbers during the night, by the calls of some neighbor in distress. He hurries on his clothes in great haste, and then inquires what is the matter? and is informed that his neighbor's child is attacked with the croup! After walking a few squares, he enters the house; and the moment the door of the sick room is thrown open to receive him, his nostrils are saluted with an odor which explains to him at once, the cause of the mischief! He looks around the sleeping apartment, in many instances nothing but a little box about eight or ten feet square, and he soon discovers that the mother has filled all the cracks and crevices about the windows with pieces of paper, for fear a little of the fresh air should get in, and give the children a bad cold, &c. If he stops for a moment to enumerate the inhabitants of such a room, he will find, in many instances, first, a large bed for the parents and a young infant; and from beneath this large bed there is drawn every night, a trundle bed, and into that there are crowded two or three children—six persons in all, in a room of that size, whose door and windows are shut almost air-tight! (Sensation.) The father and the mother first breathe over all of the fresh air up above and then send it down for their weak and rickety children to breathe after them! Is it a wonder, under such circumstances, that the younger and more feeble ones have croup and scrofula—that they are lean, lank, and sickly, and always want purifying vegetable pills, and sarsaparilla, cod liver oil, &c.? (Sensation and applause.) If you contrast these

children with those that live in the open log cabin, through whose open roof they can

> "Behold the broad canopy of Heaven,
> Thickly inlaid with stars of bright gold"—

you will discover in their red and rosy cheeks and blooming health, some of the benefits of breathing fresh air! "The symptoms of breathing impure air, or carbonic acid gas," says Orfila, the President of the French Academy, "are, first, dryness of the throat; second, ringing in the ears; and third, a feeling of oppression or weight through the temples!" Now, how many of this audience suffer more or less from these feelings every day? Many ladies and gentlemen often ask me what is the cause of the formation of this tough mucus in their throats, and this want of appetite in the morning. All of it is produced by inhaling air that is loaded with noxious vapors!

But, says some one in this audience, you would not surely advise us to breathe the damp night air, would you? Damp night air? Why, the air in your close and ill-ventilated sleeping apartment, which is loaded with the poisonous vapours exhaled from your lungs is much damper than the atmosphere, as may be shown from some very simple philosophical experiments, and it is not only damp, but it is poisonous and fatal to life and health!

You need not be afraid then to let in a little fresh air during the night, for, rest assured, the all-wise and benevolent Creator made it to be breathed, and it won't hurt you half as much as you may think it will! (A laugh.) At all events, be sure that you raise the window a little before you catch cold, and not be

like the lady at Lewistown, whose husband heard my lecture upon this subject, and then went home and raised up the window in his children's sleeping room. His wife, who was down stairs, hearing him raise the window, supposed that it was in her room that he was raising the window; and upon retiring soon after, found much fault with her husband, as she was sure that they would all catch their death of cold. But the husband said nothing, remarking to me afterwards that he thought he would see what conceit would do for once. After retiring, the wife supposing that the window was up, was seized with cold chills, and kept nudging her husband with her elbow, declaring that her young infant was getting the croup, until finally after daylight in the morning she looked down to the foot of the bed, and found that the window was closed, just as it always had been before! She said nothing, but drew her head down beneath the quilt and soon slept soundly. Her husband soon after arose and dressed the little boys, who flew around the house as lively as young crickets, and as hungry as wolves, while he prepared their breakfast for them. By and by the mother came slowly down, and the husband greeting her with a smile, asked her, "How is your cough this morning?" "Do you think the baby has got the croup?" "Had I better go after the Doctor?" &c.! (Great applause.) Now, I advise all of these old croakers to be sure and get the window up before they catch cold, or they may be laughed at!

As for myself, I may be excused for saying that six years since, I weighed about 135 pounds, and was subject to indigestion, nervous debility, palpitation and all the fashionable aches and complaints! Since that time

I have slept with my window up both summer and winter, in clear and in stormy weather, and I now weigh about 212 pounds, and am so fat and fleshy that I can scarcely get my boots on in the morning. (Applause.) I could not sleep at all with the window down. I should feel as though I would suffocate! When Kit Carson and Col. Fremont returned to Fort Leavenworth from their long tour to the Rocky Mountains they were invited to sleep in one of the well furnished houses appropriated to the United States officers. During the night they found it impossible for them to sleep in fashionable quarters, and were compelled to get up, and go out into the neighboring field and throw themselves down upon their blankets. They had slept so long in the open air, that they could not endure the close, suffocating atmosphere of a modern sleeping apartment! The Indians sleep in open air, or in open huts, and wigwams; and they do not take cold, nor are they subject to that fell disease, pulmonary consumption, which is estimated to destroy at least its seventy thousand victims in the United States, annually! Contrast the physical condition of the Indian who roams freely over the western prairie and through the western forests with the thousands of unfortunate operatives who are pent up in our countless factories throughout this land, and what a wide difference you will behold in their physical condition!

Ye who would wear a body free from pain,
Of cares a mind, fly the rank city;
The rural wilds invite, the mountains call ye,
The wood, the vale, the stream, the ambrosial breeze
That fans an ever undulating sky, a kindly sky,
Whose fostering care regales man, beast, and all the vegetable reign.

LECTURE V.

THE SKIN.

YOUR attention is respectfully invited this evening, Ladies and Gentlemen, to the consideration of the Human Skin, and its appendages, the hair and the nails.

The skin is generally regarded by the great majority of mankind as that membrane which is thrown around the outside surface of the human body for the purpose of protecting the more important organs, which are placed immediately beneath it. But this is indeed but a limited view of the nature, extent, and usefulness of the functions of this important membrane. The skin is not only thrown around the outside surface of the human body for the above purposes, but it is also reflected inwards, forming the lining surface of the lungs, and the intestinal canal, where it is called the mucous membrane. It also invests the brain and the lungs, and is thrown over the bowels, and lines the inner surface of the abdominal cavity. If you examine many of the inferior animals, as for instance the hydra, you will observe the intimate relation which exists between the skin on the outside sur-

face of the body and that which lines its inner cavities. In the center of this animal, you will observe its stomach, formed by a simple reflexion of the skin inwards, leaving a single opening at its mouth which communicates with the atmospheric air. If you pass a needle, armed with a thread of silk, through this cavity, you may invert it or turn the animal wrong side out without appearing to injure its digestive functions. The skin, under such circumstances, forms a new stomach, which is capable of performing all of the functions of the original, in a short period of time. It is only by examining and experimenting upon some of the more simply constituted animals, that we can discover the nature and the use of certain parts in the more complicated organization and structure of the human body.

A knowledge of the similarity of structure and functions of these various membranous surfaces, is of the highest practical importance; since it is a well known physiological law, that like organs having like functions, sympathise with each other; and impressions produced upon one organ, frequently produce disease in another organ, of similar anatomical structure and functions. Thus: it will be seen that the eyes resemble each other in structure and functions. If you get a mote or grain of sand in one eye, not unfrequently both eyes shed copious quantities of tears. If the skin on the outside surface of the child's neck and chest is exposed to the "rude and chilling zephyr," it produces inflammation of the mucous membrane lining the throat, or bronchial tubes of the lungs; and if one fifth part of the skin on the surface of the human body

is burned or scalded, death inevitably takes place—not in consequence of the burn on the outside of the body, but from its influence upon the surfaces of the deeply-seated vital organs, causing, in many instances, inflammation and mortification!

If we remove a part of the skin from the arm, and digest it for a short time in water, we shall be able to separate it into three principal layers, known as the cuticle, or scarf skin, the rete mucosum, or colored layer, and the cutis vera, or true skin, all of which have different functions assigned to them, a knowledge of which is necessary to enable us to understand the influence of the skin upon health.

The texture of the skin, as you will perceive, varies at different periods of life, being soft and delicate in infancy, and coarser and thrown into numerous folds, by reason of the absorption of the fat situated in the cellular tissue beneath, as we advance in life. It is also much softer and finer in its texture in the female than in the male. It varies from one-eighth to one-fourth of an inch in thickness, and in general appearance resembles so strikingly the skin of a certain domestic animal, raised very abundantly in the State of Ohio, as not to require me to give the characteristic grunt, to designate the name more clearly. (Laughter and applause.) In early life, the interstices of the muscles are filled up by the deposit of fat, which distends the skin, and gives to its outside surface that smooth, round and graceful appearance which is so characteristic of health and beauty, in the human form!

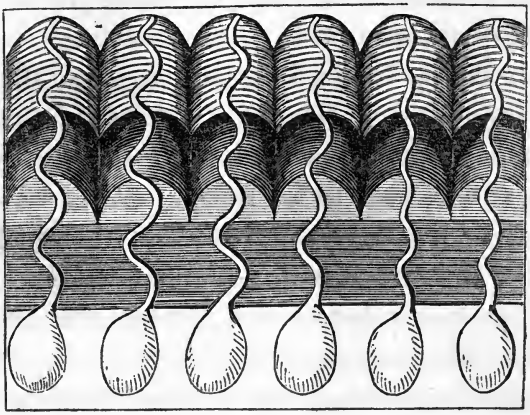
The outside layer of the skin differs from all of the

other layers, in its general want of organization. If you cut it with a knife, or prick it with a pin, it does not bleed, nor does it appear to possess any sensibility productive of the sense of pain. It appears, in fact, to be a simple, inorganized, or dead layer of albuminous matter, spread over the outside surface of the human body, for the purpose of protecting its delicate blood-vessels and nerves from injury. It diminishes the intensity of the impressions made by external agents upon the sensitive nerves; and yet its walls are so thin, that they do not impair the accuracy and delicacy of the sense of tact and touch.

Many of our ordinary impressions would be productive of painful sensations, were it not for the protective influence of this important membrane. Even the cooling zephyr, which produces such a grateful impression, as it fans the brow of the weary traveler, upon a warm, summer day, would produce the most exquisite agony, if it were not for the intervention of its delicate layers. Its protective influence is again remarkably exemplified in its increased thickness, under certain circumstances, where the parts beneath require additional protection. If the mechanic diligently plies his hammer, the delicate nerves on the palms of his hands are preserved from injury by the increased thickness of the cuticle, which, in many instances, rises up in hard knots or ridges, for that purpose.

The cuticle is composed of dried albumen, a substance which resembles the dried white of an egg—the same material which enters into the formation of the hair and the nails, which are its appendages. If you

examine this microscopic diagram of *the three layers* of the skin, you observe that the cuticle is composed of



numerous layers, which are constantly forming by the deposit of the albuminous principle from the blood, upon its under surface; while the outside layers are constantly peeling off, in the form of dandruff or scurf. This layer assumes many different forms in the inferior animals, constituting the scales of fishes, and the shell of the turtle; and even in man, sometimes it takes on a diseased action, and becomes remarkably thickened, over the entire surface of the human body!

The rete mucosum or mucous net-work, is an exceedingly soft and delicate membrane, and is the seat of color in the skin. It is extremely difficult to find this layer in the Albino, less difficult in the Anglo Saxon, and easy of detection in the African. The color of this layer depends upon the amount of dark pigmentary granules which are deposited in the meshes of its net-work. It is the same layer which gives the beautiful red and yellow spots noticed upon the sides of the mountain trout and which bestows such variegated and

beautiful hues upon the skin of the dolphin. The depth and intensity of the color of this layer of the skin always depends, in a great degree, upon the activity of its functions, which are governed, to a great extent, by the temperature of the surrounding atmosphere! The dark pigmentary granules are secreted from the blood, and all of those circumstances or conditions which determine additional quantities of this fluid to the skin, will tend to increase the depth of its hues. If the inhabitants of temperate regions leave northern latitudes and visit the tropics, the increased warmth of the atmosphere stimulates all the functions of the skin, increasing perspiration, and also the amount of dark granules which regulate the hues of this layer! The same general law holds true in reference to the hairs and plumage of the inferior animals, which are composed of the same material, and are indeed, appendages of the two outside layers of the skin! The furs of tropical animals are darker and more brilliant, and the plumage of the feathered songster is of the hue of the raven's wing, or of the darkest green, or the deepest scarlet red!

Beneath the rete mucosum you will discover the cutis vera or true skin, which is the seat of some of the most important functions of animal life. Upon its upper surface you will observe a most beautiful net-work of arteries and veins, which contain the blood of the skin and which bestow upon it that red and rosy color so indicative of health. From the blood contained in these numerous blood vessels, are secreted the perspiration and other impurities, by means of numerous follicles, the nature of which will be fully explained here-

after. The immense number of arteries and veins which the true skin contains, may be inferred from the well known fact that we cannot penetrate its surface on any part of the human body with the finest cambric needle, without wounding some one or more of them and causing the blood to flow from the opening. These blood vessels are so exceedingly minute that they cannot be seen with the naked eye, and yet when we take into consideration their immense number in the whole skin of the human body, it will be found that their aggregate capacity enables them to contain more blood than the larger blood vessels of the heart, and deeper seated organs!

In this beautiful net-work, and in contact with these blood vessels, we discover numerous sensitive nerves which arise from the posterior column of the spinal marrow and terminate in numerous loops beneath the cuticle. These nerves serve the purpose of transmitting impressions made upon the skin, to the brain, and thus enabling us to judge, through the agency of the sense of tact and touch, of the qualities of various objects which surround us.

The vast number, and the importance of these sensitive nerves, may be demonstrated by a simple experiment conducted with the finest cambric needle. Not the smallest point can we discover on any part of the skin of the human body, which is not fully protected from injury, by their numerous sensitive loops. We cannot even pierce the skin with so delicate an instrument, without wounding some one or more of these minute nervous filaments and producing a sense of pain, warning us of our danger! How wonderfully perfect

are the means which the Creator has established for the protection of the human body? Not the smallest point of our bodies can be assailed without a friendly impression being conveyed from the point of attack along the sensitive nerves to the brain, with the speed of lightning, enabling us to perceive our danger, and by a simple act of the human will to avoid its consequences. (Sensation.) The same beautiful adaptation of means to ends, is also applied to the internal surfaces of the human body, which are brought in contact with external agents. If it were not for this beautiful adaptation of means to ends in the sensitive nerves of the stomach, we never should perceive when we had eaten enough, and we might go on eating until we killed ourselves! (Applause.) So you will observe that pain is not a *misfortune*, as many suppose, but it manifests in a remarkable degree, the wisdom and benevolence of the Divine Architect, in rendering us conscious of our relations with various objects of the external universe!

It is a common opinion among the masses of mankind, in this country, that the muscles and the bones, and particularly the latter, are extremely susceptible of impressions productive of pain. But this idea only shows the foolishness of the wisdom of man, when contrasted with the forethought of the Divine Architect! The skin is exquisitely sensitive, while the bones and muscles beneath it are scarcely susceptible of the least impression when cut with a knife, and consequently, in all operations performed upon the human system, the greatest pain is produced by the division of the skin and trunks of the sensitive nerves! The

Creator could have had no object in rendering the bones sensitive, since they were never designed to be brought in contact with external objects, and consequently could never be useful, as the organs of sense! How often have I amused myself at the folly and ignorance of many of our old physiological wiseacres, as they were relating to the rising generation, who stood by with eyes and mouths wide open, and ready to swallow every word of their nonsense, as even the air rushes in to fill the vacuum, (a laugh,) some surgical exploit that they had seen performed. They say the operation did not hurt much until the surgeon sawed through the bone, and when he got down to the marrow, that made him jump! (Laughter, and applause.) Now there is no more sensibility in the bones or the marrow either, than there is in a piece of wood. If the Divine Architect had been endowed with only ordinary human forethought, we should not behold such nice adaptation of means to ends, as unfold themselves at every step as we advance in the investigation of his greatest and noblest work — the constitution of man! (Sensation, and applause.)

In the structure of the skin we also discover important organs which are subservient to purposes of secretion and absorption. If you will examine the diagram, you will observe numerous perspiratory glands, consisting of a simple follicle, and its spiral tube, which terminates upon the surface of the cuticle. Around the walls of these follicles, there is a beautiful arrangement of blood-vessels, along which the blood is distributed in order that it may be cleansed and purified!

Erasmus Wilson, the distinguished British anatomist,

in his great work on the skin, says that by means of a powerful microscope, he has been enabled to count as many as three thousand five hundred of these sweating follicles in a single square inch of the skin on the palm of the hand. Now, it is estimated that there are as many as two thousand eight hundred square inches of the skin on an average, covering the whole human body; and consequently there must be nearly seven millions of perspiratory glands and pores in the skin. The spiral tubes, which convey their secretions out of the body, are about one-fourth part of an inch long, or measured collectively, they would reach one hundred and forty-five thousand feet, or twenty-eight miles. This immense system of drainage, as we shall see, has been established for the wisest and most important purposes — for the purification of the blood, and for the regulation of the temperature of the human body!

The amount of sweat or perspiration which is thrown off through this system daily, seems almost incredible— it being estimated, by carefully conducted experiments, to exude from forty to sixty ounces, according to the habits and activity of the person! For every seven pounds of food and drink taken into the system, five corresponding pounds pass out through the skin!

"Through the small, arterial tubes that pierce,
In endless millions, the close-woven skin,
The baser fluids in a constant stream escape,
And, viewless, melt into the winds.
While this eternal, this most copious waste
Of flesh and blood degenerated into rapid brine,
Maintains its wonted measure, all the wheels of life
With ease and pleasure move;

All the powers of health befriend you.
But this restrained, or more or less,
So, more or less you feel the vital functions labor.
From this source what woes descend,
Are never to be sung!"

If we examine the secretions of the skin by the agency of chemical analysis, we shall find that they are composed of various chemical salts, animal matter, and other impurities, which are dissolved in water, producing the briny secretions so beautifully described by the poet.

The evaporation of the fluid or watery portion of the sweat, is attended by the absorption of the heat from the surface of the skin, thereby regulating, to a great extent, the temperature of the human body. Exercise in the open air, as you have before seen, in my remarks upon the circulation of the blood, increases the number of respirations, and promotes the production of animal heat. To counteract the injurious consequences of the excessive production of this vital stimulus, the perspiratory glands pour out large quatities of perspiration upon the surface of the skin, the watery portion of which evaporates, and absorbs the excessive heat of the human body, and prevents the development of fever and inflammation. If this important secretion is suspended, and the skin becomes harsh and dry, there is generally an increase of febrile heat, which, in turn, is diminished by the reäppearance of healthy perspiration.

These physiological truths are of the highest practical importance, inasmuch as so many of the great human family frequently labor under the influence of disease, accompanied or produced by checked perspiration and increased temperature of the body. How many unfor-

tunate invalids languish upon beds of sickness, and are consumed with the flames of fever, who might be speedily relieved by the judicious use of the sponge bath, applied frequently to the surface of the skin! Nothing, indeed, so speedily allays nervous excitement and irritability, or arrests the fatal tendency of excessive fever and inflammation, as the use of the bath, and the consequent establishment of artificial perspiration and evaporation from the surface of the skin. Have you a cross, peevish and irritable child, whose cries and screams, like the sleepless owl, render midnight hideous with its doleful music? Soak him thoroughly in a tub of water, and take my word for it, there will be no more crying that night. (Laughter and applause.) Has the kind and indulgent husband one of those lean, lank, delicate and sickly *ribs*, who gets the hysterics and the sulks two or three times a day? He had better not scold and rave like a madman, but soak her in a good bath! (Great applause.) And I would say the same to the enduring, kind and faithful wife—

"Beware of that lean Cassius!"

But if she heeds not the admonition of the bard of Avon, and her husband prove irritable, peevish, fault-finding and unsocial, she may not tame him with a broomstick; but when he indulges in his fits of passion and folly, she should say to him, "Now, my *dear*, you had better take a bath, and then you will feel better"! (Great applause.)

A few evenings since, a gentleman attended one of my lectures, who had one of these nervous and irritable children, and when he returned home after the lecture, of course he found the child crying; says he,

"Wife, you must soak him;" (laughter) and they prepared a warm bath in a common tub, and put him in. The husband says that when he was let down into the water, he almost sizzled like a hot iron, he was so full of heat and nervous excitement; (applause) and that as soon as he came out of the bath he fell into a sweet sleep, and slept until morning. He played around the room all the next day until near night, when he became cross again, and they treated him in the same manner, and with similar results!

There are also situated in the tissues of the skin a large number of sebaceous follicles or oil glands (see figure*) which secrete an oily substance from the blood and pour it out upon the skin, for the purpose of lubricating its surface and diminishing the friction and irritation consequent upon the frequent motion of the joints and contact of the folds and surfaces of this important membrane.

The structure and nature of these follicles, are very well illustrated in the diagram. They are distributed in greater numbers in the skin about the flexions of the joints, along the cartilages of the eye, and in the meatus of the ear, where they secrete a large quantity of unctuous matter, which preserves the softness and flexibility of these parts. The skin around the flexures of the joints, requires oiling like all other machinery, when in motion. The farmer greases the axle of his carriage to prevent the wheel from wearing it away, and producing that disagreeable noise sometimes encountered in the streets when the careless driver of the carriage has been negligent in this respect!

The oily material which is secreted by these glands

* At the close of this Lecture.

about the flexures of the joints, and more especially in the arm-pits, if allowed to accumulate, becomes rancid, irritating, and extremely offensive, rendering it necessary to use large quantities of cologne, musk, burgamot, pachoula, and oil de mille fleur, to conceal its offensive odor! (Laughter and applause.)

Sometimes the oil which accumulates in the mouths of the tubes of these follicles, is covered up by the small particles of earthy matter which float in the atmospheric air, giving the skin a dark, mottled, or dingy appearance upon the surface of the face and neck, so destructive of the delicacy, elasticity, and beauty of the complexion! If you do not wash this part of the skin frequently with soap and water — soap being required to dissolve and remove the oily secretions — you will find that these earthy particles will accumulate in such quantities as to completely seal up the mouths of these tubes, and prevent the escape of the oil. Under such circumstances the skin loses its softness and elasticity, and becomes harsh and dry; the oil accumulates and hardens in the mouths of these follicles, causing inflammation of their walls, and the formation of numerous pustules or pimples on the neck and face, which are so annoying to the ladies, and for whose removal I am frequently solicited to prescribe a remedy! (Laughter.)

The practice so common among vulgar people, of covering up these dark spots with a coating of external matter, usually, I believe, a little pearl powder or common flour, only adds fuel to the fire, and is sure to increase the difficulty that it was innocently designed to obviate, by choking up the mouths of these tubes,

and in the process of time utterly ruining the complexion. But perhaps those who use such preparations will say, "no matter, since it has answered its purpose, and enabled me to get a good husband!" (Laughter.) Not long since an acquaintance of mine, who was a little short-sighted, was walking with a young lady in this city, and they met a young lady acquaintance. After they had spoken with her and passed on, this young man remarked to the lady, "what a charming girl is Miss ———! What a *divine* complexion." "Pooh," says the lady in reply, "divine complexion, indeed! its nothing but flour." (Great applause.) I have often laughed when I have met ladies in the streets with eyebrows and faces looking as though they had stuck them in a flour barrel before they left home! (Great laughter.) Only think of a young gentleman kissing such a lady, and finding his mouth full of flour, and her complexion growing darker under the operation! (Continued applause.) Not long since I was engaged in lecturing in the interior of Pennsylvania, and putting up at the village hotel, I noticed when the landlord's daughters came down in the morning, that their complexions were as white as lilies; but after they had been engaged for a time over a hot fire, preparing the buckwheat cakes, and sausages, and doughnuts, for breakfast, I observed that the oil which had been poured out by the sebaceous follicles in the skin on the surface of their faces, had united with the whitening of their complexions, and rolled down into the wrinkles and crevices, producing the most laughable expression of countenance. I thought to myself, as I saw them mixing the flour and butter to form the

doughnuts, what a needless expenditure of material. All that these ladies have to do, is just to gather up the dough on their faces, and give it a twist or two with their fingers, and drop it into the hot fat, and the whole process is accomplished! (Renewed applause.)

It is scarcely necessary for me to remark, after what has been said, that the use of all pigments is extremely injurious to the complexion; and that although the skin may appear to be improved in color by their use for a time, yet the final results are exceedingly disastrous to beauty!

1st. It is a natural law that the temperature of the skin regulates its functions!

If we examine the skin, particularly in infancy, we shall find that it is exceedingly vascular, and that its blood vessels contain a large amount of blood which is distributed to the skin for the purpose of stimulating its important functions to healthy action. If the skin is subjected to the sedative influence of cold, its blood vessels and follicles contract, producing numerous conical elevations upon its surface, and diminishing the amount of its secretions. Cold applications are, for this reason, often applied by the most distinguished surgeons to diminish or prevent inflammation of the skin, and with very great success! Such applications seem to act beneficially, by diminishing the activity of the capillary circulation in the inflamed part, and thereby preventing congestion and irritation.

How different is this treatment from that pursued only a few years ago, and still pursued by some old "medical grannies," in different parts of this country, of applying to an inflamed part hot poultices, and thus

increasing the inflammation instead of allaying it. Cold is a most powerful sedative, diminishing the activity of all of the vital powers, and may be used successfully as a remedy in the treatment of all diseased conditions of the various organs of the human body, accompanied with increased heat and febrile excitement.

The amount of clothing required by the human being, to preserve the proper temperature of the skin, which is necessary to the healthy action of all of its functions, must be determined by the age and habits of the person. The young child requires more clothing than the grown person, because its body, contrary to the general opinion of mankind, is colder. The cruel neglect of many mothers to study and obey this law, in reference to the dress of their children, occasions sad mortality in infancy. As I have before intimated, about one-fourth of those born, die before they complete the age of one year — and die, too, of diseases caused by the suppression of the functions of the skin; such as cholera infantum, infantile diarrhœa, and inflammation of the membranes of the brain, and dropsical effusions.

Now, look, but for a single moment, at the dress of a fashionable lady's children, and see how inadequate it is to protect even the warmer body of a healthy grown person from the various changes and vicissitudes of our climate. In reference to the dress of her children, vanity and fashion rule, as in almost everything else. The child's tiny white arms must not be covered up with comfortable clothing, but the short sleeve of a very thin muslin frock must be gathered up at the shoulder, with a pink or blue ribbon; and then, its beautiful, snowy white bosom must not be covered, but

it must wear a very low-necked dress, because it "looks so pretty!" Now, no sensible person can fail to see that such a dress would not be comfortable and safe for a grown person, and much less so for an infant, whose vital powers are feeble, and utterly incompetent to resist the shocks produced upon its sensitive and feeble constitution. It is no wonder, indeed, that so many thousand children die annually, (providentially, as it is said by many,) by this fashionable but criminal neglect on the part of parents! (Sensation.) The number of these dispensations of a cruel and unrelenting Providence will be greatly diminished by a little more clothing, and attention to the organic laws! (Applause.)

The vital heat of the human body is produced through the agency of the respiratory organs, and the clothing which is worn by the human being should be composed of such materials and worn in such a manner, as to prevent the undue escape of this vital principle; while, at the same time, its texture should not be so close as to afford any impediment to the free escape of the secretions of the skin. Flannel is admirably adapted to the nature and wants of the skin, and, as an article of clothing, it is probably superior to any thing which can be worn next the person. It is a good non-conductor of heat, and thereby prevents the injurious consequences resulting from the contact of the warm surface of the body with cold air; and at the same time, it is so open and porous in its nature, that it affords no impediment to the free escape of the perspiratory matter; and by absorbing the secretions of the skin, it preserves its surface in a healthy state. Owing to its

non-conductive properties, it is not only the warmest, but it is the coolest article of clothing which can be worn next the person. When the surrounding temperature is lower than that of the human body, it prevents the escape of its heat; and when the temperature of the atmosphere is higher, it prevents its excessive heat from coming directly in contact with the surface of the body, and drying up the sources of perspiration, producing heat and fevers. If you wish to keep your flowers from freezing, you cover them up, in the fall, with a flannel blanket; and if you have a piece of ice which you wish to keep from melting, in the month of August, you cover it with two or three layers of flannel!

And so also with your own persons; if you would be cool and comfortable during the summer as well as during the winter, and above all if you would be free from dysentery and diarrhœa and fevers, wear flannel next your skin. I have had much personal experience and extensive observation, for a number of years past, in some of the warmest countries on this Continent, as to the beneficial influence of flannel when worn next the skin during the summer as well as winter, and I believe that it is universally admitted by the most experienced surgeons in the British Army and Navy as well as in our own military service, that even in the warmest countries, and during the warmest seasons of the year, the health and efficiency of the army and naval forces, is attributable to a great extent to the flannel which is now universally worn next the skin by the sailors and soldiers upon the East and West India Military stations.

But it is *not* necessary, for the promotion of health, as many persons appear to have supposed, for the human being to wear one of these woollen garments next the skin from one year's end to another, without changing and ventilating it—or until it fulls up with the dirt and secretions of the skin, and becomes as tight as the shirt of Narcissus, or until it drops off by its own increased weight and decay, in the spring. (Great applause.)

The amount of the secretions of the skin renders it necessary to frequently change and ventilate the clothing worn next its surface. From forty to sixty ounces of perspiratory matter is poured out upon this surface daily. The watery portion of this secretion evaporates and unites with the surrounding atmosphere, while its oily and unctuous matter remains in contact with the skin and clothing!

How soon the socks worn next the feet become completely saturated or filled with these secretions. Now be careful that you change them often—or at least before you call on the young ladies, as a gentleman once did that I heard of; and who, during the evening, as his feet were cold, was induced to put them upon the fender before the fire to warm them, causing an odor to arise in the room that could not be imitated by all of the ingenuity of a Roussell or a Farina! (Laughter and applause.)

Indeed I know from extensive observation that an exterior of silks and satins and broadcloths does not always indicate the condition or quality of the garments worn next the person! (Laughter.)

Visit, if you please, any of our fashionable thorough-

fares, or promenades, and you will there behold these silks and satins, dragging in the dirt and filth of the pavements, sweeping the old cigar stumps and quids of tobacco into the gutter, and absorbing all of their nectareous juices. Now fashionable opinion says that it would never do to cut off or raise up a little, the skirts of this dress, for fear the lady would show her ankles; and yet you are alarmed as she sweeps on past you, lest the dress drop off her shoulders. (Applause.) This, indeed, is a specimen of fashionable *modesty*—"straining at a gnat and swallowing a camel!" (Renewed applause.) Sure I am, indeed, that the virtue and purity of woman would lose nothing of its charms and perfection, if our fair friends should lose at least six inches of the lower portions of their robes, which hang so gracefully about their heels, especially in muddy streets on a wet day, after a long and fatiguing walk!

2d. It is a natural law that if the secretions of the skin are not removed by frequent ablution, they will choke up its pores!

It is scarcely possible for those whose attention has not been directed to the investigation of the structure and functions of the skin, to appreciate the extent and importance of this secreting surface. These secretions which are thrown off through its numerous pores, if not removed by frequent bathing, will accumulate upon its outside surface, forming a varnish-like layer of unctuous matter, which seals up the mouths of the sweating pores and follicles, checking perspiration and engendering disease!

In many of the inferior animals, the skin serves the

same purpose as the lungs do in the human being. It is not only a secreting, but also a respiratory or breathing surface, and if you cover their skins with a coating of varnish, which is imperious to the atmospheric air, they die in a very short time. From recent experiments conducted in the city of Paris by a distinguished physiologist, it is concluded that the human skin respires and exhales one-sixth as much as the lungs. If you observe the skin after you immerse yourselves in a bath of warm water, you see numerous bubbles of air arising from its surface through the water—demonstrating to us its great importance, especially to those of weak lungs and delicate scrofulous constitutions! The secretions of the skin cannot be removed from its surface except by the free use of soap and water, inasmuch as water alone is incapable of dissolving or removing any oily or waxy substance. The alkaline principle of the soap dissolves the dried albumen of the cuticle or scarf skin, and removes the layers of dandruff, and with them all foreign matter of an oleaginous or unctuous character. It also cleanses and removes the scales and foreign matter from the hair and nails, and causes them to grow and flourish in the vigor of perpetual youth. Hence, previous to the use of all baths which are taken for the purpose of cleanliness, the skin should be carefully rubbed with some mild, bland, vegetable soap, so as to dissolve the outside layers and scales of the cuticle, and remove its secretions in the form of an emulsion, and thus cleansing and purifying the system in the most thorough and efficient manner!

"With us, the man of no complaint demands
The warm ablution; just enough to open the sluices
Of the skin, to cleanse the body from indecent soil!
Still to be pure, even did it not conduce, as much
It does, to health, were worth your daily pains.
'Tis this adorns the rich; the want of it
Is poverty's worst woe: with this external virtue,
Age maintains a decent grace; without it
Youth and charms are loathsome"!

Is it not indeed humiliating, to observe how willing the great majority of mankind are to take all kinds of quack nostrums and reputed remedies for purifying the blood, while they entirely neglect this great natural provision which has been established by a wise Creator for their protection and restoration!

When I examine cases of scrofula and humeral affections almost every day, and observe the sad and neglected conditions of the skin, and perceive the *peculiar* odor which arises from its accumulated secretions, I cannot help inquiring how much cod liver oil and sarsaparilla it will take to purify them at one dollar a bottle! (Laughter and applause.) Look around you and observe who it is that labor under the influence of these humeral affections, and you will ascertain, that as a general rule, it is those who almost entirely neglect the functions of the skin!

Not long since a friend of mine, a young and intelligent physician, was walking down Fourth street on a cold frosty morning, when a lady, just before him, slipped and fell upon the pavement, injuring her foot so that she could not walk. The Doctor assisted her into a neighboring drug store, where she reclined upon a mattress, while he examined it to ascertain the

nature and extent of the injury. He soon found that there were no bones broken and that her foot was only very badly sprained; while she was continually crying out, "oh! my poor foot, I am sure it is all smashed to pieces." And as it was so painful that she could not walk upon it, she desired to be raised up so that she could see it. The moment her eyes fell upon its surface she threw herself back upon the mattress in the agony of despair, saying; "Oh! Doctor, I knew it was all smashed to pieces, just see how black and blue it is." "Ah!" says the Doctor, "never mind that. It will all come off with a little soap and water"! (Great applause.) I have often thought how many of us would be caught in the same predicament, if we should only happen to fall and injure ourselves in the same way. (Great laughter.)

Bathing is of the greatest importance to the laboring classes, on account of the increased secretions of their skins, produced by their active employments! As the farmer returns from his harvest field, or the mechanic from his workshop, at the close of a warm summer's day, spent in active toil, he feels that the waxy exhalations of the skin, cause the under garments to adhere to its surface, producing an uncomfortable and disagreeable sensation. If he could only be induced to bathe himself in soap and water before retiring for the night, he would be astonished at the change produced in his strength and feelings. The exhaustion of the moment before, would give place to renewed strength and increased mental and moral vigor!

A few months since, I induced a well known editor

in Western Pennsylvania, who attended my lectures, to try the influence of the bath upon his feeble constitution. He informed me the next day that he had a large tub of warm water brought to his room, and after rubbing himself thoroughly with soap, he stepped into the tub of water and washed it off, but did not notice that his skin was dirty by the color of the water. He then commenced rubbing himself dry with a crash towel, and after a while, on looking down upon the carpet which he stood upon, he discovered a complete circle of softened cuticle which he had rubbed off, surrounding him, and when he stepped out of that magic ring he says he *felt* at least ten pounds lighter. (Applause.)

But the bath may not only be used for the purpose of cleanliness, but also to stimulate the healthy action of the vital organs, and allay the morbid excitement of the nervous system. An incalculable number of ladies and gentlemen labor under the influence of nervous irritability produced by the accumulation of the nervous energies, which is indeed the bane and misery of countless millions. This nervous excitement causing hysteria, and all the protean forms of nervous diseases, may be effectually removed by the use of the bath. But perhaps some hysterical old ladies, or some nervous old bachelors will say, "Doctor, I am afraid I will take cold if I bathe." (A laugh.) Indeed they are about as fearful of cold water as an animal afflicted with hydrophobia! and really there is some similarity in their afflictions, or at least in their symptoms! (Applause.) During the last winter I was called upon in Philadelphia to attend a carpenter, laboring under the influence

of a periodical attack of rheumatism, and after he had recovered, he inquired of me what he should do to prevent an attack of the disease the next season, as he usually suffered every spring and fall. I told him that he must bathe every day in a tepid bath. Said he — "Oh! Doctor!

"'Take any shape but that!'

"I bathed once about twenty-six years since, and I caught the most awful cold that I ever had in my life!" Said I to him, "Had you ever bathed before that time?" "No!" said he; "never, never before nor since!" (Laughter.) "Well then," I replied, "do you know the reason why you took such a severe cold?" "No!" he answered, "I don't; what was it?" "Why you took off too much at a time, and let the cold air in too suddenly! (Great laughter and applause.)

Again; many persons take cold who bathe in a cold room, and go through the operation too slowly. If you would not take cold you must bathe in a warm room, and rub the skin thoroughly. The exercise of rubbing will warm the system and prevent the suppression of the secretions of the skin! A well-contrived bath tub is the cheapest and most economical medicine chest which you could purchase, and its daily use would soon become a luxury not easily dispensed with by any of the members of your family!

There has been much difference of opinion prevailing in the community in reference to the merits of various kinds of baths which have been proposed by different authors, and some have hesitated in procuring them on account of the supposed expense. The best bath for the purpose of cleanliness is undoubtedly that

of immersion in warm water, but inasmuch as this is somewhat inconvenient to those especially who are traveling from place to place, they may secure all of its advantages by providing themselves with an oil cloth about four feet square, and placing a large hoop beneath it, forming a kind of basin in which they can stand while bathing and preserve the carpet dry. After rubbing the surface with soap, then sponge it off with a soft sponge and water, and as the water collects in the oil cloth basin beneath, it may be poured into the wash bucket and thrown away!

In the great majority of cases the warm or tepid bath is perhaps the best, especially in weak and debilitated cases, inasmuch as it stimulates the vital powers, and invites the blood from the deep-seated organs to the surface, relieving local congestions and promoting the equality of the circulation. After bathing in warm or tepid water, it is always well to rinse the surface of the skin with a towel dipped in cold water. This braces the capillaries, and diminishes the liability to take cold from sudden changes of temperature!

In a sound and vigorous constitution, where there is sufficient vitality; or in inflammatory affections accompanied with increased heat and febrile excitement, the cold bath may be used with success.

"Against the rigors of the cold, damp earth,
To fortify their bodies, some frequent the frozen cistern;
And where naught forbids, I praise their dauntless hearts.
A frame so steeled, dreads not the cough,
Nor the ungenial blast that breathes the tertian;
Nor fell rheumatism. A frame so steeled,
Never quits its tone; nor chronic langours
Haunt such hardy breasts!"

Bathing is not only useful for the prevention of skin diseases, but it is also useful for their relief. In the hospital San Louis, at Paris, perhaps the largest hospital in the world, for the treatment of skin diseases, much reliance is placed upon the use of plain and medicated baths. They operate beneficially by cleansing the skin and removing the outside layers of the cuticle, and promoting the healthy action of its secretions. They are also useful in fevers, for the purpose of diminishing the excessive heat, and regulating the temperature of the body. You have often observed that in all febrile affections, as long as the skin is hot and dry, the fever rages higher; but the moment perspiration breaks out, and the surface of the skin becomes moist, then the fever decreases in violence. If the large majority of mankind, when attacked with slight febrile affections, would stop eating, take a bath, and rest for a day or two, instead of loading their stomachs with vegetable pills, there would be hard times for the medical profession. (Applause.)

The great advantage of the use of the bath for the relief of worn out and broken down constitutions, may be seen in its influence upon thousands of our citizens, who, after spending the winter season in one continued round of balls, concerts, theaters and fashionable dissipation, come out in the spring completely exhausted and broken down in spirits and in health. They then visit our fashionable watering places during the summer season, in the pursuit of health and renewed energies. How much more consistent it would be for such persons to provide, in their own sumptuous dwellings, the

means of bathing, and thus prevent this enormous sacrifice of health and happiness!

Not long since, Dr. Hartshorne, of Philadelphia, was attending the children of one of these votaries of fashion, whose time was mainly occupied, not in attending to her children and superintending her domestic affairs, but in making and receiving morning calls, taking fashionable walks, examining the ribbons in the shop windows, and ascertaining what color *fashion* was going to *compel* her to wear, &c.; while her children at home were entirely neglected, or intrusted to the cold sympathy of the nurse, who knew little or nothing of her business. One day, as the doctor called to make his customary visit, he met this lady and mother at the door, and she said to him, "Doctor, I don't see that our children are getting much better. Don't you think we had better take them to the springs?" "Ah, yes!" said the doctor, "I approve of that." "You do?" says she, "well, what springs do you think we had better visit?" "As to that, madam," said he, "it makes no difference—only take along with you plenty of soap!" (Applause.) The health and cleanliness of her children had been sadly neglected by the fashionable mother, who foolishly thought that the old doctor could act as nurse, mother and physician, all combined in one person!

There are many accidental injuries of the skin, such as cuts, burns and scalds, which require the attention of the mother; and it is desirable that she should treat accidents in a skillful and appropriate manner. Whenever the skin is cut but slightly, the lips of the wound may be brought together by means of some strips of sticking plaster, and covered with a little lint, which

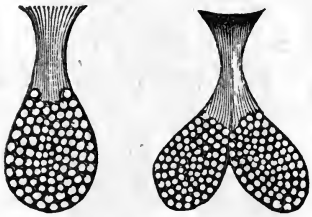
must be wet every now and then with cold water. This treatment is far preferable to the use of any kind of salve or ointment, and is generally made use of in the largest and best hospitals, at the present day, throughout the world. Burns and scalds of the skin, which raise up or remove the cuticle, allowing the air to come in contact with the nerves, and producing great pain, will always be effectually relieved by the use of any substance as a dressing, which excludes the atmosphere, while nature pours out the healing material which heals up or unites the parts. It is found, from large experience in the public hospitals of this country, that dry starch is the very best dressing to answer these indications. Cover over the burned surface with this material, and the pain ceases almost instantaneously. It operates like a charm, upon the principle of atmospherical exclusion, in all burns, scalds, chilblains, &c. This dressing should be put on thick, and covered with a linen cloth or bandage, which must not be removed until the part heals beneath. If the surface is dressed every day, the air will stimulate the parts, often producing deep ulcerations, and very unsightly scars and deformity, which might otherwise have been prevented.

"But," say some of the good old ladies, "Doctor, I know how to make a salve or an ointment, that is so healing that it will heal up any sore or ulcer in a day or two." If you inquire about the composition of these *all-healing* ointments, you will generally find that they have been compounded, by superstitious minds, out of rattle-snake's grease, or mud worms, or spider's webs, or black cats, or something in which the horrible and

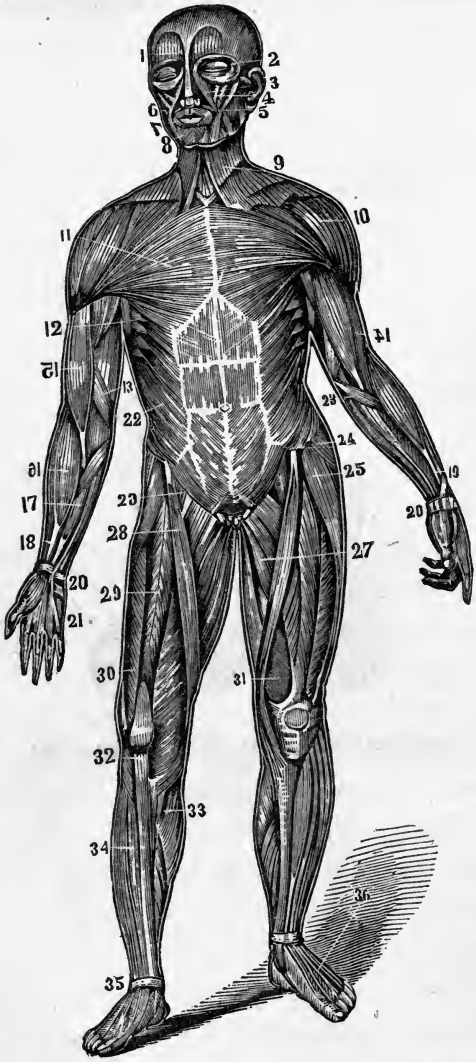
marvelous are largely combined. (A laugh.) Now, let me inform you that there is no ointment which heals or develops a granule of flesh or blood. The innate vital powers heal and repair all injuries of the human organization, while ointments, like many other medicines, do all they can to prevent nature from performing the cure. (Applause.)

While lecturing in Western Virginia not long since, I was informed by a professional friend, that the people in that country had accidentally discovered an ointment, which was a remedy of very great value; and upon inquiry, I learned that, not long since, as he was riding past the house of a lady, whose son had been severely burned not long before, his attention was arrested by the well known call, "Doctor, doctor, do tell me what you think of black cat's grease? Is it very healing?" "Yes," says the doctor, "I believe it is," and rode on as fast as he could. The doctor was no sooner out of sight than the old lady rallied all of the children, with the brooms and shovels, and they soon ran down the old black cat; and one of the boys skinned him, and they tied a string to his foot and hung him up before the fire, to roast the grease out of him. As soon as the ointment was prepared, they put some of it on William's burn, and strange to say, it healed up in a very short time; and now, this physician informs me, that all through that region of country, there is nothing so healing as black cat's grease! (Rounds of applause.) Many people believe that there is a witch in every black cat, and would not shoot one; because they say "the gun never would shoot straight again afterwards, because they had killed a witch with it." (Great

laughter.) If I tell you an anecdote occasionally, it is only to make you hear me out; for the subject is of the greatest interest and of the highest importance.



Sebaceous Follicles of the Skin. (See page 162.)


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36

LECTURE VI.

MUSCULAR SYSTEM.

LADIES AND GENTLEMEN:—

IN my last lecture, which I had the pleasure of delivering before you, I endeavored to explain to you the structure and nature of the skin, and the influence of its functions upon health; and this evening I propose to call your attention to the consideration of the muscular system, or the organs of voluntary motion.

The locomotive system of the human being is divided into two hundred and eight bones, and about four hundred and seventy muscles, or strips of lean meat, which are so attached to the bones, at both extremities, as to be able, by shortening or contracting themselves, to move the bones upon each other, at the joints, and thus produce a great variety of movements, so essential to enable us to prosecute all of our various avocations in life. The muscles are arranged on both sides of the bones, so as to act alternately, producing flexion or bending, and then extension or straightening, as may be seen in the figure on the next page, where one of the

muscles is arranged in front of the arm, to bend the elbow by shortening itself, and another muscle is arranged behind the arm, so as to extend or straighten the arm at the elbow joint. The same mechanical

arrangement is seen for the flexion and extension of the fingers, and, indeed, for all of the different parts of the body.

In the human being, and in many of the higher animals, the muscles are of that red color which is characteristic of the lean meat or muscle of the ox; and when they are thoroughly developed by *physical education* or training, they confer upon the human form all of those graceful curves which are so characteristic of strength and beauty.

The interstices or furrows between the muscles, beneath the skin, are filled up by the deposit of adipose matter, forming numerous soft cushions for the muscles to move upon, and facilitating their action. If we remove one of these muscles, for the purpose of examining it, we shall find that it is composed of a bundle of parallel strips or fibres, which terminate in the tendons or cords. Each one of these distinct strips, which is only about one-sixteenth of an inch in diameter, appears to be surrounded with a delicate sheath of cellular membrane. If we place one of these small

fibres, which compose the *muscles*, beneath a microscope of great power, we shall observe that it is also composed of a great number of still smaller strips, only the one-forty-thousandth part of an inch in diameter, and which, on account of their diminutive size, are called the fibrilla.

The tendons which are appended to the ends of the muscles, are composed of the sheaths of the fibres and fibrilla, and are not endowed with that peculiar property of muscular contractility. They serve the purpose of increasing the distance from the point where the power is applied, to the point to be acted upon, and at the same time fastening the muscles to the bones.

As I have before intimated to you, the muscles and the bones are simply the organs of locomotion, and as such, are entirely incapable of movement of them selves. In this respect, they resemble the steam engine placed upon the railroad, which requires the application of the power of steam to set its machinery in motion; so also, the locomotive system of the human body requires the powers of the nervous system to set its machinery—the bones and muscles, in motion!

The spinal marrow, as I have before observed, is composed of two parts, the anterior and posterior columns, each of which sends off two kinds of nerves. The anterior column sends off the nerves of motion to the muscles, while the posterior column sends off the nerves of sensation, or feeling to the skin.

The stimulus or power which calls each of these four hundred and seventy muscles into action, is developed in the cerebro-spinal axis, or the brain and spinal marrow, which, indeed, are the source of all power, as

well as all sensation or feeling, in the animal economy! If you divide at the shoulder, the large nerves which are distributed to the muscles of the arm, it becomes paralyzed and cleaves to your side in consequence of the interruption of the means of transmitting the stimu lus of the brain to the muscles for the purpose of calling them into action!

The muscles are called the organs of voluntary motion, because their action is limited or controlled by the human *will*, or volition, enabling us by a mental act to regulate and direct their various motions—so essential in the prosecution of the various pleasures and pursuits of life!

The rudiments of these bones and muscles exist at birth; but their size and strength in after life, will depend upon *physical education!*

Like the operations of the human *mind*, their movements, during the first few months of our existence, are feeble and irregular, but they are susceptible of a high degree of development and cultivation, by means of physical education or training—rendering them capable of performing feats of the most astonishing strength, or movements of the most wonderful delicacy and precision!

Look at the artizan and behold with what sturdy strokes he plies his hammer upon the anvil!—with what wonderful delicacy and skill the magic lines and rosy tints flow from the pencil of the painter—with what wonderful accuracy the sculptor conveys the last faint touches to the almost speaking statue!

The action of these muscles is indispensable to all of the pleasures and pursuits of man! Not even a

single motion, or expression, however insignificant, can take place, except through their agency! "By their action the farmer pursues his plow—the mechanic plies his hammer upon the anvil—the statesman wields his pen, and the orator pours forth his thoughts in words of burning eloquence!"

It will not be possible for me to remove and explain to you in detail, the nature and the use of each of the several muscular organs, this evening, in the small space of time which has been allotted to me by your kindness; but I shall endeavor to remove a sufficient number of them from the figure to give you a *general* idea of their mechanical arrangement, and then proceed to the consideration of the more important practical ideas connected with physical education!

The first muscle to which I call your attention, is situated beneath the scalp and runs from the back part of the head or occiput, to the forehead. It is called the *occipito frontalis*, and is useful to raise up the skin of the forehead, and scalp, causing the expression of wonder! Immediately beneath the skin over the eyebrows, you will observe two muscles, called the *corrugator supercillii*, which corrugate or wrinkle the skin between the eyebrows, causing the expression of scorn, contempt, anger, revenge, &c. This muscle is very largely developed in the habitual scold or virago, so that she may be known even when she attempts to assume a sickly smile, to captivate the beaux—a smile which is soon chased away by the frowns of anger, so long and so frequently indulged in, that their expression becomes natural and habitual! (Laughter and applause.)

The expression of anger is also facilitated by other muscles running up from the corners of the mouth to the side of the nose, called the *levator labii superioris alique nasi.* If any of our young gentlemen find a young lady with these muscles large, and two prominent lines or wrinkles between the eyebrows, he had better avoid the storm, while he views the gleam of the lightning at a distance, for such a countenance marks the virago! (Laughter and applause.)

On each side of the corners of the mouth, you will observe several muscles which run towards the outward corners of the eye, and which the feelings call into action in the expression of smiles and laughter. When these muscles are called into *daily* and *habitual* action, by the exercise of corresponding feelings, they will give tone to the expression of the human countenance; and hence it is, that the character of the expression of the muscles of the face, is but a reflection of the habitual action of the human mind and feelings. The muscles of the face are organs for the expression of our mental faculties, moral sentiments, and passions. If the mental faculties are not called into frequent action, the countenance becomes blank, leaden, and expressionless, or idiotic — so different from the sparkling expression of intellect, and the gleams of intelligence. If the passions and propensities are daily exercised, they will be expressed in the muscles of the *human face*, and the expression will give caste to the countenance! And so also of the moral sentiments. Their daily and habitual exercise bestows upon the human face and features, an expression which is almost divine, in its tone and character — an expression so different from

that of the victim of all of the fell passions — of anger, revenge, remorse, envy, jealousy, &c. — that it is even instantly recognized by the untutored savage!

If, then, our fair friends would have beautiful and expressive countenances, they must cultivate their minds and moral sentiments, and repress their passions, appetites, and propensities. The countenance of such a person glows with the fires of a cultivated intellect, and is radiant with the smiles of joy, and hope, and love; which invest it with charms and beauties far beyond that which can be communicated by genius, to the cold and impassive marble! (Applause.)

If you observe the anterior and upper portion of the chest, you will discover on each side two large fan-shaped muscles, which are attached to the arms on either side, and which serve the purpose of drawing the shoulders forward upon the sides of the chest. These muscles are large in carpenters, and others whose occupation requires their frequent use.

The anterior walls of the abdomen are, as you will observe, composed of several planes of muscles, which are distributed in different directions, and serve the purpose of assisting in respiration, and to protect the contents of the abdomen. If I turn this figure a little, you will observe several layers of spinal muscles, which are firmly attached to the bones of the spinal column, bestowing upon it, when they are well developed by physical education, the most astonishing elasticity and power. These muscles are the seat of that disease known as lumbago, or spinal rheumatism, produced by exhausting habits; and for the cure of which, various old plasters, and liniments, made out of numerous

roots and *yarbs*, are often applied in vain, as long as the cause remains unmoved!

Back of the shoulders, on each side, you will observe large muscles, which draw back the shoulder from the chest, and prevent the formation of a stooping figure, which is so destructive of health and beauty! If we remove the arm from its connection with the body, you will observe that its muscles are divided into those which flex, and those which extend the various parts of this useful limb. Those which are situated in front of the arm bend it at the elbow, the wrist, and the fingers, at all of their numerous joints; and those which are attached to the bones on the back part of the arm, extend or straighten it at the several joints. The movements of these muscles may be distinguished on the bones of the arm below the shoulder, (see figure on page 184,) if we grasp them firmly with the hand, and then move the arm at the elbow.

If you examine the muscles upon the lower extremity, you will find that they are arranged upon the same principle as those of the arm, and with the same view of securing alternate flexion and extension. These muscles may be dissected and removed, one after another, in a few moments; but a perfect description of their attachments, relations, and uses, would require hours to explain, and would be of little practical value, except to the surgeon and anatomist.

After having glanced as rapidly as possible at the nature, mode of action, and philosophy of the muscular system, it remains still further for me to call your attention to the laws of physical education, and muscular development, in order that, by complying with

them, you may secure health, strength, and beauty, and not labor under the influence of that exhaustion, debility, and deformity, which are so common at the present day — especially among those who have neglected to comply with its great and important truths!

1st. It is a natural law that action, alternating with rest, educates, strengthens and develops the muscles.

In the earlier phases of human life, exercise is a positive pleasure, and the want of it is little less than actual pain. The muscles of early youth are so imbued with an exuberance of vitality that a state of inactivity is irksome, and this exuberance is joyfully as well as profitably expended in active exertion! The Creator seems to have implanted in the breast of youth the instinctive desire to run, leap, jump and play, for the purpose of educating and developing their muscles to perform their appropriate duties in after life!

At birth the muscles are small, and the young child's movements are feeble and imperfect, but as they are more and more used in frequent attempts at locomotion they become larger and more powerful! It is a sad mistake to suppose that the *size* and *power* of the muscles depend upon the natural growth of the body, independent of physical education!

Indeed it is as impossible for the human being to be distinguished for *physical* strength and beauty without the aid of physical education and training, as it is for a Shakespear, a Milton, or a Bacon to arise without previous intellectual cultivation and *mental* discipline! Exercise stimulates the heart and arteries, and causes the blood to circulate with greater rapidity by means of the pressure produced by the alternate contraction

and relaxation of the muscles, thereby increasing the powers of nutrition and rapidly developing and increasing the size and power of all of the various organs of the human body. If you examine the right arm of the smith, who has long been engaged in wielding his hammer upon the anvil, you will observe the influence of action in the increased development and strength of its muscles. The votary of Terpsichore, or the dancing master, often displays to you the influence of physical education, upon the lower extremities, and so also of pedestrians and others whose trades and pursuits in life require the daily exercise of certain muscles of the human body, while on the contrary those of sedentary habits or stupid inactivity afford illustrations of the manner in which nature punishes the violators of all her laws!

"Six days shalt thou labor and do all thy work," says the commandment, "but the seventh day is the Sabbath; in it thou shalt do no work." If you will fasten your arm across your chest so as to render it impossible for you to use it for two or three months, you will discover the consequences of violating the Creator's natural laws and what he has commanded you so clearly to observe! If you remove the fastenings from your arm after two or three months' continuous disuse, you will be surprised to discover that its muscles have dried, withered and shriveled so as to render it incapable of raising a tumbler of water to quench your parched thirst! (Sensation.)

How often the command, "Six days shalt thou labor and do all thy work," is broken by idle, indolent and lazy Christians, may be inferred from their pale and

sallow countenances and imperfectly developed bodies! They not only "rest the seventh day which is the Sabbath," but they rest all of the time, and still foolishly think they serve God and keep His commandments! (Sensation and applause.) Now nothing can be plainer than that all Christians who do not engage in some honorable and useful employment "six days" in seven, live in habitual violation of this Divine injunction; and its consequences, in a physiological point of view, have been clearly pointed out!

"Toil and be strong!
By toil our long-lived fathers earned their food:
Toil knit their limbs and purified their blood."

The disastrous influence of muscular inactivity has often been seen in its effects upon those who have been confined in the prisons of Europe for political offences! The illustrious Lafayette, when confined in an Austrian dungeon, came near falling a victim to the exhaustion and debility consequent upon such confinement and inactivity! The thousands of miserable victims who issued from the old Bastile after long confinement in its dungeons, with their distorted limbs and deformed bodies, excited a thrill of indignation throughout the world! It was indeed no wonder that the heart of the Parisian mob beat with indignation when they beheld what cruelty and oppression had been inflicted upon their brothers for mere disbelief in the Divine right of Kings and Princes! It was no wonder that they arose in their majesty and might, and hurled with violence this system of barbarous and inhuman torture to the ground, and erected upon its foundation the sacred column to glorious Liberty, Equality and Fraternity!

(Applause.) Those who would live by the sword of tyranny and oppression, shall perish by the sword of truth and justice! (Renewed applause.)

The influence of a want of exercise is often noticed in reference to the domestic animals. If the gentleman wishes his horse should be fleet in the race, he causes him to practice for a long time, before engaging in the final contest. Not long since, an old friend of mine, who lived in Frankford, near the city of Philadelphia, purchased a valuable horse from a gentleman from Ohio, and not being able to use him at all times himself, he would not allow any one else to use him for him, but had him well fed, and allowed him to stand in the stable. Finally, the old gentleman was taken sick and died. In the course of time the horse was sold, when it was found that he had stood so long idle in the stable, that he was foundered and good for nothing!

Now, there are thousands of ladies and gentlemen, at the present day, that have become *foundered* and good for nothing, in the same way; (laughter and applause;) who have stood idle in the parlor, until they have become *ring-boned* and *spavined*, so that a decent trot throws them all out of breath! (Rounds of applause.) How many thousands of ladies and gentlemen in this country, linger out a miserable existence of idleness and physical ignorance and imbecility, who might, through the means of physical education, become strong, useful, and happy, while engaged at some useful employment. Thousands of pale, feeble and emaciated females scarcely pass the threshold of the door, during the long winter season; and their pale and withered

countenances and lustreless eyes tell us of the misery and the suffering which they endure.

I was called upon the other day to prescribe for the daughter of one of these mothers, who could not appreciate the necessity and advantage of physical education. After making some remarks upon the subject of physical training, the mother raised up her spectacles on her nose, and exclaimed, "'Physical education!' why, la me, I am sure it does not do our William any good, for he has lived upon nothing on *arth*, for the last twenty years, but vegetable pills!" (Laughter and applause.) Now, unfortunately too many human beings have tried this kind of physical education, with no better success. Giving an invalid physic to strengthen him, is like turning a rock over for an argument, and using a crow-bar to convince a man. (Applause.)

Would you think of educating the feeble mental powers and moral sentiments of your children by means of pills, and powders, and panaceas, and plasters applied to their heads, for the purpose of strengthening them? (Renewed applause.) Certainly not; and yet you are continually taking *strengthening* remedies, and using strengthening *plasters*, for the purpose of educating, developing and strengthening your feeble muscular powers, induced by *physical ignorance*, idleness and inactivity! (Sensation and applause.)

Physical education was held in high estimation by the ancient Grecians and Romans, as a means of securing superiority of physical strength, health and beauty. They erected their gymnasia and schools for physical exercise, which were thrown open to *both sexes*. They established their Olympian games—their chariot races, and gladiatorial contests, which "knit

their limbs and purified their blood," and the physical superiority which they thus acquired, enabled the Grecian and Roman youth to plant their victorious eagles on distant plains; and in arms, arts and sciences, to win a fame which shall endure so long as time shall last! (Applause.)

But let the most enthusiastic admirer of the greatness of the Roman State, and of the glories of Sparta, linger beneath the shade of the laurel and the olive of modern Greece and Italy, and witness the thriftless idleness and physical imbecility of the modern Grecian and Italian, and he will require no Gibbon to inform him of the "cause of the decline and fall of a great and glorious empire."

The ancients desired great physical power, not to combat error with truth, and to overcome evil with good, but to conquer the world by brute force alone; and hence their final decline and fall after they had attained their ignoble object.

———"Strengthen and fortify your bodies,
Not to strike or slay, unless the audible voice of Heaven
Call thee to that dire office, but to shed on ears
Abused by falsehood, truths of power, in words immortal!
Not the words which flash from the fierce demagogue's
Unthinking rage, to madden for a moment and expire,
Nor such as the wrapt orator imbues with the warmth
Of facile sympathy and moulds to mirrors radiant
With fair forms to grace the noble fervor of an hour;
But words which bear the spirits of great deeds, winged
For the future, which the dying breath of freedom
Shapes as it exhales, and to the most enduring
Forms of earth commits, to linger in the craggy shade
'Neath the eagle's home, or in the sea-cave, where the tempest sleeps
Till some heroic leader bids them wake
To thrill the world with echoes"! (Applause.)

But the modern idea of health, is so associated with coarseness and vulgarity in fashionable society, that few females pay any attention whatever to physical education. Indeed most of our fashionable young ladies do not study and practice the means of acquiring good health and strength, but rather the means of *weakness*, imbecility and *lady-like delicacy*, and why? Simply because they know that gentlemen love to have them weak so that they can *protect* and support them! (Great applause.) Only think of a *refined* and *delicate* lady being strong and healthy enough to take care of herself! (Applause)—there is something so coarse and vulgar in the very idea! (Laughter.) Our nice and fashionable young men wish that the ladies should be so weak, and delicate that they will scream at the very sight of a spider, and go into a fit of hysterics at the presence of a mouse; so that they may courageously step in, with their mustaches, and broad-swords, and defend them from such monsters! (Rounds of applause.)

In infancy the foolish mother rather tries to check the natural exuberance of her daughters — the disposition to run, jump and play over the hills and through the green valleys — causing them to resound with the merry music of their happy voices. If the daughter steals away into the garden, and is there discovered by her cruel mother, romping and playing — catching the butterflies and culling the flowers, with sparkling eyes and red and rosy cheeks, the mother is seized with alarm lest "she should grow up a great coarse, romping, healthy, tomboy!" (Sensation and applause.) And she immediately raps on the window for her to

come in, and says to her, "Why, my daughter, ain't you ashamed to be out there, playing with the boys? Why, how coarse you look! Come into the house and sit down by the side of your mother, with your nice little sewing, on this nice little stool," and grow up such a nice, little, lean, lank, weakly, hystericky, delicate lady! (Rounds of applause.) The mother knows how to please the gentlemen, and to get a good husband for her *ring-boned*, *spavined*, crooked-backed and foundered daughter! (Great laughter and applause.)

Now why is it that the foolish mother does not require her sons to be educated like her daughters? They are entirely unrestricted in the amount of exercise — they can play ball — take long walks — climb a mountain, or engage in all of the pastimes and sports of infancy. Have not their daughters the same physiological organization to educate, cultivate and develop? and why is it that this distinction is made? Is it because a rational public opinion, founded upon a great principle, and in accordance with the dictates of common sense, demands that it should be so for the highest and best interests of society? Certainly not. But rather because it is in accordance with the mere sickly, sentimental and heterogeneous and inconsistent dictates of custom and fashion, that woman should be pale, feeble and delicate, in order to please us gentlemen, and get a good husband. (Applause.)

This indeed is the reason why such a large number of fashionably educated females labor under the influence of spinal complaint. It has been said by a recent author, that more than nine-tenths of those females

who have been educated in our fashionable boarding schools labor under the influence of more or less curvature of the spinal column — a deformity which is almost entirely unknown among boys and young men, who are allowed to exercise abundantly in the open air. Now let me ask you, who is responsible for all this weakness, debility and deformity? Rest assured that these diseases and misfortunes are produced by causes which are within the control of *human* agency and are left in operation only in consequence of our ignorance of ourselves. If the physical education of woman received the same attention that is bestowed upon the opposite sex, there would be few spinal diseases, and comparatively little muscular weakness and debility.

Woman is not weak by reason of sex, as many suppose, but rather by reason of habit, custom and fashion. Among many savage tribes the female is the stronger of the sexes. And even in our own country, you may find young females with cheeks as red as roses, on the Alleghany mountains, in old Pennsylvania, who would make our young knights of the yard-stick and imperial fly round like a top in the hands of a school boy. (Applause.)

A few months since, I had the pleasure of lecturing at Hollidaysburg, and during the few days which I spent there, very agreeably, I was invited to an afternoon party; and during the evening, while romping with some of the young ladies, I undertook to catch one of them in blind man's buff. It took me a long time, I can assure you, to do so; and when I did catch her, I could not hold on to her, she was so strong! (Applause.) Why the muscles of her arm were as

hard as a bar of iron! (Renewed applause.) I asked her afterwards, if she ever had the hysterics, or the blues — felt *nervous* or *weak* — and she only laughed at me! (Rounds of applause.) I only hope that some of our nice young men, who think that all females are the *weaker vessels*, may not fall into the hands of some of these mountain girls; if they do, they may as well yield at once, for I can assure them there will be no need of any broomstick, to make them behave themselves! (Applause.)

But again: the style of dress which has long been adopted by fashionable females, is well calculated to restrain all freedom of locomotion, and produce great effeminacy, weakness, and debility, on account of the length of the skirts, and the nature of the waist, precluding the possibility of free exercise in the open air. The following extract from a recent article in the Westminster Review, is so appropriate to this subject, that I shall be excused for quoting it:

"The great object of clothing should be—first, to guard against cold; secondly, that it may be put on and removed with the least possible trouble; thirdly, that it may possess the most graceful form consistent with unrestricted freedom of motion; and fourthly, that the material be of the best kind to accomplish these conditions with the greatest facility for cleanliness! For those who may be born to consume the fruits of others' industry, if such there may be, such integuments may be used as will express their helpless dependence and uselessness. The idle and indolent may have long flowing draperies like the Turk in the harem, or the pumps, and silk stockings and breeches

of the last age, indicating that they are to be carried with care, like glass, "this side uppermost," and not to be exposed to winter and rough weather; that they are things to be carried like *babies* in long clothes, dependent on nurses and servants!" (Applause.)

Now no sensible or well-informed lady or gentleman of enlarged experience and observation, can fail to discover that such absurdities in dress, are opposed to all freedom of movement, and healthful exercise, especially among females, and in a country like ours, where there is great alternation of seasons! "Were our fair countrywomen *mermaids*, the long flowing skirts would be mechanically right; but inasmuch as they have two lower extremities instead of one, they require separate integuments, just as much as a glove requires its separate fingers, in order to be convenient and useful!"

Physical education is not only useful for the purpose of strengthening and developing our physical powers, but it also contributes, in no small degree, to cultivate and unfold our mental powers, and our moral sentiments! Exercise stimulates the heart and arteries, and quickens the circulation of the blood, not only to the muscles, nourishing, and increasing their size; but also to the brain, developing and increasing its size, and unfolding its most wonderful powers! It is thus that labor or manly exercise, dignifies and improves the nature of man. It promotes the health, strength, and beauty of his physical form! It disciplines his passions, refines his taste, exalts his feelings, and contributes to unfold his immortal moral sentiments, and mental faculties! Motion, action, progress—these are the words which now fill the blue vault of heaven with

their stirring demands, and make humanity's heart pulsate with a stronger bound! (Applause.) These are the talismanic words which thrill the world with echoes, and lead on our noble youth to fortune and fame!

Who, indeed, have made the most splendid discoveries of ancient and modern times? Who discovered and explained the laws of gravitation? Who caught the sparkling flame from heaven, and chained it harmless upon the ground? Who has enabled us, by his laborious investigation, to transmit our thoughts with the speed of lightning, and the powers of steam? Energy, motion, action; by the aid of their magic influence, we have the key which unlocks the treasures of knowledge, of fame, and power, and affluence! (Applause.)

"The longer I live," says the poet Goëthe, "the more certain I am that the great difference between men—the great and the insignificant—is energy, invincible determination, an honest purpose once fixed, and then *victory*. This quality will do anything that can be done in the world; and no talents, no circumstances, no opportunity, will make a two-legged creature a *man* without it!" (Applause.)

"Mind is immortal! Mind is imperial! It bears no mark of high or low—of rich or poor. It heeds no bound of time, or place, or rank, or circumstances. It asks but freedom. It requires but action. It is Heaven-born, and it aspires to Heaven. Weakness does not enfeeble it. Poverty cannot repress it. Difficulties do but stimulate its vigor. And the poor tallow-chandler's son, that sits up all night to read a book which an apprentice has loaned him, lest the master's

eye should miss it in the morning, shall stand and treat with kings, shall add new provinces to the domain of science, shall bind the lightning with a hempen cord, and bring it harmless to the ground!" Yes, my friends, on that kite—when the city away yonder upon the Delaware, upon which it that day looked down, shall be known only by its ruins—will be read by posterity, as it waves high up in mid-air, in blazing colossal letters, the name of BENJAMIN FRANKLIN! (Applause.) It was his early industry, economy, and frugality, which developed his noble and manly physical proportions, and in after life enabled him to stand and treat with kings, in favor of noble principles and the dearest rights of a great and a free people!

It has often been said of this distinguished American philosopher, that in early life, when a printer in Philadelphia, he was not ashamed to wheel his paper along the principal streets of that city on a wheelbarrow. Now let me ask you how many Benjamin Franklins we have among our editorial friends at the present day, who are not ashamed to do likewise? If they have a load of wood left at their doors, they dare not saw and split it, for fear of what *Mrs. Grundy* will say! (Applause.) If *Miss* Grundy should happen to pass along the street and *see* them engaged at any such menial employment, she would not invite them to her *soiree* upon the next occasion! And yet if they can only get the wood down cellar out of sight, they may saw and split away as long as they please! (Laughter and applause.)

"Now is it not one of the most unaccountable of contradictions, that society should look *backwards* upon

examples of industry and frugality, with feelings so different from those with which they contemplate the same virtues when exhibited before their eyes? Who does not feel honored by his relationship to Doctor Franklin, whether as a townsman or as a countryman, or as belonging to the same race? Who does not feel a sort of personal complacency in that industry and frugality of his youth, which laid the foundation of so much generosity and kindness in after life? And yet how few there are among us who would not disparage, nay ridicule and contemn a young printer who should follow Franklin's example! (Sensation and applause.) Is not this the strangest of weaknesses, as well as the most inconsistent of inconsistencies? for when we take to ourselves credit for commending a virtue, why should we disdain to practice it? Do you then ask me why there are no old Benjamin Franklins in the coming generation of adults? I answer, only because there are no young Benjamin Franklins in the rising generation of youth; none who will feed his body upon a roll of bread, in order that he may regale his mind upon sacred and divine philosophy"! (Renewed applause.)

Now is it not strange, in view of the great truth that all excellence, either physical, mental, or moral, is derived from *exertion*, that in a *democratic* and a republican country like this, the *laborer* is not respected as he ought to be? The great masses of society have been taught to believe that exertion, in accordance with the divine command—that man should "be dilligent in business," is degrading to humanity, and this wicked idea has been handed down from father to son,

until life has become a great struggle for the acquisition of wealth, because it insures respectability and gentility.

Look if you please, at our census tables, and you will there find a description of the character and pursuits of a gentleman. Under its various headings, for this city you will observe the names of many who are enumerated as mechanics, artizans, lawyers, clergymen, physicians, &c., all of whom follow some pursuit or calling—while under still another heading, the title of gentlemen occurs, and beneath this title you will find the names of all the "dead heads" or "gentlemen loafers," the only genteel occupation in these modern times! (Laughter and applause.)

Formerly, "mind made the man and the want of it the fellow"—but now, "money makes the man and the want of it the *poor* fellow—that is good for nothing! (Laughter and applause.) If the child playing at the window, sees a gentleman passing in the street and inquires of its mother who he is, it is informed in reply, that he is the *richest* man in the village, and is *worth* just two hundred thousand dollars. Now the child is taught by her foolish mother that he is *worth* more than any other citizen because he has more dollars, and not because he is the most *learned* and *moral* member of the community. (Applause.)

In this age, paleness, indolence, and imbecility means *gentility*. They are made by fashionable public opinion, to go hand and hand with each other, and the young man who can practice them, is sure to be invited to the saloons, and to be feasted at the tables of the "upper ten"! It is of little consequence *how* the

young man obtains the means of a livelihood, provided he obtains them by his wits, rather than by his hands. (Applause.) He may cheat his shoemaker —defraud his tailor—and ruin his market-man, by never paying them; but still if his hands do not bear the imprint of the laborer's degrading toil, he is often caressed, fed, and flattered, by the very *elitè* of our fashionable and highly cultivated aristocracy! (Sensation and applause.)

Now is it at all strange, under the influence of such a state of public opinion in this country, that the young lady should be ashamed to *work* at any honest employment for the means of a livelihood? No matter how pure her heart, how spotless her character, how cultivated and refined her mental powers, the moment she grasps in her lily white hands the scrubbing brush, her *respectability* vanishes as by the influence of enchantment. She will no longer be invited to the levees, balls, and parties of "Mrs. Grundy," because her daughters say, "she works" for an honest livelihood. (Sensation and applause.)

Not long since I was engaged lecturing in one of the strongest *democratic* counties in the United States — I allude of course to old Berks county, Pennsylvania — and while there, was invited to visit a lady laboring under the influence of consumption, by her family physician. As we entered the house rather unceremoniously, we encountered her only daughter, with a broom in her hand, engaged sweeping out the entry. At first she attempted to run and hide the broom behind the door, but finding there was no escape, she then attempted an apology, and with a countenance suffused with

the blushes of shame, she declared that "the servant had left them the day before, and she was obliged to sweep!" and at the same time, judging from her confusion, feeling more ashamed than she would if she had been caught stealing sheep. (Rounds of applause.)

Now Dr. March says, in a recent lecture, that the best cure for hysterics, is to discharge the servant girl. In his opinion there is nothing like "flying around" to keep the nerves from becoming unstrung. Some women think they want a physician, he says, when they only need a scrubbing brush. (Laughter and applause.)

I was invited out, a few afternoons since, while lecturing at Wheeling, Virginia, by a widow lady, living in the country, and after conversing with her fashionable daughters about Dickens' last novel, the fashions, and a few such trifles as generally make up the conversation of fashionable young ladies, I wished to satisfy myself what kind of wives they would all make, and I commenced a conversation about straining the milk, and making butter and cheese, &c., when their mother, entering the room, exclaimed, "Why! Doctor, I don't believe our Arabella knows what a *strainer* is. I don't, really!" Now, gentlemen, only think of a fashionable young lady knowing what a strainer is, and straining milk, and making butter and cheese! Why they can hardly *eat* such *vulgar* things, let alone making them. (Laughter and applause.)

Such young ladies often let themselves out for life, to some of our foolish young men as helpmeets—that is, they help to *spend money*, and help their husbands to be *miserable* like themselves. (Applause.)

Oh! I can assure you that there is nothing in any employment which ministers unto the welfare and happiness of the human race, which is vulgar or degrading. "It is the *spirit* which is carried into an employment which elevates or degrades it. The ploughman that turns the clod may be a Cincinnatus or a Washington, or he may be a brother to the clod he turns. It is every way creditable for a young man to handle a yard-stick and measure tape; the only discredit consists in having a *soul* whose range of thought is as short as the stick, and as narrow as the tape!" (Sensation and applause.)

"No matter what may be the fortune or the expectations of a man, or woman, they have no right to a life of idleness. In a world so full as this of incitements to exertion, and rewards for achievement, *idleness* is the most absurd of absurdities and shameful of shames. In a world like ours, the idler is not so much a biped as a bivalve — a sort of human oyster, that opens and shuts." (Applause.)

2d. It is a natural law that the muscular powers are limited, and continuous action exhausts and destroys them.

The injurious consequences resulting from excessive exercise may be seen in many of the avocations and employments of life. If you stand erect for a long time, listening to an eloquent address, the muscles of the spinal column and lower extremities become exhausted, painful and weak. If you engage in any mechanical employment requiring the continuous exercise of certain muscles for several hours, those muscles become painful and exhausted. The causes of lumbago,

rheumatism, spinal weakness and debility may generally be traced to exhaustion of certain muscles, produced by excessive exercise. The blacksmith, who works bent forward at a very low anvil, soon complains of spinal weakness, and so, also, of various other trades, for the cure of which they generally wear two or three *plasters*. Now, if you can tell me how many plasters it will take to do a day's work for the blacksmith, in this improper position at a low anvil, I will be able to tell you how many it will take to cure him! (Laughter.)

If you are not accustomed to the exercise of walking, and you ramble over the hills and mountains, in pursuit of amusement, you will experience at night the painful exhaustion, cramps, and restlessness consequent upon such excessive muscular exercise. The amount of disease and debility which is produced by the unequal distribution of labor, can scarcely be appreciated by those whose attention has not been particularly directed to the consideration of the subject. Thousands annually die from excessive toil, while myriads languish in inglorious ease and helpless imbecility!

But many people will aver that they have no time for relaxation and rest. The Coön sage begins his aphorisms with this remarkable expression: "*Ars longa, vita brevis;*" which virtually means, "our labors are many, but our days are few." The aphorism is correct, but the inference drawn from it is often wrong. It is not by dedicating all our hours to labor that we shall effect most achievements — whether intellectual or mechanical — consistent, at least, with health. Par-

simony is not always economy, and he who abstracts a certain portion of time from his mental or corporeal avocations, and dedicates it to simple relaxation and amusement in the open air, will reach the goal of his ambition sooner, or, at least, more safely, than he who considers all time lost which is not spent in the specific avocation or pursuit in which he is engaged. I am well aware that, in the present organization of society, thousands, nay, millions, are so circumstanced, that their daily wants demand the daily waste of their health and strength. This is particularly the case with females, and affords an additional reason for our sympathy and kindness to the more amiable as well as the more industrious and oppressed half of the human race. Is it not, indeed, unfortunate that the toils and the exertions of poor, suffering woman are so ill repaid, that they are, in many instances, *compelled* to sacrifice their health and happiness, to secure the means of procuring the merest necessaries of existence, while hundreds revel in wealth and affluence?

Franklin long since observed that, if every human being worked at some useful employment four hours each working day, their combined productions would be sufficient to procure all of the necessaries of life, in great abundance, and leave sufficient time for the necessary intellectual and moral cultivation. But, unfortunately, men are utterly selfish and divided by individual and separate interests; and they are educated to believe that the providence of God has designed one-half of the human race merely to consume the fruits of the industry of the other half — that they were born to riot in luxury, and thus doom the other half of humanity to a

life of excessive toil and sorrow! The physical, mental, and moral deterioration produced by the sufferings and privations of our over-worked manufacturing population, may well excite the attention and commiseration of the statesman and philanthropist.

3d. Again: it is a natural law that *compression* stimulates the absorbents and diminishes the size and power of the muscles.

The principle of compression has long been made use of by distinguished surgeons, for the purpose of removing tumors, and morbid growths from different parts of the body. The influence of the application of the same principle is often observed in the treatment of fractures or broken bones. If, for instance, the bones of the fore-arm should be broken half way between the elbow and the wrist, and the surgeon should adjust them by the application of splints which press against the muscles, and allow this dressing to remain upon the arm for thirty days, upon its removal you would be astonished to discover that the arm had diminished nearly one-third in size, and had become almost powerless. What is true of the muscles of the arm, is also true of all the muscles of the human body. If you apply to the muscles of the spinal column the close fitting bodice lined with inelastic brown linen, and filled with pieces of whalebone or hickory wood, as is common in *some* parts of the country, and then hook it tightly around the waist, the pressure will be so great upon the spinal muscles as to diminish their growth, and size, and power, producing deformity, weakness and debility.

Nor is this all. The dress which fits closely to the

chest and spinal muscles prevents their action, and destroys that natural grace and harmony of movement between the various members of the human body so characteristic of woman.

> "Nor can such forms with force or beauty shine,
> Save when the head and hands in common action join,
> Each air constrained or forced, each gesture rude,
> Whatever strains or *cramps* the attitude,
> With scorn discard."

If a fashionable lady drops her handkerchief, it is polite for a gentleman to raise it and return it to her again. Now this custom is not only polite, but it is even necessary on the part of the lady, for she is bound so tightly with *hoops* and *staves* — or "hooks and stays" — that it is the next thing to an utter impossibility for her to pick it up herself without the rupture of a blood vessel, or the explosion of her dress. (Laughter and applause.)

The only comparatively easy and safe position for such a person is the erect one. If they stoop, it must be without bending the body, but by bending the lower extremities; and even then it makes their eyes stick out like cups and saucers. (Renewed applause.) Now suppose that such a dress were applied to any laboring man, previous to entering the harvest field, or the shop of the artizan, and he was requested to labor industriously at his employment, he would reply to such a request, that he was laboring already; and if asked at what employment, he would say that he was *laboring for breath!* (Laughter and applause.)

This is the reason why, when any of our fair friends wish to engage in any useful employments, they put on a loose robe or dress "*en dishabille.*" They find from

experience that it is impossible for them to use the muscles of the body when they are thus cramped and compressed.

4th. The stimulus of hope, joy, and the sympathy of friends sweeten toil, and promote the vigorous and healthy action of the muscular system.

The exercise of our moral sentiments and mental faculties determines larger quantities of blood to the brain, and develops its wonderful power which is in turn expended upon the muscles, calling them into healthy action. Its beneficent effects may be witnessed upon almost all of the employments and pursuits of man. The hope of pecuniary rewards, of fame, and of power, stimulates the exertions of the artist, and nerves the arm of the mechanic and agriculturist, and causes the hum of busy industry to be heard in our fields and workshops.

If we engage in the pursuits of pleasure, its zest is heightened by amusement. The pleasures of the pursuits of the sportsmen are regulated by their success. If we eagerly tempt the finny tribe along the banks of some neighboring stream, the fatigue consequent upon this employment is greatly diminished by the mental excitement, or amusement of success. If, after angling for several hours, we have no success, the employment becomes irksome and painful, and we begin to think with Dr. Johnson, that we have got a worm at one end of the fishing apparatus, and a fool tied to the other, (a laugh) but if we draw trout after trout from the crystal element, the stimulus of success precludes all fatigue from the amusement. If we climb the mountain cliff in pursuit of the flying deer, or the swift-

footed antelope, the amount of fatigue resulting from the excursion depends very much upon the excitement of success. If we do not succeed in capturing the game, we return towards our mansion at night, exhausted and overcome with fatigue.

If we go back to the darkest period of the history of the American revolution, we observe Washington with the remnant of a scattered army, exhausted and dispirited, hastily retreating across the plains of New Jersey, in the face of a successful and relentless foe, until at length an opportunity was offered to clip their wings at Trenton and Princeton, which revived the drooping spirits of this little band of patriots, and nerved their arms with that hope and confidence, which enabled them to carry on to a successful issue that great and glorious contest for freedom and the rights of man.

All exercise and labor which is designed to contribute to the health and happiness of man, should be combined with rational amusement! Joy, hope and friendly sympathy exalt the vital powers and strengthen and invigorate the system, and hence it is the duty of teachers, parents, guardians, and masters to provide for the young, rational amusement, inasmuch as the Creator has rendered its use so necessary for the development of their health and happiness.

———"In whate'er you sweat,
Indulge your taste: some love the manly toils,
The tennis some, and some the graceful dance;
Others, more hardy, range the purple heath
Or naked stubble, where from field to field,
The sounding covies urge their laboring flight,
Eager amid the rising cloud to pour

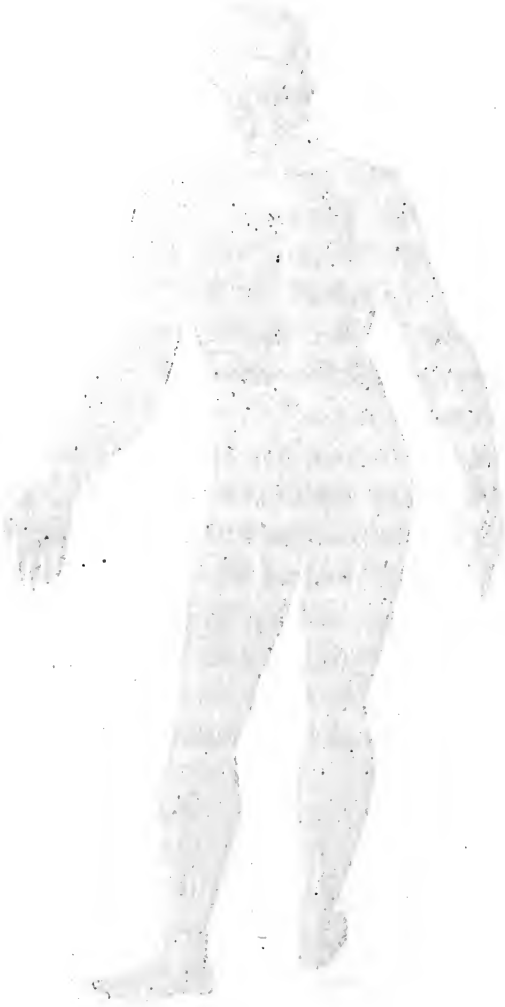
The gun's unerring thunder; and there are
Whom still the mead of the green archer charms.
He chooses best whose labor entertains
His vacant fancy most: the toil you hate
Fatigues you soon, and scarce improves your limbs."

The benefit to be derived from exercise will be very much increased if the invalid has an object which enlists his earnest attention and stimulates his feelings. Who has not noticed the different expression which the countenance assumes under the influence of exercise combined with amusement, from that derived from exercise alone? "Laugh and grow fat," is an old aphorism. Be sorrowful, and grow lean and melancholy, is equally true.

Look around you in society and observe who it is that is the most constantly afflicted, and who it is that dies earliest! In this beautiful city there are many young ladies who are called patterns and examples for the imitation of others! If they attend school, they are never known to laugh or smile, or if they do, they immediately blush to show their shame for such levity. They always wear countenances so demure, and expressions so angelic and ethereal as to appear scarcely fit to inhabit this rude, cold earth, and they consequently sicken fade and die; when all of the well-meaning, but uninformed old men and women say, that they are all too good for this world, and that they have gone to another and a better one! (Laughter.) Again, in this community there is an opposite illustration, where an opposite history is recorded. A young lady presents herself to your view, with a countenance whose expression is the very picture of health and happiness! Filled with the exuberance of joy and animation, which

dances in the sunshine of her expression, and sparkles in her eye—she can scarcely sit still for a single moment—she runs, romps and plays, with her mouth stretched from ear to ear with convulsions of laughter. At school she is always known as the greatest rogue, and is constantly whispering, or sticking a pin into some of her companions, or perhaps pinning a piece of paper to the teacher's coat-tail—constantly moving and jumping about, she has really no time to sit or stand still long enough for pain and disease and death to overtake her. (Applause.) As she advances in life, she still maintains her happy temperament and becomes the pride and the ornament of society and the idol of the family circle.

Cultivate, then, these kindly feelings towards all of those surrounding you! If you employ servants, be generous and kind towards them, for you can well afford to be. Rest assured that a kind word or expression, now and then, will not lessen your dignity in the estimation of any but fools, and it will contribute inexpressibly, not only to the promotion of their health, but of your welfare and happiness! (Applause.)



LECTURE VII.

THE BRAIN AND NERVES.

LADIES AND GENTLEMEN: —

LAST evening, I had the pleasure of explaining to you the nature, mechanism, and philosophy of the muscular system, and the laws which govern its development and maintain its healthy action; and this evening, I propose to conclude this brief series of lectures, with an examination of the Brain and Nervous System.

The brain is, in many respects, the most important and wonderful organ of the human body. It is the common center of the nervous system, towards which all of our impressions flow. It is the seat of consciousness and perception, from which emanates the will and power which moves all of the subordinate organs in the animal economy. It is also, during life, the seat of the mind — the immortal reasoning faculties and moral sentiments, which elevate and ennoble man to an equal with the angels — as well as the passions and the appetites of a brute, which, when unrestrained, degrade him to a level with the savage, or the beast that roams the forest.

The nervous system of the human being is divided into the cerebrum or the superior or intellectual brain, the cerebellum or lesser brain, and the spinal marrow. The brain sends off twelve pairs of nerves within the head, called the *cranial* nerves, which are distributed to the nose, the eye, the ear, tongue, teeth, face, and the organs of the chest and abdomen; while the spinal marrow gives off thirty-one pairs of nerves, which are chiefly distributed to the muscles and the skin. (See figure.)

The cerebrum, or upper brain, is divided into two hemispheres of equal size, which give off the same number of nerves, and have similar functions. They are about six inches long, and three inches and a half or four inches wide. At birth, the brain is very soft and vascular, and weighs only sixteen ounces. It gradually increases in size and weight up to the age of about thirty-two, when it weighs, in the male, on an average, three pounds and eight ounces; and in the female, three pounds and four ounces. So you will observe that the male brain weighs four ounces more than that of the female; but anatomists say that the female brain is much finer in its texture, and that it makes up in *quality* all it wants in quantity. (Laughter and applause.) In this respect, it is like a dime among ten pennies — equal in value, but not as large in size. (Renewed applause.)

The outside surface of the brain is covered, as you will observe, with numerous convolutions, or ridges, whose size is found to correspond with the susceptibility of cultivation displayed by the animal. In the lower animals, the brain is quite smooth, and these

convolutions are quite indistinct; while in the human being, they are small at birth, and larger as we advance in life, and exercise the brain upon its legitimate objects.

The brain is composed of two kinds of material, called the grey, outside, or vesicular matter, and the white, central, or marrow-like portion, which is fibrous in its nature. From numerous experiments conducted upon the lower animals, it is believed that the manifestation of instinct is intimately connected with the outside or vesicular part of the brain, and with reason, reflection, and the moral sentiments.

In the center of the brain, we have located two great cavities, called the great lateral ventricles, in which we observe several important bodies, which are common to the brains of many of the inferior animals, called the *corpora striata*, and the *optic thalami*, and which are supposed to be subservient to the purposes of sensation.

There are many dry anatomical descriptions and details connected with these portions of the nervous system, which are of no great practical utility to the masses of mankind, inasmuch as the true functions of many of the parts of the brain have not yet been determined by physiologists themselves; and you will excuse me, if I do not weary your attention by describing them in detail.

It was supposed by many of the ancient anatomists, who examined the brain only after death, that it was of little or no importance in the animal economy—that the Creator, when he formed man, like the potter making his earthen vessels, had a little clay left over, and put the lump into his head, to balance his system and

keep him from becoming light-headed! (Laughter and applause.) Other anatomists, a very little wiser, supposed that the human brain secreted a kind of cooling, nervous fluid, which was transmitted along the nerves to the different parts of the body, for the purpose of keeping us cool during the heat of political discussion, and "the excitement of love affairs," &c. (Applause.) At a still later period, it was discovered that injuries of the head often impaired the perfection of the mental powers and moral sentiments; and, hence, it was naturally concluded that the healthy condition of the brain was essential to their proper manifestation. Further observation and numerous experiments leave little doubt in the minds of the best anatomists and physiologists that the brain is a compound organ, and that some parts of it are concerned in the manifestation of perception, other parts, reason, reflection and the moral sentiments, &c.

The cerebellum, or lesser brain, is situated beneath the cerebrum, and is about one-eighth of its size and weight. It is also divided into two hemispheres, which are composed of grey and white matter, so arranged internally as to produce a beautiful arborescent appearance, called by anatomists the arbor vitæ, or the tree of life. The convolutions of the cerebellum are more regular in their distribution than those of the cerebrum. From numerous experiments upon the lower animals, it is concluded by most physiologists that the functions of the cerebellum are to generate and supply the nervous stimulus which calls the muscles into action. It is said to be larger in muscular and laboring men than in those of sedentary and inactive habits.

The brain gives off, within the head, twelve pairs of *cranial nerves*, which are called, first, the olfactory nerves, which are distributed to the nose; second, the optic nerves, which are distributed to the center of the eyes; third, the motores oculorum, which are sent to the muscles of the eyes; fourth, the patheticus, which are distributed to the superior oblique muscles of the eyes; fifth, the trifacial, which are distributed to the eyes and to the upper and lower jaws; sixth, the abducentes, which are sent to the muscles of the eyes; seventh, the portio dura is distributed to the muscles of the face; eighth, the portio mollis, which is distributed to the internal ear; ninth, the glossapharangeal, which is distributed to the mucous membrane of the tongue and throat; tenth, the pneumogastric nerves, which are distibuted to the larynx, gullet, windpipe, lungs, heart, spleen, stomach, liver, and large and small intestines; eleventh, the spinal accessory, which is distributed to the muscles of the neck; and, twelfth, the hypoglossal nerves, which are distributed to the muscles of the tongue, for the purpose of stimulating the muscles of this organ to action; and it is said to be particularly useful to the ladies, although I have not noticed that this nerve is larger in one sex than in the other. (Laughter and applause.)

You will observe that all of these twelve pairs of *cranial nerves*, except the tenth pair, are distributed to the parts about the head and neck, and that many organs appear to receive several pairs, as for instance, the eye. This mechanical arrangement is necessary, for the simple reason that the several nerves, although they resemble each other in color, yet they differ from

each other in their functions; and when any organ is required to perform several functions—as for instance, the eye, in sight, motion, feeling, &c.—it must have a variety of different nerves adapted to its variety of functions. The optic nerve, which is distributed to the retina, or the internal membrane of the eye, is only useful to transmit the impression produced upon its minute branches, to the brain. If it is cut with a knife, or pricked with a pin, it has not the least sensibility; and so also of the motores oculorum, which are distributed to the muscles of the eye! The pneumogastric, or tenth pair of nerves, pass down along the sides of the neck, sending branches to the windpipe, heart, lungs, &c., and then run down the meat tube, terminating in numerous branches—the majority of which are distributed to the stomach. The union which is seen to exist between the stomach and brain, by means of these large nerves, is of the most extraordinary and perfect character—which explains the reason why dyspepsia causes pain along the center of the breast, accompanied with shortness of breath, sick headache, irritability of the feelings, &c. The impression produced by a slight blow upon the head, is not unfrequently reflected from the brain along these nerves, with the speed of lightning, to the stomach, producing sickness of the stomach, and vomiting! And so also of slight *mental* emotions. The contemplation of some painful or disagreeable scene, will often cause *nausea* and vomiting. Melancholy and despair produced from the loss of friends, or misfortune, often cause dyspepsia, and the various forms of disease resulting from indigestion!

Again: The irritability of the stomach, resulting from the various forms of indigestion, is reflected along these large nerves to the brain, producing nervous debility, and irritability of the feelings. If we hamper the digestive organs, or stimulate their nerves by over exercise, in eating and in drinking, they become exquisitely sensitive — rendering digestion extremely painful!

"When the stomach has thus acquired additional sensibility through excess, the owner of the stomach has incurred a penalty which will require months or years for exoneration! Under such circumstances, the stomach not only reflects back on the organ of the mind, a large share of its afflictions, but in consequence of its extensive chain of sympathies with various other organs—as for instance, the liver, lungs, kidneys, bowels, and heart, in short the whole of those organs supplied with these nerves—it weaves a tissue of disorders which no human skill can unravel — it constructs a labyrinth of infirmities through which no clue can guide us—it fills an Augean stable with evils which few rivers, except those of Lethë, can cleanse away!"

For the sensations of body and mind springing from this source, there is no vocabulary. The patient is in many instances unable to describe them, or the practitioner to understand them; and thus a whole class of them have received the appellations of "vapors," "hypochondriasis," "maladies imaginaries," &c., &c. Few moral natures are entirely exempt from the injurious influence of such causes. The peevishness and irritability of feeling manifested by the dyspeptic and hypochondriac, are familiar illustrations of the influence of

our corporeal conditions upon our mental and moral feelings! The disposition of the child is often entirely changed by physical disease and suffering. Sour tempers are more frequently sweetened by sweetening the stomach, than by the use of the rod upon the skin. (Sensation and applause.)

Again: the digestive apparatus is the nutritive system of the human body, and if its functions are impaired, the nutrition of the brain becomes defective, and it dries, withers, and shrivels, for the want of a due supply of healthy nutritious blood. And hence the dyspeptic becomes not only nervous from the irritation generated in the stomach, but also from inanition and consequent debility! Nor do the injurious influences of indigestion cease with impaired physical energies. The mental faculties and moral sentiments, are also involved in the general ruin! If you inquire of the dyspeptic if his mental faculties are unimpaired, he will generally reply that he is weak, exhausted, and nervous, and that for some reason, not well understood by him, his memory, his reasoning, and reflective faculties, seem to fail him, or be lost in inextricable confusion—often clasping his forehead with his hand, as if to collect his scattered ideas, while he replies to your question!

If you consult the annals of many of our insane asylums, you will readily ascertain that the most common cause of mental imbecility and insanity, is to be traced to the general exhaustion consequent upon long-continued indigestion, or defective nutrition, originating, it is true, in many instances, in mental and moral causes. The physical, mental, and moral relations

which exist between the stomach and the brain, cannot, indeed, be too highly estimated! The immortal spirit called the soul, cannot manifest itself in this world independent of the body, and the perfect system of laws which the Creator has established for the promotion of its health. And the Christian who violates the laws of his *physical* organization, will lose the strength, clearness, and perfection of his moral sentiments, in the general wreck and decay consequent upon the loss of health! How often have we seen the Christian who had up to that moment, led a correct and a blameless life, under the influence of monomania, hypochondria, and insanity, draw the knife from the scabbard, and sheathe it in his own breast! Such instances of death by violence, even among the most upright and moral, produced by long continued disease of the digestive apparatus, and the exhaustion consequent upon it, must be within the knowledge of all!

The stomach cannot digest our food independent of the stimulus of the brain, which is transmitted to it by the pneumogastric nerves; and when the brain becomes exhausted under the influence of indigestion, it is consequently rendered incapable of stimulating this important organ to healthy action, thereby augmenting and increasing our afflictions and sufferings!

There can be but little doubt that the unrestrained indulgence of our appetites in eating and drinking, is one of the greatest impediments to mental and moral improvement; inasmuch as the whole of the energies of the nervous system are required, under such circumstances, to digest our food, and cannot, therefore, be expended upon intellectual and moral pursuits! The

brain generates a *limited* amount of stimulus, which the demands of health and happiness require should be expended in the performance of all of our bodily functions, and in the cultivation of our reasoning faculties and moral sentiments! If the whole of the nervous energies, or the stimulus of the brain, is expended in the digestion of excessive quantities of food, they cannot be expended in the exercise of our intellectual faculties and moral feelings!

Now is it not humiliating that man, because he has a few *animal* wants which must be gratified to preserve his health, and promote his mental and moral welfare, should become all animal—an epicure, an inebriate—and make it the chief end of his existence, the great aim of his life, to glorify his *stomach*, and enjoy the brutish pleasures of his appetite, his passions, and his propensities? (Sensation and applause.) Within mankind are the attributes of a God, and the appetites of a brute, and when these meet in council to make up the roll of his destiny, and to seal his fate for immortality, shall the beast drive out the divinity? Shall man wed the low animal passions and ambitions of the world, and seek, with their emptiness, to fill his immortal desires?

If we visit our religious churches on the first day of the week, how many persons we shall discover during the service whose whole nervous energies are engaged, not in digesting the sermon, but in digesting the corned beef and cabbage, and cold ham that they have eaten for dinner! (Laughter and applause.) Dead to all moral appeals and external impressions, because all of their nervous and vital energies are being expended upon the functions of digestion alone. Like the ana-

conda, they have gorged themselves to repletion, and perched themselves in an easy church pew, not to worship the eternal God, but "to sleep it off." (Sensation and applause.)

The brain terminates in the spinal marrow, which is a long fibrous cord, situated in the spinal canal or cavity of the spinal column. If we carefully examine the spinal marrow we shall observe that like the brain, it is divided into two parts or columns corresponding to the two sides or hemispheres of the brain. These columns are composed of grey and white matter, the latter being arranged on the outside of the spinal cord, and situated, as you will remember, on the inside of the brain.

The spinal marrow gives off thirty-one pairs of *spinal nerves*, which are composed of numerous fibres from its anterior and posterior columns. Those fibres which arise from the anterior column are distributed to the muscles, for the purpose of transmitting the power of the will to those organs and stimulating them to action, and are called the *motor* branches; while those which arise from the *posterior column*, are distributed to the skin, and are called the *sensitive* nerves, which receive impressions made upon the skin, and transmit them to the brain, which is the center of all consciousness and feeling.

If you should separate the posterior column of the spinal marrow from the brain in the neck, its sensitive nerves could not transmit any impressions received upon the skin to the brain, and the sense of feeling from that moment would be entirely destroyed. Again, if we divide the anterior column of the spinal marrow

in the neck, the muscles become instantly paralyzed, and refuse to perform their motions by the exercise of volition.

It will thus be seen that the brain, or rather the immortal principle called mind, which acts through the instrumentality of the brain, perceives through the agency of numerous sensitive nerves, which are distributed from the brain to all of the *external* and *internal* surfaces of the human body, and the mind becomes cognizant of their qualities, and regulates our movements and conduct accordingly.

If then we are brought in contact with any external agent capable of injuring us, the *mind* is informed of it through the agency of the nerves of sensation; and the mind, through the agency of volition, calls the bones and muscles into action, which move the body away from the danger.

You will thus perceive that all pain and feeling are essentially *benevolent* in their agency, and that if it were not for the sense of feeling and *pain*, we could not know good from evil, or when we were doing right or wrong. Pain warns us of danger, and tells us when we have done something which is wrong, for our benefit, and preserves us from the evil which results from violating the laws upon which happiness and pleasure depend. Our *reasoning* faculties and *moral* sentiments, operating through the instrumentality of the human brain, are thus informed of what is good and what is evil, by the amount of positive happiness or misery which they are capable of bestowing upon us, even in this world. (Sensation.) Consequently, all of our conduct which necessarily involves the sacrifice of

health, and causes pain and misery even in this world, is essentially *sinful*, and at war with the true principles of Christianity, which create rather than require the sacrifice of happiness. (Applause.) But how often we see long-faced, *pharisaical* Christians laboring under the influence of dyspepsia, gout and rheumatism, who think they do God service by enduring all of His chastisements in this world, in the hope of happiness in the next. Now I never could understand that kind of theology which teaches mankind to suppose that the wine-bibber and the glutton, who are *justly* tormented with disease and pain, will be *rewarded* in the next world for enduring these pains in this. (Renewed applause.)

If we desire to give ourselves up to the excessive indulgence of our selfish appetites, passions and propensities, and eat to excess, endangering our health and happiness, a *friendly* pain warns us of the consequences of our transgression, and tells us to stop eating. Indeed I do not know what would become of our modern epicures, were it not for this benevolent provision of nature. It seems probable, at least, that if many of them were guided by the dictates of appetite alone, they would eat until they would kill themselves, and "get their money's worth." (Laughter and applause.)

If we inhale the poisonous fumes of tobacco, or the atmosphere of a close and ill-ventilated room or sleeping apartment, the impression produced by it on the lining membrane of the air-tube is transmitted by the sensitive nerves to the brain and mind, which cause a sense of irritation and coughing, rendering it neces-

sary for us to remove or change our position. Were it not for this benevolent provision of nature, we should inhale noxious and poisonous gases, without being cognizant of their evil effects! If we use our eyes *excessively*, the stimulus of the light produces a smarting impression upon their delicate nerves which is transmitted to the brain, causing us to desist from using them. The same law holds true in reference to all the other organs of the human body!

The natural action of all our different organs is attended with an impression upon the nervous system, productive of a positive sense of pleasure, which may be defined in the word *health*, which is the result of the implicit obedience of the natural laws; while on the contrary, pain and suffering are entirely benevolent in their character, and are intended to warn us of our danger and to preserve us from destruction. The same nerves which transmit impressions to the human brain productive of all the enjoyments of sense, can also vibrate with a thrill of pain and anguish whenever the laws of their natural and healthy action are violated!

After thus rapidly glancing at the structure and nature of the nervous system of the human being, we can comprehend the immense importance of the healthy action of its functions upon our moral, physical, and intellectual condition. If the brain and nerves are diseased and impaired, the various subordinate organs are thereby deprived of their customary stimulus, and become weak and exhausted. Digestion is impaired—the circulation becomes feeble and irregular—respiration laborious and difficult—the muscular energies weakened and exhausted, and the whole constitution impaired

and shattered! The amount of disease and human suffering which are produced through the deranged action of these organs, would indeed exceed the bounds of human credulity, were they gathered before us in their naked deformity!

1st. It is a natural law that the demands of health require that the stimulus of the brain should be expended upon our various physical organs, mental faculties and moral sentiments. The brain generates the stimulus which calls into action all the organs of motion; and if it is not expended upon these organs they decline and decay, while the nervous stimulus which should be expended upon this system, accumulates, producing nervous irritability and excitement, which is the bane and misery of countless millions! At birth, the brain weights but about sixteen ounces, and is only capable of manifesting a few feeble animal powers and feelings, among which muscular motion is quite conspicuous, and manifests itself long before the feeblest powers of intellect. The health of the young child demands that its limbs and body should not be so tightly confined during the first few weeks of its feeble existence that it cannot expend its nervous energies upon its muscles, calling them into frequent motion.

The natural exuberance of *feeling* common to youth, seems to have been wisely implanted in the breasts of the young by a benevolent Creator, to cause them to exercise this system and expend their nervous irritability upon their muscles, thereby developing their brain and nerves, and promoting their health and strength. In after life, this necessity of our nature becomes still more conspicuously displayed. If we are riding in a

stage coach, with our arms folded upon our chests, and our feet beneath the seat for several hours without using them, they become painful, causing us to feel *fidgety* and irritable; and we would gladly exchange our sedentary position for one that would be more active—walking. Exercise, under such circumstances, is attended with a feeling of positive pleasure. It consumes the excess of nervous irritability generated by the brain, and relieves our feelings from much of that heat and excitement peculiar to those of sedentary and inactive habits. Well regulated, physical exercise, daily, in the open air, is indispensable to the preservation of the health of the nervous system. The cerebro-spinal axis, or the brain and spinal marrow, is in this respect like a steam engine, constantly engaged in generating steam. If we do not open the safety valve, or set the machinery in motion, so as to consume its steam, it will explode; and so also, of the human brain; if we do not set the bones and muscles in motion, and "fly around," the nerves will become unstrung and the heat and excitement of our feelings will explode in anger. Physical exercise also exhausts the irritability of the nervous system, and disciplines the *passions*, diminishing licentiousness, intemperance and all manner of evil! The abodes of idleness, are also the dens of intemperance, of licentiousness and of crime; for if our nervous energies are not expended upon their own legitimate objects, they must and will be expended in another calling!

Visit your streets on a pleasant Sabbath afternoon, and you will behold congregated in your fashionable drinking establishments, and in front of the engine-

houses, numerous young men thrown temporarily out of employment. They will not attend divine service, because the community in which they have been reared, have not given them an appetite for such food, by supporting a generous system of education for the rising generation. A child without a *physical* constitution to supply, cannot experience the longings of hunger; neither can a human being without a moral constitution, desire the stimulus of moral excitement. These young men that congregate in the drinking establishments, on the Sabbath day, when thrown out of temporary employment, seek for other sources of amusement adapted to their education, which has been of a mechanical rather than of an intellectual character. Hence, they drown their reason and blunt their senses in the Circean cup, for amusement — to expend their superabundant nervous energies. They drink whisky, smoke cigars, chew tobacco and swear a little, just to season this kind of amusement; and if they do not become fatigued at these kinds of employments, towards evening — if they have any more nervous energy which is unexpended — they get up a fight, or set some one's house on fire, to "get up a muss," and have a run with the engine. They become restive, nervous, irritable, excitable, mad—for the want of employment which will consume their pent-up energies!

The injurious influence of want of physical employment upon the nervous system, may be seen among females, who are denied by a fashionable but foolish public opinion all opportunity of engaging in useful employment. The great mass of society look with envy upon the lady whose wealth enables her to ride

in her carriage, with a servant mounted up before and one behind, to sustain her lazy dignity, and to express her helpless uselessness and imbecility; but they know not the anguish and pain which is generated by her life of idleness. Could they experience her sleepless nights, her shattered nerves, and irritable feelings, which embitter every moment of her life, they would not exchange their condition of toil and its sweet sleep, their health and its enjoyments, for all her wealth and all her misery, which it has engendered.

Under the benign and exhilarating influence of exercise, friendship opens her heart, the miser his purse; bigotry widens the circle of its charity, and what is stranger still, the crusty old bachelor forgets his *fidgets*, and becomes possessed of at least momentary generosity; and the most obdurate and cruel-hearted young lady melts and yields to its kind and gentle influences. If you wish to procure money for the purpose of renewing your Sabbath-school library, and approach the miser while engaged in his counting-room, poring over his musty ledger, he will only growl, and scarcely raise his head to notice your presence. But if you encounter him returning from the survey of his broad lands, and demand a portion of the contents of his well-filled purse, he can scarcely resist you.

If any of these young gentlemen should conclude, some fine afternoon, to visit a certain young lady, for the purpose of asking her whether he shall hang himself or not; and if, as he enters the room, he discovers her at the piano, where she has remained chained for six mortal hours, he had better hold on, or look out for

"breakers ahead." But if, on the contrary, he encounters her in the garden,

> "Stirring amidst the roses, where of old
> Love shook the dew-drops from his glancing hair,"

she will be so full of the exuberance of joy and happiness, that it would really be almost cruel to take advantage of her defenceless condition! (Applause.)

More than half of mankind are dying for the want of something better to do—for the want of a laudable pursuit or occupation—for the want of an *object*, which shall call forth their dormant energies, and expend their immortal powers, which have no doubt been bestowed upon them by the Creator for the highest and noblest of purposes. Those of you who have experienced the nervous restlessness, depression of spirits, and painful ennui produced by the confinement incident to a rainy day, will know very well how to appreciate the condition and feelings of those who have no occupation, either in fair or in foul weather, upon which they can expend their accumulated energies; but who are condemned by the trammels of wealth and fashion, to a life of indolence and inglorious ease.

How many instances, especially among females, society presents, of noble energies, and powers of mind and body, which have been wasted upon trivial occupations, or frittered away upon the most unworthy objects—in adorning their persons—in discussing various objects of fashion and folly—in village gossip, and in traducing the character of their neighbors! When it is remembered that thousands of females are denied, by fashionable public opinion, an opportunity to expend their energies in the various professions and useful

avocations of life, will it be thought strange that we have a large class of those called "busy bodies"—luckless old bachelors and maidens, a kind of "preserved" men and women, who, since they have no "little responsibilities" and useful occupations in life — who, since they are allowed nothing else to do, make it their business to distribute the "news!" (Applause.) They must do *something*, or else their health would suffer; and since they must not do anything that is useful, because that is *work*, and all kinds of useful work are extremely unfashionable and *unlady-like* employment, perhaps gossipping is as innocent as almost any other pursuit they could engage in; at all events it has one recommendation—it is *fashionable;* and to be in fashion is to be *right*—in the estimation of a large majority.

But again: the preservation of the health of *females*, demands more physical employment than that of males; for the reason that their *intellectual*, or higher faculties, have not, as a general rule, been unfolded and developed by a thorough course of instruction; and consequently they cannot expend their nervous energies upon the habitual exercise of their moral sentiments and intellectual faculties, in any professional avocation or calling! Public opinion declares that the education of a portion of the human race, shall be confined to the mere *accomplishments* of life, and perhaps some slight knowledge of the rudiments of literature and the sciences; while it has utterly denied them all opportunity of expending their physical, mental and moral energies, in the various occupations and callings which have been created by the necessities of society!

A woman may possess strong moral sentiments, and

yet she may not cultivate and exercise them to the highest, by preaching and prophesying, as did the Hebrew women of old! She may no longer practice medicine, and attend upon the diseases and trials peculiar to her own sex; although the Bible and history inform us she did do so, with remarkable success, for more than four thousand years; and yet she may *nurse* a *man*, in all of the diseases which human nature is heir to; that is, she may do the *menial* service, for which, as a general thing, she is *paid* nothing; but when she rises to the dignity of taking the *fee*, oh! says her *protector*, she is getting out of her appropriate *sphere*, as many of them call it! (Sensation and applause.)

A woman may be a *Queen* of Spain, and of the British Empire, and as such, sway the scepter over dominions upon which the sun has never set; and yet, in a *democratic* republic, she may not even quietly deposit her vote in the ballot box. She may appear upon the stage in a theatre, in a short frock, and after kicking up her heels in the most approved, *artistic*, and fashionable manner, kings will confer upon her orders of *nobility*, and our fashionable young men will harness themselves like beasts into her carriage, and draw her home to her lodgings, as they did the "Divine Fanny," at Baltimore! (Sensation.) A woman, as we have recently seen, may perform the grand tour of the Union, and appear upon the stage of every theatre in a low-necked dress, and after *singing* at the very top of her voice, excite the most enthusiastic applause, and yet she may not appear in the pulpit, or as the president of a benevolent society! She may read Shakspeare to large and fashionable audiences, but not her *own* com-

position. She may contribute to found theological seminaries and colleges of learning, but she must not claim an equal right to their benefits in a good education. She may make shirts and coats at sixpence a piece, but some *man* must sell them, and pocket the receipts! (Sensation and applause.)

Now, no sensible or well informed man or woman, can fail to observe that such distinctions between what a woman may or may not do, or be, are not parts of a great and harmonious system, founded upon a *principle*, and in accordance with the constitution and wants of woman, but they are the mere heterogeneous dictates of custom and fashion! (Applause.) The eternal God has bestowed upon every human being the *same* talents—though they may not be equal in all cases; and He has given us the *right* to *cultivate* them to the highest, and to *use* them in His service, and no mere *man* shall take upon himself the right to deny a human being an opportunity to do so! For my part, I acknowledge but one *master*, whose counsels I would strive to follow, and I allow no *man* or woman to stand between me and Him, to determine what are or what are not my rights! (Renewed applause.)

The deprivation of an opportunity of engaging in all the active duties of life, is the chief cause of many of those nervous diseases so common among females, and which in many instances render life almost intolerable. The headaches, nervous irritability and weakness, the loss of memory, mental confusion, and giddiness, &c., are but the legitimate results of sedentary habits, and physical, mental and moral inactivity; and nothing can prove a complete and perfect antidote for

them but exercise and employment, which equalize the circulation of the blood, as well as the excitability of the nervous system!

2d. It is a natural law that the amount and kind of employment demanded by good health, depend upon age and temperament.

"The temper," says Dr. Johnson, "is by most people looked upon as a quality of the mind, whereas it is solely one of the body." Metaphysicians have not always been the best versed in a knowledge of human nature, and how could they be, since they only studied half the subject — the mind and not the body? — and many qualities, dispositions and propensities were consequently assigned by them to the mind, which belong to the body, and only effect the mind secondarily. Temper is in fact the offspring of temperament, which is material and not mental. If this were not true, how is it that a man's temper is entirely changed by severe illness? Does the mind or soul change thus? Not at all. But the physical constitution, the health of the body changes, and the temper or temperament with it. Nor does this view of the subject offer any apology for the non-restraint, or change of our tempers, appetites, passions and propensities, by means of *reason* and the *moral sentiments;* but on the contrary, it holds out the strongest incentives to employ our moral and mental powers for the purpose of coercing and removing these physical evils. If tempers and passions were exclusively mental — the mind could not control them any more than it can its own operations, or the body itself could control its own temperament. As the temper and passions, then, are the attributes of the grosser part

of our nature, it is for the immaterial agent to quell, or at least to restrain and check them.

Physiologists have usually divided the temperaments into four — namely, the nervous, the bilious, the lymphatic, and the sanguine. It is however rarely the case that we meet these temperaments in their purity in any one person. As a general rule, we find them more or less mixed with each other, producing a combination of the peculiarity of feeling and mental and moral qualities of the original. A knowledge of the nature and peculiarities of these various temperaments is of great practical importance, especially to parents, since they may be changed into each other, and their evil qualities and fatal tendencies be changed and averted by the appropriate adaptation of means to ends on the part of their children.

The *nervous* temperament differs from all of the others, in the predominant development of the nervous system, rendering the constitution exquisitely susceptible to all mental, moral and physical impressions, and capable of the highest enjoyment or the most exquisite misery. The brain is large and well developed, while the vital and nutritive systems are small and feeble, giving them a thin and sharp countenance and weak and feeble muscles. To a person so constituted, if successful in his various avocations and employments, there is no limit to his pleasures and enjoyments; but if, on the other hand, he is unsuccessful, there is no end to his sufferings and torments. In the *morning*, he will be full of hope and joy, and in the evening often overcome with gloom and despair.

Such persons take great delight in literary employ-

ments — in books and lectures — in study and in intellectual excitement — and abhor all physical employment and bodily exercise, even for the purpose of improving their physical constitution. If this temperament is developed by continued mental excitement, the nervous system will become, in time, so exquisitely sensitive, that the constitution will be like a barometer, susceptible of the slightest impression produced by the most trivial causes, rendering them morose, peevish, cross and irritable and extremely unhappy. As might be expected, a child of this temperament requires the most careful treatment on the part of its parents. Such children very often display extraordinary precocity and development of intellectual faculties, which may be seized upon by the parents as an evidence of great genius, and no opportunity spared to stimulate an already diseased, nervous system, by books and intellectual excitement, until inflammation of the membranes of the brain takes place, and the child is lost. This precocity, as we have seen, depends upon the extraordinary, the unnatural development of its nervous system, while the other organs are feeble and imperfectly formed. At best, such a child stands, during the first few years of its feeble life, with one foot already in the grave; and if all nervous and intellectual excitement is not carefully avoided, its life will be sacrificed, and the very precocity of its genius will only increase the agony which the parents will feel at the parting. Those who are so constituted either in youth or in after life, should avoid all mental excitement, as far as possible — they should lay aside books and intellectual pursuits and employments and earnestly engage in the

pursuits of the agriculturist and the farmer, in all of the out-door employments and avocations which will strengthen and develop their vital and their muscular powers, while their nervous system remains dormant and at rest. By this means they will change their constitutional peculiarities, and with them their temperaments also.

In the *bilious* temperament, the development of the muscular system predominates, giving to those so constituted, great capacities for physical endurance. In early life, such children are known as those who are called stupid or inactive, on account of the small size of their brains, in comparison with those of the nervous and sanguine temperaments. Persons so constituted, take great delight in labor upon the farm or in the mechanic's workshop—they are indeed the hewers of wood and the drawers of water, and have little or no taste for literary or scientific pursuits. If they attend church, they will generally fall asleep before the sermon is half delivered! They generally have a mulish or sulky temper, which, when once excited, is not easily overcome by reason or by the moral sentiments, but is easily *worked* off through the agency of muscular exertion. If any of these ladies happen to have a husband of this description and they should unfortunately offend him, they should not attempt to reason or dispute with him, for he is as contrary as a *mule ;* but stand clear and give him plenty of room, and he will *work* his anger off, and feel much better satisfied with himself than he would if you had attempted to coax him with smiles and gentle persuasions, which are only thrown away upon such a nature! (Laughter and applause.)

The *lymphatic* temperament may be recognized by the prominent development of the nutritive system, and the general torpor which is manifested in the movements of all of the physical organs, and mental and moral powers. The heart is small and beats slowly, the pulse is feeble, and the vital powers seem to perform their functions with difficulty. The skin is covered with a cold, clammy perspiration. If a human being so constituted, indulges in excessive eating and becomes an epicure, cultivating his appetite to the highest, and at the same time leads a sedentary and inactive life, he soon acquires the sumptuous proportions of the Alderman and keeper of the "White Bear," or "Turk's Head," and is always in good humor, but more especially so just after dinner. Persons of this temperament are famous pot-house politicians, and generally contrive to fill all of the good offices in the gift of the people, of "My Lord Mayor" and the Alderman, "with his well stuffed capon," whose stomach is his God and the seat of all his sensibility. If you would find your way to the heart and conscience of such a man, it must always be through the stomach and not the brain. He abhors all thought, as it makes his head ache. Give him a gallon of ale and two quarts of turtle soup, and he will be your friend for life, and if found as a representative at Columbus, will vote well on that side of the question whose friends give the best oyster suppers. (Laughter and applause.) He eats enormously, and after the pleasures of the table, his greatest source of enjoyment is a *good sleep* in his easy arm-chair, where he can "snore like a porpoise." His friends ask him when he rises from his slumbers in the

morning, if he heard the thunder last night? and he replies, "no indeed, I never *knows nothing* after I go to sleep, until the next morning." It would take at least forty earthquakes to make him wink once; he is so phlegmatic, cold and insensible. (Laughter and applause.) This temperament is unfavorable for great length of life, or mental and moral activity; but it may be changed, corrected and improved, by restricting the diet to a few of the necessaries of life, and engaging in active out-door employments, which will stimulate and develop the heart and arteries, and reduce the deposit of adipose matter, and develop the muscular system! Great advantage will also be derived from intellectual pursuits, which will strengthen and develop the nervous system, and restore the equilibrium of the constitution.

The *sanguine* temperament may be recognized from the remarkable development of the vascular system which accompanies it, such persons having large hearts and arteries, giving them red and rosy cheeks, and all of the indications of good health and long life. A person so constituted, is full of vital energies, and inclined to active employments. They seem never to enjoy themselves except when engaged in some kind of employment, and if disappointed in its results, they are no sooner down than their natural elasticity buoys them up again. They may be disappointed often in business, because too sanguine in their expectations, but they are never discouraged. Boys of this temperament, if not employed in worthy and benevolent occupations, will become restless and extremely unhappy—often incline to mischievous and vicious employments.

To remain entirely quiet and do absolutely nothing, with their sanguine temperaments and active energies, seems almost an impossibility; and fortunate will it be for such youths if they have parents, teachers, and guardians who recognize their constitutional predisposition, and skillfully provide for them the means of rational employment and mental and moral improvement. They long for employment and pant for exertion, and if their parents do not provide for them good books, and subscribe for the best newspapers and literary magazines, they will frequent the theater, the tavern, and the gambling-house in pursuit of *amusement*, as it has been termed. In school they will often be detected in their mischievous tricks, such as snapping paper balls at the other scholars, or sticking them with a pin fastened in a bench, or, perhaps, pinning a piece of paper to the teacher's coat-tail, (a laugh,) all designed for amusement, and not desiring to do anything wrong, or produce the least harm or disturbance in the school. They are so full of the natural exuberance of joy and activity, that it is impossible for them to control themselves, or sit still for a single moment.

Horace Mann, in one of his most excellent reports upon the common school system of Massachusetts, relates an amusing anecdote, which illustrates the peculiarities of this temperament. In visiting one of the schools in the neighborhood of Boston, his attention was attracted to the movements of a little, rosy-cheeked boy, who sat on a bench near the door. It seems that it was past the usual hour to close the school, and this young lad had put away his books, and procured his cap and held it in his hand, ready to jump and scream

the moment that the teacher had dismissed them. This evening the teacher was busily engaged solving a difficult problem for some of the larger scholars, and did not notice that it was past the usual hour to close the session of his school. The young lad became very restless and impatient, casting an anxious glance first at the teacher, and then at the door, until at last forgetting himself in his great anxiety to escape, he whistled so loud that the teacher heard him. "John," says he, "was that you who whistled?" "No," says he, "master, it was not me." "Yes it was," continued the teacher. "What did you tell me that wrong story for?" "I did not, master; I did not whistle," continued John, beginning to cry; "it whistled itself, and I could not help it." (Laughter and applause.) Many young lads of this temperament, like John, require employment; and if their parents wisely provide for them that which will contribute to ennoble and improve them, they will gladly avail themselves of it; but if they do not, they will become vicious and mischievous, because their untiring energies must be expended.

3d. It is a natural law that impure blood injures the brain, paralyzes the nerves, and produces numerous diseases of the nervous system.

The health of the nervous system not only requires that the blood should be nutritious, but that it should be pure, and free from all hereditary taint. If you observe those persons whose employments require them to spend the greater part of their time in the close and ill-ventilated apartments of our various manufacturing establishments, you will notice the pernicious influence of carbonic acid gas, not only upon the respiratory

organs, but also upon the nervous system, in the headaches, nervous debility, mental confusion, weakness and exhaustion with which they are afflicted. The poor unfortunate female who pursues her lonely occupation from early morning until the approach of evening — and too often from evening until morning — in close and impure air, necessarily becomes nervous, and subject to fits of hysteria, nervous debility, and melancholy; not because she is a woman, but rather because her sedentary and inactive employment, in impure air, destroys her health and strength; and this affords us a strong reason why we should sympathize with her, rather than ridicule these exhibitions of her feebleness and exhaustion!

Hysteria is no disease of the imagination, as many vulgar persons have supposed, but is really an indication of a complicated derangement of the nutritive and vital systems, most difficult to understand, and still more difficult to remove; and its miserable victim is often more to be pitied than she who labors under the influence of fever, or any of the various forms of inflammation!

If you visit our numerous public charitable institutions, you will soon ascertain the dreadful inroads which confinement in impure air, causes upon our physical, mental and moral constitution. How many thousands of poor unfortunate emigrants, who have sought the peaceful and happy shores of America, have found an untimely grave beneath the blue waves of the ocean, or have lingered out a miserable existence, and finally sink and die of nervous or ship fever, contracted by respiring the impure air in the narrow

space allotted to them by the mercenary owners of many emigrant vessels! We rejoice that the subject has recently attracted the attention of Congress, and that an appropriate remedy is likely to be applied. In our numerous jails and public prisons, nervous or jail fevers, of a similar character, frequently occur, and during their progress, carry off large numbers of their unfortunate inmates. These, and similar occurrences, demonstrate to us the great importance of ventilation in our sleeping apartments and dwellings, school houses, and churches. In many of our churches, the air becomes so confined and impure during the services, and the nervous systems of the audience so weak and exhausted under its influence, that nearly one-half of the congregation sleep, instead of listening to the sermon! If you visit our school houses for the education of the rising generation, you will generally observe that they have been constructed without any regard to the principles of ventilation; and consequently, that the air which these young and tender children breathe for six hours, is, in many instances, so impure as to be offensive even to the sense of smell!

During the past season, several of our first class colleges and seminaries were closed, on account of the fatal prevalence of nervous or typhoid and typhus fevers, produced by neglecting these principles in the construction of their dormitories or sleeping apartments. A young lady or gentleman may accustom themselves to retire for the night and sleep in a small room, with the windows closed and the door shut air-tight; and when they rise in the morning, they will complain of nervous and sick head-ache — of the want

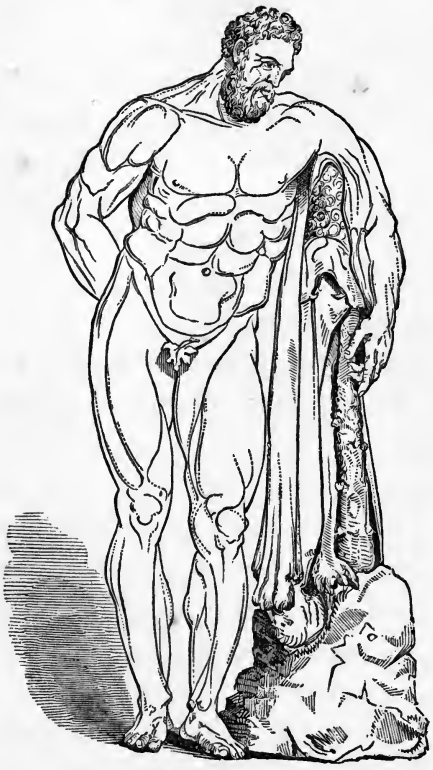
of the refreshing influence of sleep from the previous night's repose; and in a short time they will become dyspeptic, nervous and irritable; and if they still persist in inhaling impure air, they may be seized with nervous or ship fever, which is contagious, and may destroy many members of the same family. Such incidents in relation to this most fatal malady may be met with frequently.

But the injurious consequence arising to the *physical* health of the human being, is not the only evil resulting from the neglect of the principles of ventilation, in the erection of our dwellings. The injurious effects upon our mental and moral natures are equally disastrous. If we visit large manufacturing towns, where thousands of males and females are pent up in impure air, during the greater part of the day, we shall there behold its injurious influence in the state of public morals. Contrast, if you please, the inhabitants of mountainous regions with those who live in the valleys beneath them, and you will often observe the great mental and moral superiority of the former over the latter. Down in the deep mountain gorges and valleys of Switzerland, where the air is scarcely agitated by the currents and countercurrents of the mountain breezes, we behold hundreds and thousands of poor miserable cretans, who are reduced so low in the scale of animal life, by the general prevalence of the causes of cretanism or scrofula, as to be scarcely recognizable as human beings; while upon the crests of the bleak mountains, we shall observe a race of men as hardy and as free as ever the sun has shone upon!

——— "Ye mountains, crags, and peaks!
I am with you once again; I hold to you these hands

Ye first beheld, to show they still are free.
Methinks I hear a spirit in your echoes answer me,
And bid your truant welcome to his home again."

Here, amidst these fastnesses of the mountains, flourished the principles of the reformation; while the lowlands of Holland and Italy are cursed with ignorance, vice and superstition, even until this day! Here, too, was the cradle of liberty! These hardy sons of Switzerland are as free as the eagle which makes its home in the cliffs of their own native mountains. They have withstood the craft of the wily Austrian, and the power of the French monarchy, for ages, and offered to the wounded and bleeding patriot an asylum sacred from the approach of the agents and spies of despotism!



The above outline of the celebrated statue of Hercules, (which was intended to face page 192,) represents the influence of muscular exercise upon the education and development of this system. Such a development of physical power cannot be secured by the use of pills, and plasters, and *strengthening* remedies, but by physical education.