THE REALITY AND CERTAINTY OF MEDICINE.

AN

ADDRESS

DELIVERED AT THE

Annual Meeting

OF THE

MASSACHUSETTS MEDICAL SOCIETY,

JUNE 17th, 1863.

BY MORRILL WYMAN, M.D.
OF CAMBRIDGE.

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THE REALITY AND CERTAINTY OF MEDICINE.

BY MORRILL WYMAN, M.D.
OF CAMBRIDGE.

READ AT THE ANNUAL MEETING, JUNE 17, 1863.*

Mr. President and Fellows of the Mass. Medical Society:

The return of this day of social gathering and friendly greeting almost unavoidably brings to mind those of our friends, who during the past year have been taken from their labors and duties to another sphere of activity. Twenty-three Fellows of the Society have died since our last anniversary. Some of them, at the age of fourscore, were enjoying the confidence and respect of the community in which they lived, and that inward peace which belongs to an honest man and good physician looking back upon a well-spent life. Others were in the midst of life and usefulness. Others again, full of hope and high aspirations, had just commenced the

* At an Adjourned Meeting of the Mass. Medical Society, held Oct. 3, 1860, it was

Resolved, "That the Massachusetts Medical Society hereby declares that it does not consider itself as having endorsed or censured the opinions in former published Annual Addresses, nor will it hold itself responsible for any opinions or sentiments advanced in any future similar addresses."

Resolved, "That the Committee on Publication be directed to print a statement to that effect at the commencement of each Annual Address which may hereafter be published."

work of the profession. One fourth of the number perished in the service of their country. The surgeon who ends his career in the faithful discharge of duty deserves and ever will receive the grateful homage of every true physician. Love of country excites the admiration of all; and what greater love can a man bear his country, than to lay down his life for her?

One,* yet in early manhood, an only child, inexpressibly dear to his father, a scholar, learned in his profession, his mind improved by foreign study, responded to the call of his country. Always faithful, chivalrous, dauntless, almost reckless of his life, he believed, with Baron Percy, his place of duty to be wherever a soldier fell; ready with instant aid for the wounded, he was ever in the thickest of the fight. He fell at his post. What more could we ask? He is held in grateful remembrance by his fellow soldiers who admired his humane bravery, and by his friends who knew the kindly qualities of his heart. What more could we wish?

Another,† the son of a most honored member of our Society, young, serious and thoughtful, has also fallen. Possessed of those qualities of mind and heart esteemed by all good men, peculiarly qualified for the duties of his profession, he gave himself to it in the spirit of a man who feels he must one day give an account of the lives of those committed to his care. Naturally averse to the strife and turmoil of war, he entered the army from a sense of duty.

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* Samuel Foster Haven, M.D., fell at Fredericksburg, Dec. 13th, 1862.

† Robert Ware, M.D., died in Washington, N. C., April 10th, 1863.

Exact and faithful in the performance of it, he could not but gain the love and respect of all around him. Worn down by arduous service, in a beleaguered town, amid the roar of cannon, he yielded up his pure spirit, faithful to his trust, true to himself, and true to the honored name he bore.

Quantâ de spe decidit.

Notwithstanding the evidence of the self-devotion of the practitioners of the Healing Art, and of their just confidence in its results with which its history teems, and of which the past year furnishes such bright examples, those are not wanting who doubt its usefulness and the certainty of its foundations. This grows in a great measure out of a mental restlessness and tendency to scepticism, which seems to be rather a prominent feature of our times, leading to the raising of doubt and question with regard to well-received doctrines; which, because the doubters themselves cannot solve to their own satisfaction, they straitway conclude that no one else can. These discontented persons are not many, but they make up by noise and activity what they want in numbers, and soon draw together a floating class always ready to listen to the suggestions of others. They also allure those of a speculative turn, including many of the literary and in some respects more influential class, those whose studies lead them rather to a knowledge of ideas than of things, whose steps are guided not by the lamp of experience, but who, as has been said, bear about a dark lantern of theory, bright indeed within with the brilliancy of their own

speculations, but quite unfit to keep them in the path of truth. They are much inclined to be system-makers. If between a few facts they detect a similarity, it is enough for their excited imaginations, and it soon reäppears in a well-appointed theory, against all the contradictions to which they resolutely close their eyes. "I have heard," says Condillac, "of a philosopher who had the happiness of thinking that he had discovered a principle which was to explain all the wonderful phenomena of Chemistry, and who, in the ardor of his self-gratulation, hastened to communicate his discovery to a skilful chemist. The chemist had the kindness to listen to him, and then calmly told him that there was but one unfortunate circumstance for his discovery — that the chemical facts were precisely the converse of what he had supposed them to be. 'Well, then,' said the philosopher, 'have the goodness to tell me what they are, that I may explain them on my system.' "*

This unhealthy restlessness manifests itself not only in speculative matters, but in the estimate of physical truths. It is often seen "in a feverish anxiety to square the circle, trisect an angle, duplicate the cube, and detect perpetual motion," or in attacks upon the principles of astronomy. By one of these reformers its professors are charged with concealing the grossest of errors under the cloak of the higher mathematics, and building a flimsy edifice "with the calculus for stones and fluxions for mortar." A member of the Royal Society of London, who boasts

* Sir William Hamilton's Metaphysics, p. 45.

of having served in the Royal Navy for nearly forty years, and of having seen the tide rise and fall in all latitudes and under a greater variety of circumstances than Newton ever calculated, puts forth a volume to prove that the Newtonian theory of the tides is "a failure from alpha unto omega, for it will not bear the test of an impartial mathematical investigation;" and assures us that the schoolboys of another generation will laugh at the idea of the attractive power of the moon being the principal cause of the tides of the ocean.*

On the other hand, there is a class of minds always ready to accept what is new, no matter how unsupported by facts; the simple statement of a novelty has an attraction they cannot resist, and with the cry of liberality they give themselves to it with a zeal only equalled by that with which they embrace its successor. This, also, is seen not only in matters of mere speculation, and in those questions like spiritualism, which, when we have eliminated what is simple fraud, are to be explained on known principles of psychology; but also in plain practical matters, the truth of which may be settled to the satisfaction of all but this class of minds, by the most decisive experiments. Some years ago, an advertisement appeared, assuring the public that a new combination of metals had been discovered, and by its application to time-keepers, a poor marine chronometer could be made equal to the best. Many were deceived, and many chronometers sold. How

* See an interesting article on Scepticism in Science, by Prof. Lovering, Christian Examiner, 1851.

much death and disaster was the result, will probably never be ascertained. About the same time an ignorant but apparently honest master of a vessel invented a peculiar kind of quadrant, known as Hedgecock's Quadrant. With this instrument, by means of observations, as he called them, on a lighted candle, he declared that he could with great certainty determine the latitude of the place. Absurd as the whole thing was, it found friends and supporters — men who were ready to trust their property and their lives to its guidance. Vessels were actually sailed by it, and accomplished their voyages safely, as appeared by the "log-books," duly vouched. Insurance offices are said to have looked upon it with favor, two commanders of the American Navy gave in their adhesion to it, and the Director of the National Observatory at Washington saw "a gleam of truth in it," thus proving himself as shallow in science as he is false in patriotism. In fine, it attracted so much attention that it was referred to a committee of the American Academy of Arts and Sciences, who submitted it to experiment, showed it to be worthless, and the last that was heard of it was in the vituperations of the committee for its unfairness, bigotry and professional jealousy.*

If, then, the great truths of Physics cannot long remain unchallenged, if questions so absurd are raised, and claims so unfounded find supporters who are ready to risk their lives and their property on the strength of their belief, we cannot be surprised that the claims of Medicine on our confidence should

* See Appendix, Note A.

be assailed by ignorance and presumption from without, or suffer still more from scepticism and unfaithfulness within. A sceptical physician declares that he has no faith in Medicine. To such an one Barthez answered, he is right if he means his own. The physician who has no confidence in his art, and yet practises that art, can lay no claim to honesty. He should abandon it, for no one is compelled to be a physician. Such cannot receive and need not hope for success. The labors and constantly recurring self-sacrifices required of the practitioner of Medicine, can only be properly met by one who feels that he is invigorated and sustained by a well-grounded and abiding faith. It is not in the nature of man to undergo such labors and privations, if at heart he believe it is a useless mockery, that he is acting the part of humanity and leaving his suffering fellow-creatures the victims of a cunningly devised system of cheating and fraud.

Medicine is a romance, says another, of which the physician is the author. It is not worth our while to reproduce the epigrams and satires which have been heaped upon our art. They have amused the vulgar and served the end of their authors. We have little to do with mere witticisms; we are charged with relief to suffering humanity. We are to see that health, the greatest of blessings, is restored or preserved. Medicine is progressive; it must therefore be imperfect. It is pursued by keen minds and in a true spirit, but it has difficulties, peculiar to itself, which can only be overcome by patient and laborious observation and careful study.

It is in the nature of man to suffer pain as well as to enjoy pleasure; to die as well as to live. He is constantly exposed to the influence of physical agents which surround him, and to other and more subtle influences of mind. In proportion as his organs are endowed with higher functions, they are necessarily more delicate and sensitive. His sufferings are the necessary results of the laws of the animal economy. Hence it is concluded by those who have no confidence in Medicine, that its practitioners are deceived by their own vain imaginings, as to their supposed influence over disease. It is certain, they say, that many die under their hands, and it is quite as probable that those who escape owe it rather to their good fortune than to the art. Contrived by charlatanism, it is continued by the combined credulity of physician and patient. In other words, our adversaries declare that there is no reality in Medicine. Against such arguments and assertions it is in vain to array the antiquity of Medicine, the high respect in which it has been held from early times — so ancient that we know not when it was without a name and practitioners — nor even the high rank of its practitioners in learning and intelligence. Almost as much could be said for Astrology and Alchemy.*

But the question is a grave and extensive one. False or true, Medicine is connected with the greatest interests of society. It is as much the greatest of all the blessings conferred on man, if it be well founded, as health and life are the greatest of enjoyments. It is also connected with the highest princi-

* See Appendix, Note B.

ples of the physical sciences, and must be in accordance with those principles. Let us state the question as proposed by our opponents distinctly. Medicine claims the power of the prevention and cure of disease; that is, the power of producing such changes as will convert a tendency to disease, or an actual state of disease, to a state of health. This supposes in man the power not only to resist nature, but to compel her to a course the opposite to that to which she was tending; to abolish the laws of nature. But the laws of nature are invariable; hence the claims of medicine are unfounded. This is the argument brought against the very foundation of our art, stated broadly enough to meet the views of our greatest opponents.*

It is proposed to examine this question, to set forth some of the grounds of the confidence we have in the reality of medicine, and thus show that the arguments and objections just stated are unfounded.

At the very outset we are met with this reflection: If the laws of nature are invariable in the sense assumed, it is in vain to attempt or even wish to change them. But we know that these laws, or uniformities of action, are not one, but many; that each taken by itself acts in its own direction and has its own results. Action and effect in nature are usually the result of many powers combined, some aiding and some opposing, and therefore modifying each other.† Our ability to predict phenomena shows that they are invariable, and our ability to change

* See Appendix, Note B.

† Comte. Positive Philosophy, English Edition, Vol. i., p. 19.

the combinations and thus modify the results shows that the powers, entering into these combinations, are subordinated to our own. The power of man to modify them arises from his intelligence, which directs him in the combination of these laws in setting one against the other, and thus producing effects which could not take place without his intervention. To illustrate: It is a law of Physics that gravitation is in proportion to the quantity of matter; it might therefore be inferred that a man can move only a weight equal to his own. But by another law the quantity of motion is measured by the quantity of matter and its velocity; hence a force however small, may move a mass however great.

Such combinations are the sources of the wonderful power which man exercises over the globe itself. Everywhere it exhibits marks of his genius. He modifies its surface to suit his ends. Neither hill nor valley nor mountain range impedes the directness of his progress. The seas are his highway, and the winds do his bidding. The higher regions of the air and the bowels of the earth are visited for his gratification, or for the acquisition of materials for new conquests. He tames the lightnings, and they become his messengers.

But man is not content with the exercise of his intelligence upon inanimate matter, the laws of which are more simple, and its conditions permanent. He sees around him organized bodies endowed with wonderful powers of development, and forms of beauty of which he could not conceive. He perceives that the laws of their being are complex, and

that they are subject to influences which produce in them great and frequent variations; indeed, that which strikes him most, is the invariability of their tendency to variability under all favorable circumstances. The varieties are so great and so readily produced under domestication, that it is by many doubted, and by some denied, that species are anything else than varieties constantly increased by natural or artificial selection. He sees in this law the source of all the choicest productions of the garden. We have but to compare the delicious fruits which grace our tables with their wild originals, to see what wonderful changes may be produced by intelligent selection, cultivation and treatment. Who could recognize the Newtown Pippin in the crab apple, the peach and the nectarine in the almond, the plum in the sloe; or, suppose that the pear could be so modified that each month in the year should have its appropriate variety in full perfection. So thoroughly does he impress upon them their peculiarities, that they are retained for many generations, even when left to themselves, exposed to those influences which tend to bring them back to their original condition.

But he is by no means content with the exercise of his power over those plants which may conduce to his sustenance, he turns to the gratification of his taste, in the color and form of the flowers of the field. By treatment he modifies their hue, the number of their flowers, and the number of their petals, almost at will.* Indeed, whatever may be their

* See Appendix, Note C.

color, fragrance, taste, form or size, all must yield to his intelligence. Acrid and deleterious qualities must also yield and give place to those that are nutritious. And while by hygienic means he thus develops his subjects in vigor, he does not forget their diseases. Some he prevents by new combinations of plants, others he treats, and often successfully, by applications both vegetable and mineral. But, too often, wide-spread epidemics, like that of the potato and the sycamore, pass over the land and disappear, while he bitterly regrets his ignorance of their laws.

Another illustration of man's power may be found in his influence over animals, in which, inasmuch as they have voluntary motion, new relations must arise with surrounding objects, and a greater complexity of structure, accompanied by a still greater degree of variability; and mind also, by which habits are formed and qualities are developed, which so far as man is concerned, change the whole nature of the animal—habits of the body developing physical qualities requiring only the existence of their germs that man may seize upon and cultivate, increase and convert to his purposes. Whatever be the natural geographical distribution of animals, their food or their climate, they can be so modified that even the intolerance of heat by the reindeer, or of cold by the camel, has not prevented their domestication. By the law of inheritance, that like produces like, combined with habit, use and disuse, together with the selection of innate differences, and the accumulations through successive genera-

tions, what wonderful changes have been brought about and confirmed to the use of man! The ox has been increased in weight and strength and patient endurance. The horse is made to rival the ox in steady draft, or challenge our admiration for its beauty, speed and courage. The dog, the ancient, faithful friend of man, has varieties so diversified, that we can hardly believe with the naturalists that the slim and active greyhound, the slow and tenacious bull-dog, the pointer and the shepherd's dog, could all have had their origin in the wolf. The coverings of animals have been made to change their color and qualities; that of the pigeon to suit the fancy, or that of the sheep to afford a finer fabric or more complete protection against the severity of a northern climate. In fine, few animals which can live in the vicinity of man, and to which he has found it worth his while to turn his attention, have resisted or escaped his modifying influences.*

These are some of the instances, of which many more may be collected, proving the power of man over organic life. They prove it clearly and unanswerably; and this being so, we may ask those who deny the reality of medicine if it is philosophical to admit this power and at the same time to deny to man the power of influencing disease. Disease is a departure from the normal state; and to produce a return to this state the strongest agencies in nature are brought in play—those having in charge the preservation of the individual. Perhaps it would

* Darwin. Origin of the Species, p. 34.

be saying too much to claim the control of disease because we have this influence over nature; but we may fairly claim that if it can be shown, independently, that such control exists, it will be perfectly in accordance with those other powers which no one can deny. And we may also claim that the organization of nature is more in accordance with the supposition that man possesses this control, than with that which refuses it.

If it shall be said, the instances collected require long periods of time, I do not object; for if they cannot be considered analogous to those changes required in rapid disease, they can illustrate what frequently takes place in hygiene, the highest branch of medicine, the influence of which extends not only over individuals, but over whole communities, and for more than one generation.*

The evidence upon which the power of medicine is to be determined must be drawn from experience and observation. Not upon a few isolated facts and remarkable instances which may or may not be exceptions to the general rule, but upon classes of facts so numerous and extensive and so well known that they have but to be named to be recognized. The inferences drawn from them will then possess the highest probability. We have no need, in such an inquiry, of either hypothesis or theory.

It is obvious that there would have been no such thing as medicine if the necessities of man did not demand it. If, for instance, the same kinds of food or the same kind of regimen were as useful in dis-

* See Appendix, Note D.

ease as in health; but this the whole experience of mankind shows not to be so. Indeed, the whole system of diet in health must have grown out of the necessity of selecting certain articles of food which experience had shown to be most conducive to the comfort and efficiency of the strong, and the preservation and improvement of those who were less favored by nature. By the process of cooking, articles of food would be improved in flavor or utility, and, by rendering substances digestible, which before were not so, the sources of nutrition would be increased. If, however, we refuse to admit the diet of the healthy as a part of medicine, and consider that only as really medicine which was invented for the sake of the sick, which has a name and practitioners, we may say again that no one would have invented or investigated the art if the same course of life were equally advantageous in health and disease. It is probable at first that the wishes of the patient would be the only guide as to diet; or, perceiving himself weak and faint, he would attempt to use that which had strengthened him in health, even if not desired. The more intelligent and observing, finding that this failed, would restrict the quantity, and this to most persons would be a decided gain. Others would be unable to take even the smallest quantity of ordinary food; for these, soups and gruels would be invented. But soups and gruels do not agree with all, in all diseases; on the contrary, they sometimes exacerbate both fever and pain, and thus prove food and increase to the disease, but a wasting and weakness to the body. Now if we, to avoid

this error, could adopt as an axiom, that such things as are strong and nourishing are injurious, and those that are weak and diluting are beneficial, it would be an easy matter; for then, the safest rule would be to circumscribe the diet to the lowest point. But here we are liable to fall into the opposite error of prescribing a deficient diet, or one composed of weaker things than are proper. Abstemiousness may enervate, weaken and kill; consequently the practice must be varied. We must aim at attaining a certain measure, and yet this measure does not admit of weight or calculation by which it can be accurately determined. It is a matter of judgment, often requiring an amount of careful observation and skill, hardly less than that required for prescribing powerful medicines. That these matters belong to the healing art is unquestionable; of their utility to those passing through the successive stages of disease, no one can doubt; they are facts with which all are familiar, and need only to be stated to be admitted. And all will agree that a physician deserves great praise who makes small mistakes in the quality, quantity and times of administering food during disease and convalescence. Here, then, is unquestionable evidence of the reality of Medicine.*

The influence of medicine upon the cure is much more obvious in some cases than others. Some diseases cease under the influence of nature alone; others require the assistance of art; while a third class is equally beyond the powers of nature or art.

* Hippocrates, Ancient Medicine. Sydenham Society's Edition, vol. i., p. 164.

That many diseases are cured by nature alone, that is, by such changes only in the condition and regimen of the individual, as are prompted by his own sense of what is proper, and without the use of active disturbing agents, is abundantly proved. First, there are many affections which are trivial in their effects and ordinary duration, trivial apparently not from any difference in their nature from other more severe forms, but from the extent of surface affected, and which seldom receive aid from friends or physicians. Secondly, cases more severe occur, which from necessity, neglect, or a belief in an inert system, are, except so far as the mind is concerned, left to themselves. And again, in "some persons celebrated in the arts or the sciences, who wish in their diseases to distinguish themselves from the vulgar, and of two opposite things which they regard as equally obscure or problematical, the use or the non use of certain medicines, prefer the last, to give an additional proof of an elevated mind and a total freedom from popular prejudices, a simple glass of sugar and water, presented according to the received forms of pharmacy, becomes for their alarmed imaginations an object of repugnance they cannot overcome."* In these cases even the mind has no effect upon the cure, so far at least as the excitement of hope is concerned. These may all recover without the use of active disturbing agents. That many diseases are cured by nature alone, is proved by the observations of the most accurate of observers more than two thousand years ago. Further proof was

* Pinel. Dictionnaire des Sciences Médicales, vol. xiv., p. 250.

accumulated by Stahl, when, declaring that the reasoning soul was the great cause of the prevention and removal of all diseases, he treated many by absolute expectation. It was again proved by the observations of Pinel, continued for nearly twenty years in the hospital of La Salpétrière.*

Many have had an excessive faith in the curative power of nature. That it is equal to the cure of a large number of diseases, all admit, except Hahnemann and his followers, who declare that "nature alone cures no disease" — a doctrine at variance with common sense and the opinion of every well-informed physician from the days of Hippocrates to the present time, and which we are quite willing to accept as the distinctive mark of the system.†

In claiming so much for the healing power of nature, it must not be concluded, and will not be by any reflecting persons, that medicine is therefore useless. To draw such an inference would require— first, that nature should be equal to the cure of all diseases; and secondly, that she should cure them as rapidly and with as little suffering without aid as with. This no one can show. Besides, the hope with which the sick man turns towards those conversant with disease, is a part of his very nature, and cannot be destroyed even with the destruction of the medical art. Of necessity he calls upon others for that aid he cannot himself render. He must be directed in his needs; in the feebleness of mind and

* See Appendix, Note E.
† See Appendix, Note F.

body he must lean upon some one; and even if our art were powerless to aid nature directly, which we by no means admit, it would vindicate its claim upon the gratitude of the community, if it only prevented the interference of that which is positively injurious. We know the credulity of patients; we know also that the well-meant but often most dangerous advice of friends has rendered fatal, diseases which under rest and careful diet would speedily have reached a favorable termination. We cannot expect a sound judgment in a sick body, or a mind always strong enough to resist the influence of highly wrought descriptions of wonderful cures. Disease of moderate severity not unfrequently renders a man quite incapable of reasoning; his friends are anxious, indiscriminate remedies are multiplied, and everything is confusion and uncertainty. To bring order out of confusion, to prevent everybody from doing everything, to inaugurate a well-considered course of treatment, to inspire confidence, is the office of the physician.

Medicine is not only useful in its active coöperation by means of remedies, but also by its judicious reserve. If the disease proceeds regularly and safely, the duty of the physician is to hold his hand, be cautious and watchful, see that all dangerous complications are avoided, pains relieved, comforts increased, the strength husbanded, and the disease brought to a happy termination. His great aim should be "to help nature when she flags, and curb her when she is outrageous." We should rather liken nature to a leading wind, the direction of which

we must in the main follow, but of which the physician, as a good navigator, takes advantage; and, knowing well the currents, the coast, the dangers and the place of safety, will succeed in accomplishing a voyage in which another less skilful and vigilant would have been lost.

Those who are disposed to deny the utility of medicine should consider well what they will substitute. If they will not have one who has devoted his time and his talents to a laborious preparation for the duties of his calling; who is imbued with a sense of its dignity and of his own responsibility; who knows when to refuse remedies that are useless or dangerous; and the ways by which nature brings health from disease, and who, by weight of character, imparts confidence and commands respect; it may be that they will find his place supplied by the ignorant charlatan, equally dangerous in his officiousness and his neglect, deaf to the cries of humanity, and alive only to the insatiable greed of gain.

Time is an important element in all the processes of health or disease. This is true whether we have to do with the natural growth or the repair of injury, either in an animal, a plant or a crystal. But it would be a grave error to suppose that diseases cannot be abridged or mitigated by art, seeing that there are hardly any which cannot be prolonged or increased by imprudence.

Those diseases sometimes denominated "self-limited" (as to their number and the extent to which they are self-limited, physicians are by no

means agreed), which have a more obvious succession of processes than some others, can, there is good reason to believe, be lessened in severity and duration by appropriate treatment, because they can, unquestionably, be increased by that which is inappropriate. Besides, it will be observed that disease, by which I mean that state which intervenes between the loss of health and its restoration, is not a unit, but is made up of stages, of increase, of decline, of convalescence, requiring different management in these different stages. No one, for instance, would give cordials at the commencement of a typhoid fever, and antimonial emetics at its close, although he might be perfectly convinced of the value of each at its appropriate time. Convalescence, which not unfrequently occupies more time and attention than the preceding processes, is a state of recovery from the effects of disease, and may be much the same for several diseases, whether their course be more or less determinate, as the recovery from a fracture may be nearly the same, whatever may be its cause. That this stage may be prolonged or even life sacrificed by abuse of regimen, no one will deny. Then, again, there are sequelæ which may or may not follow the chief disease, and this also in many, if not in most cases, turns upon whether the treatment, especially as regards regimen, has been well or ill managed.

Smallpox, the external processes of which are well marked and open to inspection, and which is cited as an example of self-limited disease, may (as is abundantly shown by the great English physi-

cian in his essays on this subject) be modified by treatment, in its severity, duration, in the time of the appearance of its pustules, in their number, and consequently in the danger of its subsequent stages.

Dysentery, in which the mucous membrane of the large intestine is denuded of its epithelium, has its analogue — as regards anatomical changes, not as regards causes — in those changes taking place in the skin denuded of its cuticle by a blister, and the one may well be illustrated by the other. A blistered surface would, I suppose, be considered a self-limited disease. The amount of constitutional disturbance, other things being equal, will be nearly in proportion to the extent of surface blistered; the time required for healing will be nearly independent of such extent. The manner of healing will depend in a great measure upon treatment; if protected, it heals by the simple formation of cuticle; if irritated by friction or otherwise, it may secrete pus and heal slowly, or it may be made to slough and terminate in cicatrization after a long period. In dysentery it is not unlikely that similar relations exist between extent of surface and constitutional irritation, as well as a certain degree of similarity in the successive changes of structure — the epithelium merely is removed from the mucous membrane in some cases, accompanied by a copious serous evacuation, or covered by an exudation; or, again, the successive layers of tissues are destroyed, even to the peritoneal coat, each stage having its appropriate effects upon the system. In this disease we know that, by appropriate treatment, pain, gripings, tenes-

mus, may be controlled; movements over the inflamed surface may be prevented or restricted to long intervals, and the disease terminate in health with greater certainty and in a shorter time than when left to nature alone.

Another field, and a rare one for the exercise of medical skill, is in the influence a wise physician has over the mind of the sick, for man is an emotional and intellectual being, by which he brings hope to the despairing, certainty to the doubting, calm to the alarmed, and by that mysterious power of mind over matter makes certain a result which was before trembling in the balance. Any one who will read those remarkable letters of Sir James Mackintosh, himself educated as a physician, to the Rev. Robert Hall, during his recovery from "that calamity incident to tender sensibility, to great enthusiasm, to sublime genius, and to intense exertion of intellect," must feel that they "do good like a medicine," and that it is possible to rob even aberration of intellect of its horrors, by establishing in the mind of the patient a feeling of the superiority of a moral nature over intellect itself.*

Although the diseases which of themselves tend strongly, and generally successfully, to health are numerous, and the healing powers of nature as great as they are past finding out, there is another class in which nature fails to accomplish her work, or does it so incompletely that art becomes desirable if not actually necessary. Solutions of continuity on

* Life of the Hon. Sir James Mackintosh, vol. i., pages 251, 368.

the surface of the body, if slight, heal readily; if large, require aid. If fractures heal, it is almost always with imperfections of direction or length, or both. In dislocations, the bones obeying the muscular contractions are drawn further and further from their articular cavities. If hemorrhages from small vessels cease spontaneously, those from larger trunks or from aneurisms are inevitably fatal. Cataracts tend constantly to increase, and to destroy vision; and in iritis all the efforts of nature to exclude light only favor that condition which leads to an immovably contracted pupil. The healing of varicose ulcers requires support and position, and is very much aided by change of figure.* In strangulated hernia, the patient is snatched from the jaws of death by one of the most beautiful operations in the whole round of external medicine; while the various forms of internal strangulation, the seat of which is concealed, not unfrequently yield as signal triumphs to internal medicine, under the Fabian policy which dictates a judicious use of opium, producing quiet and gaining time for the subsidence of inflammation and the consequent relief of tension. In a pleurisy, the effusion of serum, so long as it is moderate in quantity, may be considered a blessing, inasmuch as it separates two inflamed and exquisitely sensitive surfaces, and prevents at once the rubbing and painful stitch. It should not be interfered with. Nature acts kindly; and only when inflammation has ceased, or lymph

* See Appendix, Note G.

protects the surfaces, is the serum absorbed. But when the quantity is excessive, one lung completely compressed, the other encroached upon, and the heart displaced, when nature may be unequal to the task of absorption, art withdraws the fluid, and the prospect of recovery is materially improved.

In apoplexy, where the victim is stricken down as by a thunder-bolt, the effusion of blood slowly disappears, with but little aid from art; but if the physician neglects those means which secure the nutrition of the paralyzed muscles and their nervous connections, his patient may be life-long indebted to him for a useless member, which might easily have been otherwise.

Intermittent fevers in the days of Sydenham, who says they were justly called the *opprobria medicorum*, and "were seldom or never cured by any remedy," were considered self-limited, and requiring, in ordinary cases, three hundred and thirty-six hours to complete the necessary "depuration," and sometimes six months, when their regular course had been interfered with. Under the use of quinine they are readily cured; and not only intermittents, but other malarious diseases are effectually prevented by its continued employment as a prophylactic; to such an extent, indeed, that the mean strength of our army and navy in malarious districts has been materially increased thereby.* In the Pernicious Fever, or "Congestive Chill," without treatment, three quarters of the patients die; with the efficient use of quinine,

* Sanitary Commission, No. 31. Report of Committee on Quinine as a prophylactic against malarious diseases.

one in eight dies. "This is the remedy for the disease, and only this."*

Periodical neuralgia may also be arrested by quinine. The violent spasms of colic may be quelled, the pains of acute rheumatism prevented, diarrhœa checked and sleep procured by opiates. The pains of gout yield to colchicum, and irritative coughs to various narcotics. It would be easy for any physician to swell the list, but enough, with other and perhaps more striking instances, have been cited to establish the reality of our art, and this is the only point at present.

No distinction is here made between Medicine and Surgery; both are branches of the healing art. The latter deals with subjects for the proper investigation of which more than one of the senses come in play. The relation of these subjects can be readily determined, and their character established; the operations required upon them consist principally in the mechanical arrangements for restoring displaced parts, or the ablation of those diseased. In the knowledge and treatment of physical lesions, surgery exhibits its peculiar certainty and usefulness; when it passes from these to the care of constitutional affections, like cancer and scrofula, the degree of certainty diminishes. The detection and removal of a foreign body, local in its effects, is vastly more simple than detecting and removing a hidden disease which has a sympathetic relation with the whole body. Finally, a selection of subjects is permitted for the exercise of surgery, while it is denied to the sister art, and

* Wood's Practice of Medicine, vol. i., p. 302.

this has not a little to do with the certainty of the results.

Let us now consider those conditions which are incompatible with health, and those diseases which from their very nature are incurable. Some enter the world with so little power of resistance to the influence of surrounding physical agents, that life is a struggle to which they are entirely unequal, and they rapidly succumb. Others, with more strength, may, with constant care, preserve for a while a precarious existence. The latter are among the first to seek aid from our art, and unreasonably hope for longevity, a blessing that can no more be conferred upon them than a vessel of bad materials and faulty construction, with feeble machinery, fitted only for the calmest waters, can be made to brave the storms that are weathered only by the staunch and powerful sea-going steamer. And yet the failure to accomplish this is reckoned among the reproaches of Medicine. But Medicine is not without utility here; it cannot reorganize the body, but it may show how the powers already possessed may be husbanded, to what they are equal, and what must be avoided. The records of hygiene show how delicate health can be improved, life prolonged to an unexpected extent, and a feeble body sufficiently strengthened to become the vehicle of an intellect which has enlightened the world.

Many incurable diseases are long, lasting for months or years, affording a most important field for the resources of the art, and one which must occupy much of the time and attention of its practitioners.

When it is not possible to restore to health, the medical art is often able to relieve pains more dreaded than death itself, and in most cases to render life more supportable. Medicine does not forget the triple nature of man, but while ministering to his physical wants and lessening his sufferings, extends those moral remedies which may render more gentle the descent which is inevitable. And lastly, the discoveries of recent times have placed in our hands means by which can be secured that physical Euthanasia so ardently longed for through so many generations.

We have now proved the reality of medicine by an array of facts drawn from fields of observation known to all; also from classes of facts too extensive to allow of the supposition that they may be exceptional cases. It has also been shown that medicine is in accordance with and acts in aid of one of the most important forces, that of the preservation of the individual; and finally, that it is in harmony with the powers of man over organic and inorganic nature.

This being so, we will proceed to consider the certainty of Medicine. And this is the more important, as it is the point in which it is most frequently attacked. Many minds are so constituted, that they of necessity run to extremes; if, for instance, it is shown that there is an element of uncertainty, they straightway conclude that all is chance. They do not perceive that there is a world-wide difference between knowing all of a thing and knowing nothing of a thing. Some one declared that after thirty

years of practice he was tired of guessing at the truth, and was answered that it was our business not to be tired. The tired man remains in doubt; the unwearied man arrives at certainty. And again, the very expression shows that there is truth at the bottom, to be guessed at and sought for.*

Admit that Medicine is an art, a body of precepts only, and not of principles and deductions, it by no means follows that it is all chance. Agriculture is an art having certain processes, which being duly accomplished, still leave the future crops at the mercy of the storms and devouring animals. Before these the farmer bows, as the physician bows before organic disease and "the pestilence that walketh in darkness and the destruction that wasteth at noonday."

First, what is the meaning of the word certainty? Medicine is founded on observation and experience, and as such is classed among the physical sciences; consequently its certainty must be of the same nature as that of these sciences. Certainty in physical science is the conviction of the invariable relationships of phenomena. It requires exactness in the history of the phenomena of disease and the relationships of these phenomena; it also requires that the relationship that exists between morbid processes and their modifiers should be known, and that the

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* Feuchtersleben's Aerzte und Publicum.

"Yes, gentlemen, even in games of chance, intelligence goes for something, you may well believe; perhaps you have reason to know it. There are two classes of people who always win: the *Greeks*, I shall say nothing of these; and the good players. A good player always wins in the end; a good player, if he has no trumps in his hand, has them in his head."

Trousseau sur L'Empirisme.

modifier should be equal to the modification claimed. All this is derived from experience only.* But there are various kinds and degrees of certainty, and the sciences may be arranged in the order of their certainty, which also corresponds with the simplicity of their laws.

Mathematics, the most ancient and most perfect of all the sciences, has to do with numbers and figures — Arithmetic with the first, and Geometry with the second. They refer only to notions of time and notions of space, to which the existence or non-existence of matter is indifferent. "If matter had no existence, nay, if space and time existed only in our minds, mathematics would still be true."† Those who complain that our science has no mathematical certainty — and it has not — should remember that nothing but formal mathematics has this certainty; and should also remember that mathematics can furnish us with no knowledge of objective realities.

Rational mechanics, again, which supposes matter inert, obtains from observation the laws of motion and the law of virtual velocities; and except in these instances, is independent of all else — the whole science being a matter of mathematical reasoning—and consequently has its degree of certainty; but it also gives us almost as little knowledge of objects. When it is applied and has to do with physical bodies, we find abundant sources of uncertainty in friction, rigidity of cordage, weight and flexion of levers, and various other instances.

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* Bartlett's Philosophy of Medical Science, p. 103.

† Sir William Hamilton's Lectures on Logic, p. 380.

Astronomy deals with the heavenly bodies, and knows but one law. Its facts are derived from observation, furnished by one sense only; but through the human intellect it has been placed at the head of the natural sciences. Its certainty is greater than that of any of those sciences, and this certainty we may use for the determination of time and place, and the prediction of astronomical events, and thus contribute to our most ordinary wants. But its law is one, and no power of ours can modify any of its phenomena.

Physics, which contemplates the laws which regulate the general properties of bodies in the mass, is more complex, and, in accordance with the law of compensation, we can employ instead of one sense, as in astronomy, the whole five. Observation and experiment become sources of knowledge, and as there are hardly any bounds to our power of modifying the relations of bodies, experiment becomes supreme. With this science, man begins to exhibit his power of modifying phenomena, and he becomes more powerful in this respect as the sciences with which he has to do descend in the scale of certainty. He is thus compensated, in a measure, for the loss of that certainty which gives him the power of prediction in astronomy.

Chemistry studies the changes of composition of bodies in virtue of their internal reactions. The phenomena are the most intimate and complex of any in inorganic philosophy; bodies are changed, and no longer recognized. Here, again, complexity is accompanied by an extension of the means of in-

quiry. All the senses are more freely used, and experiment and observation find full employment. The powers of observation are wonderfully improved; but we can predict nothing; instead, however, we have the power of modifying phenomena through the variety of resources afforded by complexity, which is so great that the larger part of chemical phenomena are due to human intervention.

We come now to Physiology, the science most intimately connected with Medicine, which owes its existence to Medicine, for it was the practical needs of Medicine, and a conviction of the light that physiology sheds on the vital phenomena, that first suggested and kept alive its investigations. Its phenomena are extremely complex, and cannot attain the certainty of the more simple parts of natural philosophy. It has all the complexity of the preceding physical sciences, and those due to life in addition. Here, again, is an increase of the means of investigation. Observation is more valuable, the medical education of the senses is studied; they are armed with instruments. The microscope, the stethoscope, the ophthalmoscope, the laryngoscope, and such other contrivances as will aid the inspection of cavities of the body, are brought in play. Experiment is still used and comparison introduced, which owes its great value to the variety and complexity of living beings, and challenges "our admiration for the eminent art by which the human mind has been aided to convert into a potent means what appeared at first to be a formidable difficulty."* Notwithstand-

* Comte. Positive Philosophy, vol. i., p. 373.

ing all these resources, they do not compensate for the great difficulties, and Physiology must take its stand next below Chemistry in certainty. And with Physiology stands Medicine, for the state of disease does not differ radically from the state of health, but is rather a great and long continued variation of the phenomena of health without producing any entirely new phenomenon. These variations in man have limits without which all would be confusion, and within which the action of remedies is included.

Below Physiology in point of certainty are the sciences of Ethics, Political Economy, Finance, Commerce, Government, Politics, Doctrinal Theology. Great difference of opinion exists as to the proper application of the principles of each of these sciences. Notwithstanding the study devoted to plans for the improvement of States, they not unfrequently fail, and individuals and communities are brought to ruin. Fortunes are lost by the most careful of men, by changes in public policy, or in other reactions or events, which could not be foreseen. And so of the other sciences. Cases are constantly occurring in which, although the greatest human care and prudence were exercised, hopes and confident expectations were not destined to be realized. And yet, notwithstanding their imperfection, all these different callings, founded upon the wants of the community, are filled with aspirants. Those who reject Medicine on the ground of uncertainty, should remember that, for a still greater reason, to be consistent, all the arts and sciences just mentioned should also be rejected.

This, then, is the position of Medicine with regard to certainty; it is of the nature of physical certainty, which is of various degrees, as it has relations to organized or unorganized bodies, to plants or animals; and Medicine having relation to man, the most complex of all beings, its certainty is, although inferior to that of several physical sciences, superior to the moral certainty on which rest the greatest interests of society.

The certainty of diagnosis and prognosis in disease rests upon the fact that disease is not a confused and disorderly effort of nature, but a variation of the laws of health, and always within certain limits producing a related succession of processes sufficiently constant to be subjects of investigation. They are studied, as subjects of natural history are studied, their proper phenomena carefully considered, and all accidental complications as carefully rejected, until an accurate portrait is obtained. But as these processes are successive, they require time. That time is required should not be set down to the discredit of the certainty of Medicine. It is required in all arts; and those diseases which from their rapidity preclude the investigation requisite for their recognition, are beyond the limits of our art. No man claims certainty for any art in matters beyond its limits.

As a botanist cannot determine the name of every plant from an inspection of its seed-leaves and plumule alone, neither can a physician determine each disease by its first symptoms; but as the plant and the disease develop, they become more and more

distinct, and in many diseases the certainty of the physician is but little, if any, short of that of the botanist.

This certainty is unquestionably different for different diseases, for external diseases, and for those that are internal. It is in the diagnosis of these latter, that the powers of our art and the degree of excellence to which it has arrived are most clearly displayed. Symptoms may be observed by any one having the proper condition of the senses. Whether these symptoms shall become to the observer signs, depends upon something else; it depends upon intellect, upon reasoning, and a knowledge of the relationship of facts and processes. "That which escapes the eye of the body is seized by the eye of the mind."* What would avail this power which it has been proved we have over disease, if we could not recognize disease? This faculty, therefore, is acknowledged to be one of the most distinguishing marks of the good physician. He who understands most profoundly the workings of nature in disease, must of necessity be best able to calculate the dangers, foresee the terminations, and be most likely to bring it to a favorable issue.

It would not be possible to go into a discussion of the probability of success in the various diseases we are called upon to treat. But a mere glance at the subject, even in diseases the cure of which may reasonably be aimed at, will show what great differences must exist with reference to the nature of the

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* See Appendix, Note H.

disease, whether acute or chronic, the original constitution of the individual, his usual vigor, age, temperament, his mental condition, the time at which treatment is commenced, and many other circumstances, all of which must render the limits of the probability of success very broad, and between these limits we find favorable certainty, doubt, and unfavorable certainty.

The different estimate of the value of remedial treatment by different practitioners, is brought forward as an objection to Medicine. There are extremists in all professions; Medicine is no exception. Although it generally materially improves the mental condition of its followers, it cannot transform them; they are extremists still. There are those with their unbounded faith in imaginary remedies, on the one hand; and those who declare that their opinion is made up that the amount of death and disaster in the world would be less if all disease were left to itself, than it now is, under the existing condition of things — *Nihilism*, on the other.* At a distance from these two extremes, which, like most extremes, nearly meet, stands the Rational Physician. Removed from the credulity of the first and the scepticism of the second, he feels that his profession is a noble and a glorious one; and inspired with a just confidence, he looks forward to the time when some of its high aims and aspirations shall have been accomplished. He sees in remedial treatment a blessing vouchsafed to the human race.

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* See Appendix, Note I.

Whether this blessing shall reach those who commit themselves to his care, he believes depends in a good measure upon the ability with which he has searched out the secrets of nature, and the faithfulness with which he learns her powers, both those within the body and those which have been elaborated and stored up in the various remedial substances* against her hour of need. With the Hippocratic Oath he declares, "With purity and with holiness I will pass my life and practise my Art. I will follow that course of treatment which according to my ability and judgment I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous." Cheered by such hopes and sustained by such faith, he seriously and thoughtfully girds up his loins for his work. He meets firmly and uncomplainingly the labors, privations and dangers inseparable from his calling, feeling in his inmost soul that no life can be better spent than that devoted to the relief of his suffering fellow-beings.

In discussing the value of remedies, it is often assumed that all medicines are hurtful. But hurtful to whom? — to the well? Under most circumstances they unquestionably are; and this is why they are not used by sensible persons in health. Hurtful to the sick? Their extensive use in disease, and the apparent relief following their use in many cases, is presumptive evidence against this assertion. To deduce the pathology of an organ from its phy-

* Medicines, by the older physicians, were called the *Hands of God.*

siology is well nigh impossible; to deduce the proper therapeutical course from the pathology, with certain rare exceptions, is also impossible. To deduce the therapeutical value of a medicine from its physiological effect, is a matter of very great difficulty.* The physiological effect of a medicine is one thing, its therapeutical effect another and often a very different thing. The assertion that a medicine which hurts a well man will hurt a sick one to the same extent, it would be hard to make good. A dose of opium large enough to kill a well man often does no apparent harm, nay, does a great deal of good to a man suffering from one of many diseases that could be named. "There is a great deal that is mysterious in what is practical." The Homœopathists reason from the effects of medicine in health to their effects in disease; but to my mind their deductions in this respect are as valueless as their therapeutics.

Another objection brought against Medicine is the number, variety, and often contradictory nature of the systems which have in succession been put forth and have disappeared. Here, it seems to me, the objection lies rather against the builders of the systems and their theories than against the art itself. To my mind, there is no such thing as a system in Medicine, any more than there is a system in Mathematics or in Agriculture. The mathematician works out each problem by itself, and he is the ablest mathematician who has the greatest variety of methods

* Bartlett's Philosophy of Medical Science, p. 118.

from which he can select that best suited to the solution of the question proposed.* So in Agriculture, each plant must have its proper exposure, soil, degree of moisture, fertilizing compounds, and their adaptation to the year and season; all this can be accomplished by no one system. It is the knowledge of the habits of plants, and the proper selection from among the various powers he has at his command, which makes the difference between a good farmer and a poor one. In disease, nature does not follow one course. Diseases are not only not all cured in the same way, but the same disease apparently is not always cured in the same way. A cut, for instance, may be healed by immediate union or by one of several other ways. The exudation of pneumonia may be removed by expectoration, or by absorption, or by both. It is of these system-makers and adopters of systems, that Sydenham complains as thwarting him in his endeavors to improve the method of treatment in smallpox, measles and scarlet fever.

There is no probability, then, that a successful system applicable to all diseases will ever be invented. We may have artificial classifications of diseases according to any principle we may select, as aids to memory, or for convenience. That there are certain principles from which we should start, and certain methods which may be followed, no one will deny.

There is an enumeration of questions to be satis-

* For this statement I have the authority of Prof. Peirce.

fied with regard to disease, which may greatly aid us. My medical instructor,* to whom I desire to express the grateful acknowledgments due to a master from his pupil, gave me, during my pupilage, four such rules of inquiry, the value of which to my mind can hardly be overrated.

First. Is the malady understood?

Secondly. Is it susceptible of cure or of material relief?

Thirdly. Are the proposed medicines well adapted to bring about the cure or relief?

Fourthly. Are they likely to leave any deleterious influence in the system?

It is no objection to Medicine, and no subject of humiliation, that it cannot explain disease. We cannot explain a common furuncle or boil, any more than we can explain weight, and this no intelligent student of natural philosophy for more than a century has attempted to explain. "By seriously inclining our minds, we may discover what Nature does, and by what organs she does it; the way in which she does it will always be unknown to man." We do not know why the tongue puts on such and such appearances in such and such diseases. Its value as a sign does not depend upon our knowing why. Men who have the leisure and inclination for such

* William Johnson Walker, M.D., of Newport, R. I., whose munificent and repeated donations to institutions of learning are but a slight recompense for the loss sustained by his withdrawal from our profession in the height of his usefulness. See his Report to the Governor and Council of Massachusetts, for a concise statement of the results of his Experimental Inquiry as to the proper conditions for giving drugs. State Prison Reports, 1843.

speculations may show anatomical or other reasons for or against any theory they may choose to adopt. The true physician will say with Sydenham: "I have ever held that any accession whatever to the art of healing, even if it went no further than the cutting of corns or the curing of toothaches, was of far higher value than all knowledge of fine points and all the pomp of subtle speculations — matters which are as useful to physicians in driving away diseases as music is to masons in laying bricks."

But whatever be the shortcomings of Medicine, the physician is not left guideless. The Supreme Being has a work for man to perform on this earth, and he has given him a power which is always active in its efforts to preserve and restore him. With this guide, physicians must not always expect success; for what art or calling is invariably successful? and in this art it is impossible, seeing that "death happeneth to all alike;" but they may expect that measure of success granted to honest and intelligent human effort. "They ought not to be satisfied with simply giving health to the sick, but they should strive to add greater certainty to the art that they administer; and they should so direct their experiments, that the Science of Medicine may grow day by day more clear and more efficient. In this way the human race may reap the advantages thereof generally, and with safety, even after they themselves have been laid in their graves."

APPENDIX.

Note A.

The question involved in the Hedgecock Quadrant is simply whether the laws of reflection and refraction of light are constant for all latitudes and longitudes. The believers in the quadrant, in opposition to all other observers, are of the opinion that they are not constant; and, further, they declare that they vary so exactly with the change of latitude and longitude, that the place can be determined thereby.

Note B.

In the Hippocratic Collection is an Essay on "The Art." It alludes to those persons who make an art of decrying all art, for the sake of displaying their own knowledge. "In my opinion," says the author, "to discover that which was before unknown, and to know which avails more than to be ignorant, or to finish that which was before unfinished, is the end and object of intelligence; on the contrary, to endeavor, by an artifice of language by no means honorable, to vilify the inventions of another without doing anything, or decrying the labors of the skilful before the unskilful, is neither the end nor the object of intelligence, but is rather the evidence of natural depravity or unskilfulness; for to unskilfulness belongs the desire without the power to gratify a malevolence which loves, in the works of a neighbor, to calumniate the good, and jeer at the bad." The defence of each art is left to the practitioners of that art, but the defence of Medicine is taken up. The art of Medicine is defined, its objects enumerated, and its limits pointed out. "I say its object is, in general, to remove the sufferings of the sick and diminish the violence of disease." The assertion that the recovery from disease is the result of chance, and not of art, is discussed, and the conclusion arrived at is that "diseases treated badly are more frequently followed by a bad result, and those treated well by a good result." The difficulties of Medicine are set forth and considered with reference to internal and

external diseases. Several objections to it are answered, and its reality proved. In the treatment of disease, there are three elements: the disease, the patient, and the physician. To those unfortunate persons who see in fatal results the effects of drugs only, the author addresses a few considerations, pointing out the true relation between physician and patient. The essay concludes, "That, therefore, Medicine has within itself ample means for the succor of the afflicted, and that it would rightly refrain from attempting to cure incurable diseases, or if it did attempt it, would not commit an error, has been shown by what has already been stated, and also by the practice of good physicians who prove these positions by their works rather than by their words, being persuaded that the common people place more confidence in what they see than in what they hear."—*Prof. Sophocles; Mss. Translation.*

This tract appears to have been written to meet the popular scepticism of the times with regard to Medicine. Some of the views developed in this Address may be found in the "Art"; how many, may be easily ascertained by any one who will take the trouble.

NOTE C.

The gardener can, by starving down his plants, reduce them to a condition in which they will mature but a single perfect flower; or, on the contrary, by generous nourishment, can increase both the number and size of the flowers.

Changes of some of the colors of flowers can readily be produced; Prof. Gray informs me that the Escholtzia, naturally yellow, the most difficult of all the colors to modify, has been made to assume a considerable variety under the influence of differences in soil, exposure and treatment.

NOTE D.

The earliest instance of sanitary measures is said to be that connected with military operations, and described in the first Book of the Iliad. A nine days' epidemic, attacking men and animals, raged in the camp. Apollo, the god of acute diseases, had been insulted; he was appeased by proper offerings; at the same time Agamemnon issued orders for a general police of soldiers and camp, directing that all filth should be effectually disposed of, by throwing it into the sea.—*Malgaigne. Etudes sur l'Anatomie et la Physiologie d'Homere.*

One of the most successful instances of the prevention of disease by judicious and energetic hygienic measures, occurred at New Orleans during

the Rebellion, upon the occupation of that city by the government forces under Major General B. F. Butler. New Orleans is situated in the midst of immense swamps, with the Mississippi on one side, and Lake Ponchartrain at the distance of five or six miles on the other. The land near the river from which it was originally deposited, is higher than that near the lake towards which all the drainage tends. The swamps lie in the rear of the city, at a distance varying from half a mile to a mile or more from the river, and are covered by a dense growth of cypress trees and underbrush. Two navigable canals extend from the lake into the heart of the city, each terminating in a basin for the accommodation of small vessels. The drainage is effected by means of gutters on the sides of the streets, emptying either directly into the canals, or through others leading into them, and so into Lake Ponchartrain, and then by way of the Rigolets into the gulf. The general surface of the earth is so soft and marshy that it is necessary to bury the dead above ground, in tombs of masonry, or in raised graves.

The action of the Forts took place April 24th, and on the first of May Maj. Gen. Butler with 2,000 troops, mostly New Englanders, entered the city. It was found in a most filthy condition; because of the troublesome times, the contractors upon all the streets and canals had utterly neglected to comply with their contracts for cleansing and purifying the streets, and the filth was indescribable. In view of this most alarming sanitary condition of the city and the approach of the epidemical season when yellow fever would be expected, after consultation with the most eminent physicians who would give advice, some refusing to give any opinion (to their shame be it said), with the apparent hope "that the pestilence would do what the rebel arms could not—drive us out," and acting with the advice of his medical staff, General Butler took the most energetic measures for purifying the city itself, and thus prevent the possibility of engendering disease. [See General Butler's Letter to Secretary Stanton, Oct. 2d, 1862—and Report on the Conduct of the War, part 2, p. 355.]

This was to be accomplished by the most scrupulous attention to cleanliness. The streets were thoroughly cleansed by a force of a thousand men, paid from a relief fund obtained from the wealthy inhabitants, especially those who had subscribed largely for the purpose of resisting the Government, and also from funds voted for this purpose by the city authorities. By these means ten or eleven miles of canals were cleaned, some of which had not been cleaned for twelve or fifteen years. Large pumps were put in motion for raising the filthy water from the canals and discharging it into the bayous, by which it escaped into the lake. Several thousand tons of coal were given to the water companies, to be expended in keeping up a constant supply of water in the street gutters to wash all impurities into the canals. No garbage of any kind was allowed to be thrown into the streets or gutters, but it was required that it should be kept in proper vessels and daily removed by the public carts without the limits of the city. A large quantity of chloride of zinc, obtained from Lowell, Mass., where it is used

in the preservation of wood, was freely distributed in all places likely to be unhealthy. In fine, every precaution was taken to make the city clean and healthy, and keep it so.

In the second place, a discriminating quarantine was established, having reference to the cargoes, the general cleanliness of the ships, and the length of time spent at an infected port. If the ships belonged to an infected port and the cargo was manufactured there, the crew acclimated and indifferent to sanitary regulations, they were kept under quarantine longer, to watch the probable development of the disease and to assist the operation of the purification, than vessels loaded at a northern port, which had merely touched at a port infected with yellow fever and held communication with the shore under the restrictions imposed by the fears of unacclimated officers and crews. It was, however, determined to err, if at all, on the safe side, holding ever of far greater importance the lives of a large city and of the army than the possible damage to any commercial adventure from detention. No vessel that had been at an infected port was allowed to come to the city under thirty days. If she had anything like a perishable cargo, it was taken out and fumigated. The quarantine was more perfect than the blockade. Five or six cases of fever occurred at Quarantine, only seventy-five miles from New Orleans, and but *a single one* at the city, and this one, in the opinion of General Butler, fully justifies and illustrates the sanitary regulations adopted.

The U. S. Steamship "Ida" having touched at Nassau only to take in coal, as the captain stated, and being there but a short time, was allowed to come up by the Health Officer after fumigation and other precautions. It turned out, however, that the captain did take passengers on board, and one of them was taken sick on shore with malignant yellow fever the day after his arrival. The square in which he was, was immediately shut up by a guard, and no one allowed to enter or leave it; the square was cleaned up, everything whitewashed and fumigated. On the sixth day he died and was buried; almost everything he had touched was destroyed, and only acclimated persons were allowed to do the last sad offices. The house in which he died was most thoroughly purified, and by the blessing of "Him who holdeth all in the hollow of his hand" the pestilence was stayed. This was the only case of yellow fever in the city, although it existed all around, at Havana, at Nassau, at Key West, at Pensacola, at Galveston, at Matanzas, at Vera Cruz and Mobile. The rebels imported it into Altakapas and Sabine Pass, in running the blockade. Up to the first of October, 1862, there had been no malignant fever or epidemic of any kind in New Orleans, and its mortality returns show it to be extremely healthy. In one Regiment, the 13th Connecticut, a thousand strong, garrisoned in the Custom House since May 15th, but one man was lost during the months of July and August. During the present year the same attention to cleanliness has been kept up or even improved upon. Notwithstanding the prediction of the certain appearance of yellow fever and its actual existence at Quarantine, no case has appeared in New Orleans.

In view of these circumstances, and of the frequent epidemics of yellow fever, some of which are painfully fresh in our minds, and also in view of the constant occurrence of sporadic cases in July and August of each year, it is with honorable pride that General Butler, in his Farewell Address to the People of New Orleans, says, "I have demonstrated that the pestilence may be kept from your borders."

These most successful sanitary arrangements, the establishment of excellent Hospitals furnished with every accommodation for the sick and wounded, his recognition in General Orders of the humane courage of his surgeons under fire in personally bearing off the wounded as they fell, vindicate the claim of General Butler to rank in humanity and philanthropy above most military commanders.

Note E.

If I were to name a disease which more than others illustrates the healing powers of Nature, it would be Pneumonia. So remarkable in its hidden causes, its great differences at different periods of life, the suddenness of its attack, the rapidity of its progress, its extreme gravity, physiologically and anatomically, and, lastly, the celerity and certainty with which the diseased products are completely removed and health re-established.

Note F.

"That state of the organism which we call disease, cannot be converted into health, but by the aid of another affection of the organism excited by means of medicines. The experiments made upon healthy individuals are the best and purest means that could be adopted to discover this virtue."—*The Homœopathic Medical Doctrine of the Healing Art; a new system of Physic, translated from the German of S. Hahnemann, by Charles H. Devrient, Esq., p.* 162.

Hahnemann declares that seven eighths of all chronic diseases originate in *psora*, or common *itch;* this is theory. Common itch is caused by an insect; this is fact. What now becomes of seven eighths of the theory? But homœopathists say, and say truly, that the theory of homœopathy (infinitesimals) is of no consequence, the only question is, "whether it be, as actually employed in the treatment of disease, a valuable acquisition to the practice of medicine." If Nature alone cures no disease, its value is great; for unquestionably many get well under its use. We have satisfactory evidence that Nature alone cures *many* diseases. Can it be shown, with equal certainty, that she does not cure all of those which cease during the use of infinitesimals?

Note G.

The longer time required to heal a round ulcer, was noticed by Ambrose Paré; one of his Canons reads as follows:

L' Vlcere rond ne reçoit cure,
S' il ne prend vne autre figure.
Malgaigne's Edition, Vol. III.

As the growth of skin is always from other skin, that ulcer will obviously heal most rapidly, other things being equal, which has the most circumference. This is the great secret of the success of Baynton's method of dressing ulcers.

Note H.

The distinction between symptoms and signs, so often confounded, is well illustrated by the following from Captain F. B. Head's Rough Notes, taken during some rapid journeys across the Pampas, p. 257.

"The Gaucho pointed to the sky, and said, 'See! there is a lion.' I started from my reverie, and strained my eyes, but to no purpose; and he showed me at last, very high in the air, a number of large vultures, which were hovering without moving; and he told me they were there because there was a lion devouring some carcase, and that he had driven them away from it. We shortly afterwards came to a place where there was a little blood in the road, and for a moment we stopped our horses to look at it. I observed, perhaps some person had been murdered there; the Gaucho said, 'No;' and, pointing to some foot-marks which were near the blood, he told me that some man had fallen, that he had broken his bridle, and that while he was standing to mend it, the blood had evidently come from the horse's mouth. I observed, perhaps it was the *man* who was hurt; upon which the Gaucho said, 'No;' and, pointing to some marks a few yards before him on the path, he said, 'for, see, the horse set off at a gallop.'"

The Englishman might have speculated long and wisely upon the flight of vultures, upon the structure and functions of their organs, even to the minutiæ of a feather, and yet never been so far benefited by his speculations as to diagnosticate a lion. What are mere symptoms to one, become, through a knowledge of their relationships, valuable signs to another.

Note I.

George Ernest Stahl, Professer of Medicine in the University of Halle, did a great service by calling the attention of physicians to the influence of mind upon disease, and also by insisting upon what seems to us obvious, and yet was overlooked by his predecessors, that the human body is neither a machine nor a chemical laboratory, but is possessed of vitality. But he dwelt so long upon this idea that he at last came to the belief that the

Rational Soul, or Nature, did all. He had but little confidence in medicines, of any kind. He not only rejected cinchona in fever, but declared, in the credulity of his scepticism, that it produced obstinate constipation, engorgements of the abdomen, dropsy, phthisis, and many other diseases. Dropsy, he tells us, was never common in England till the introduction of Jesuit's Bark, though others remarked that its increase was also coincident with an increased use of spirituous liquors. Opium he considered a dangerous palliative, and discontinued its use. Indeed he hardly used anything of the kind except his peculiar preparation of cynoglossum, which appears to have been a feeble narcotic. His colleague, Hoffmann, did all he could to extricate him from his errors. While admitting that the Rational Soul could do much, he reminded Stahl that it had been liable to error ever since the *Original Sin*, and must not therefore be implicitly relied upon. But neither theological arguments, nor others much more applicable, had any effect; he grew more and more sceptical, and died a believer in amulets and charms. His errors apparently grew out of a too limited view of Nature; he did not observe that Nature includes far more than what is in the human body; that her powers are exhibited in all animals, plants, and crystalline forms. The *vis medicatrix* is not only in the body, but is to be found in the medicines external to the body.

Erratum.—On page 30, 9th line from top, the words "but enough" should be placed before "have been," in the next line.