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LECTURES ON GENERAL THERAPEUTICS.

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LECTURE I.

GENTLEMEN,—The preceding lectures of this course have been devoted to a consideration of the causes from which diseases proceed; to a description of the symptoms by which they are indicated, and of the elementary affections by which they are constituted; and, finally, to an exposition of the method according to which these materials are to be analyzed so as to make up, what are called in medical language, the diagnosis and prognosis. These are in themselves interesting objects of study, but their real importance consists in the relation they bear to the study of Therapeutics, or the treatment of disease. To this they are the necessary preliminaries.

The original notion among mankind probably was, that each disease is a thing by itself, a distinct individual entity; that one disease differs from another, just as one plant differs from another, or one animal from another;—a peach from a plum; a horse from a dog. In conformity with this notion of disease, was that of the nature of remedies;—that each disease, having its own peculiar character, had also its own peculiar remedy; that this medicine was good for one disease, and this for another; this for gout—this for fever—this for cough. The same notion enters even now into the popular idea of therapeutics, and you may have yourselves entered the profession with some vague conception of the same kind. Hence have arisen systems of nosology. These arranged disease into classes and orders; genera and species; just like the subjects of Natural History. These attempts at classification undoubtedly had their use; but you are aware that, in the present state of medical knowledge, they are discarded as superfluous; just as we take down the scaffolding of a building after its erection has made a certain progress.

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I formerly endeavored to explain how it was, that, whilst diseases are many, the elementary affections on which they depend, are few; that diseases vary from one another, not by each being possessed of an exclusive individual character, but, by the fact, that the same elementary affection produces what we call a separate disease, according to the organ or texture in which it is seated, the function which it interrupts, or the state of the constitution in which it occurs. Now something like this is true of the treatment of disease. Diseases are many, but the principles on which we proceed in their treatment are few. The most important parts of treatment relate to disease in general and not to particular diseases. Before, then, proceeding to the details of individual diseases and their treatment, it is proper to explain the principles of General Therapeutics.

It is a matter of common observation that, of some diseases prevailing extensively—such as common catarrh—all, or nearly all persons recover; and this whether they use remedies or not: that of other diseases, as typhoid fever or pneumonia—under the same circumstances—the larger number also recover, but a certain proportion die; whilst of other diseases—as plague and cholera—though a few recover, nearly all die, whether they have been the subjects of medical treatment or not. Now why this different result? Why and how do persons get well who use no remedies; and if a certain proportion get well, why do not all? This is an inquiry that should be preliminary to all questions of treatment.

This inquiry is twofold, and our first purpose is to learn why and how do patients recover who use no remedies.

It is obvious that, in order to this, there must exist in the system some power which contends with disease, seeks to remove it, and in these cases does so successfully. The recognition of such a power in some form or degree, among the careful observers of injury and disease, is probably as old as our art; but the nature, the mode and extent of its operation, have not always been as clearly perceived as they now are. It was early designated as the "*vis medicatrix naturæ*"—the curative force of nature; an expression less employed than formerly, but worthy of being remembered as the original form of words denotive of the idea. It is now referred to under other and various names and designations, as the sanative effort of the system, the restorative tendency of Nature, &c., but all refer to the same principle.

This is not, as so distinct a mode of expression might seem to imply, a separate or independent principle, coming into play when an injury has been inflicted or a disease induced, and, after recovery, suspending its activity and lying dormant till a new occasion calls for its beneficent operation. On the contrary, it is always and everywhere present, and always and everywhere in exercise. It is, in fact, only a modified activity of that power which constantly maintains the body in a state of healthy organization and

action. This power watches over the condition of every part; keeps up its relation with every other part; presides over its nutrition; repairs its waste; heals its injuries; remedies its diseases. The purpose, the mode, the degree of its activity, are determined by the condition of each part, and by the condition of the system as an aggregate of parts. It accommodates itself to the variations of this condition; so that, while in health, it is merely concerned in maintaining each part in its integrity by the healthy processes of nutrition, in disease it is concerned in removing that in which disease consists, by what are called the processes of disease. Its office, in health, is to keep the parts in a normal condition. Its office, in disease, is to bring them back to a normal condition. The processes of disease are only the processes of health modified and adapted to a peculiar exigency. The instruments are the same; the materials are the same. Inflammation is a modified form of nutrition; spasm, of muscular contraction; fever is a modified result of the same law by whose influence increased vascular action is induced by the increased activity of any organ. The processes are simply varied from their ordinary character, because the purpose for which they are established is different from that to which they are ordinarily directed. The quality of life is such, that it is capable of using the same means for different purposes—for formation, for nutrition, for growth, for repair, for restoration—just as a skilful workman employs the same tools and the same materials in the repair of a machine, that he has already employed in its construction.

This principle is universal in organized matter, animal and vegetable, but it is exhibited in different degrees, and with various limitations. It is more restricted in man than in the animals below him. In many of them, it not only keeps good the organization of parts and repairs partial injuries; it may even reconstruct organs that have been removed or destroyed—as the claw of a lobster or the eye of a newt—but in man it is only capable, in health, of maintaining the organs in a normal condition, and, in disease or injury, of bringing them back to that condition.

But the efforts of this principle, as we have already seen, are not always successful, and this brings us to the second branch of our inquiry:—Why are they not always successful? Why are they so often unavailing? Why are they so often defeated? We shall have occasion to consider this more at large hereafter. It will be sufficient to say now, that the causes are many and various; such as, among others, the nature and severity of the disease or injury; the state of the patient's constitution; the character and functions of the part affected; the favorable or unfavorable conditions under which the patient is placed; his injudicious management on the part of those about him. In disease, there is always a contest between two antagonistic forces—the force of disease, tending to destruction; and the force of recovery, tending to prevent destruc-

tion. The result will depend upon the relative strength of the contending parties. But whatever be the force of the disease, we are always able to detect indications of the effort to remove it. Even in those maladies which are almost necessarily mortal, as cancer, consumption, tetanus, or hydrophobia, we trace the constant operation of the same restorative principle in the character of many of the processes that are going on, and in partial periods of relief and suspension of progress.

But it may now be asked, is there no other dependence but upon this principle of spontaneous recovery? Has art no direct resources? Are there no absolute remedies by which disease can be controlled and expelled? It always has been and still is believed that there are. The simple and primitive idea of treatment, to which I have already referred, is founded on this belief. It has been difficult to determine how far this belief is well founded, because very generally in the practice of medicine care has not been taken to distinguish between the direct influence of remedies and the results of the sanative principle; between what is due to Art and what to Nature. Hence, as some remedy or other has usually been given, the recovery is apt to be ascribed to its influence. It is not till the treatment of disease is carried on with a clear and distinct appreciation of these two separate principles, and with constant reference to the part which each severally takes in bringing about the result, that we can properly determine their respective value, and thus learn how far we are in possession of remedies of a direct and positive character.

Still, the belief in such remedies exists among physicians, and is the result of a long course of observation and experience; but there is a wide difference of opinion with regard to their number, their amount of efficacy and their mode of operation. This direct remedial agency, so far as it exists, appears to be founded upon the relation which is maintained between the human system and other substances in nature. Probably every such substance bears a peculiar relation to this system, in consequence of which it produces peculiar effects upon it. In the case of powerful agents this is clear enough, as in those having a strong smell or a strong taste, or acting as medicines and poisons. But there are considerations which tend to show that even substances that appear inert, in the ordinary mode of application to ordinary constitutions, are capable of producing decided effects when differently applied, or applied to peculiar constitutions. Thus, prussic acid, as combined in the common peach, produces no sensible effects, but when exhibited in a concentrated form may speedily destroy life; whilst, on the other hand, the most virulent poisons, as strychnine, in a small dose and largely diluted, may be taken without injury. Still further, some substances from which most persons perceive no peculiar effect, act upon certain individuals almost as poisons, such as mutton, milk, cheese, honey, &c. An eruption upon the skin is produced in cer-

tain persons by the contact of rose leaves, and a species of asthma, or difficult breathing, by emanations from them, from hay, from ipecacuanha, and probably various other vegetable substances unknown to us, although their presence is not obvious to the senses. Emanations from the common domestic cat give rise, in some constitutions, to faintness, nausea and vomiting, and this even where the animal is not known to be present, and its odor has not been perceived. Such susceptibility, it is true, is an individual peculiarity, called in medical language an *idiosyncrasy*. Probably, however, it is only the exaggeration of a relation common to all mankind, but which in others requires the application in greater quantity or of greater intensity. So that very likely there is no substance that in some quantity or in some degree of intensity is not capable of producing a cognizable influence upon the human system.\*

At any rate, whether this be so or not, it is upon such a relation that those articles which have been selected as medicines depend for the effects they produce. They may be divided, according to the manner in which they operate upon disease, into two classes: the *first* contains those that are directly remedial; the *second* contains those that are indirectly remedial.

I. The articles of the first class are supposed to act directly for the removal of disease—they are primarily curative. Thus Peruvian bark, quinine and arsenic, have a direct influence on certain diseases characterized by distinct paroxysms and intermissions—such as intermittent fever, hemicrania, intermittent catarrh and neuralgia, and some others having this same element of distinct intermission in common with them. Of the same direct nature is the influence of mercury and iodine upon syphilis—of colchicum upon gout and rheumatism—of iron in anæmia—of lemon juice in scurvy—of ergot upon the parturient uterus.

I mention these as the most distinct cases of an absolute power on the part of drugs to remove disease, and probably few physicians would doubt that they have this power. But the possession of the same sort of power has been claimed, from time to time, for a great many other articles, about which there has been and is a variety of opinion; and it is to be remarked, that as disease has been observed more closely, and its course judged of in the light of more advanced science, the number of these articles has steadily diminished. Even of those medicines with respect to whose influence there is no reasonable doubt, it is not intended to imply that this influence is always exerted—that they are infallible remedies. Far from it. On the contrary, they very often fail in the cases to which they are appropriate. But so far as they have any effect, it is directly to remove that condition in which the disease consists, and their power depends upon a peculiar relation

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\* Some remarkable facts illustrating these statements may be found in the history of Casper Hauser.

between the remedy and that condition. In other words, they are specific remedies. Still, even where we depend upon specific remedies, it does by no means follow that the whole work of recovery is performed by them. It is always necessary that a part at least of this work, in order to its completeness, be performed by nature. Suppose that quinine has extinguished the paroxysms of an intermittent. There is usually left behind an impaired state of the functions which it does not remedy, but which nature gradually restores. Mercury destroys the specific character of a syphilitic ulcer, but the ulcer is only healed by a spontaneous process. The removal of disease in this way bears a sort of analogy to a surgical operation, in which the knife removes the diseased part, and the wound left behind is healed by the powers of nature.

This, so far as we have the means of following it, is the most simple, perfect and satisfactory method of treating disease. Its purpose is simple and distinct. It implies the knowledge of a distinct object to be effected, and of a distinct agent with which to effect it. Unhappily, our knowledge of disease itself is so limited, and our knowledge of the exact power of remedies is also so limited, that it is capable of but a narrow application. Yet such is its simplicity and directness, that it has a great charm to many minds, even among physicians. So conformable is it, also, to popular comprehension, and to popular notions of disease, and even to those of many medical men, that there is a constant tendency to extend its application and to believe in its capacity for extension. If we examine the medical journals of the day which give an abstract of the various new propositions for treatment, it is found that no inconsiderable proportion of them are based upon this relation of remedies to disease.

Upon the same principle is founded—if I understand it aright—that part of the theory of homœopathic practice which relates to the efficacy of its medicines. It teaches that for every morbid condition there exists a specific remedy—a distinct antidote. No method of treatment could be more perfect in theory or more satisfactory in practice, if it were actually founded in truth. But there is a two-fold difficulty in the way of accepting it as a sufficient system. First, there is a want of evidence that such antidotes have been discovered, or that they even exist; and second, even admitting their existence, there is a great anterior improbability of their being capable of any positive effect upon the human system in the inconceivable state of dilution in which they are exhibited, whilst there is no sufficient body of proof to balance this improbability.

These remarks relate to the powers possessed by remedies for the direct removal of disease; but there is another view of remedies, somewhat of the same kind, which is of great importance. There are few, as has been stated, having a direct power over disease, but there are a great many having a direct power over

symptoms. It is often desirable to palliate a symptom, when we have no power over the essential malady. If opium cannot cure the disease, it will at least remove the pain which the disease produces. If antimony cannot cure pneumonia, it will at least diminish the febrile activity accompanying it. Considered in this point of view, medicines become most important as subsidiary agents, when the character of a disease obliges us to leave it to run its natural course.

II. The articles of the second class, when they are efficacious at all, are efficacious in a different way. They have a distinct operation—often more distinct than that of the preceding class—but an operation not primarily remedial, though it may be so secondarily. Of this kind are emetics, cathartics, narcotics, strychnia, digitalis, blisters, and many others. They do not directly remove disease, but they produce definite changes in the condition, action, and perhaps structure of organs, the indirect result of which may be its removal. The relation of remedies of the first class is directly with the disease. The relation of those of the second class is directly with some organ or function which may or may not be involved, and only indirectly, with the disease. Quinine subdues intermittent fever by its direct operation. Emetics and cathartics, if relied upon for the same purpose, can only bring about the same result by the vomiting and purging they excite, and this may indirectly arrest the course of the disease. We know that strychnia will produce contractions in the muscles of a palsied limb, but we do not know that it will, as a consequence, restore its natural power of motion. We know that digitalis will diminish the frequency of the pulse, but not that it will cure the disease which has produced it. We know that cantharides will blister the skin, but not that the blister will relieve the inflammation for which it has been applied. The effect in the first class is curative; in the second class, physiological. The principle upon which the agents of these classes act, so far as they are beneficial at all, is thus entirely different in the two. Their value as remedies is to be judged of from a different point of view, and by a different kind of evidence.

A great number—perhaps the greater number—perhaps all medicinal agents—appear to bear a special relation to particular organs, and to produce their effects through those organs. Antimony, however, introduced into the stomach, the veins, the rectum, or applied to the skin, acts upon the stomach, cantharides upon the bladder, opium upon the brain and nerves, strychnine upon the muscles, cathartics upon the bowels, mercury upon the salivary glands, phosphorus upon the bones of the face. This list might be extended, but it is sufficient to suggest the fact as of some importance in studying the effects of remedies.

Diseases may be treated, then, according to two distinct methods:—

1. By leaving them mainly to the influence of the sanative principle, or the *vis medicatrix naturee*.

2. By the employment of absolute remedies that we believe to be possessed of the power of removing that condition in which disease consists, either directly or indirectly.

Whatever be the relative value of these two methods, of which different opinions may be entertained, there can, I think, be no doubt that under one or the other are comprised all the agencies that are ever concerned in the treatment of disease. Consequently, if all treatment resolves itself into these two methods, all treatment should be studied in relation to them, and it is only by keeping them continually in view, and determining, as far as practicable, upon which depends the efficacy of any course we adopt, that we can arrive at any clear and distinct views of the results of our practice. Now there is really no such incompatibility between these two methods as renders it inconsistent to rely upon both in the same case or the same diseases. On the contrary, the best practice is probably that which combines them. Thus, where the main reliance is upon nature, there are few cases in which, at some period in their course, some absolute remedy may not be employed either to directly aid in supporting the system through the disease, or else to remove some obstacle or relieve some symptom which interferes with its successful progress. There are few plans of treatment, either in systems or in the practice of individuals, where these two methods are not combined. There has always been a certain undefined reliance on the powers of nature, whilst, at the same time, a great variety of distinct remedies have been employed with an equally undefined conception of the manner in which they are to prove useful, whether by their own efficacy, or by indirectly promoting the natural recovery. In order to clear and philosophical views of practice, it is necessary that the physician should first judge what amount of benefit he is to expect from the efforts of nature, and then, if he uses remedies, whether he merely uses them in aid of these efforts, or whether he expects from them a distinct effect independent of these efforts. I acknowledge that these are points very difficult to determine, but the more nearly we approach to their determination, and the more constantly we attempt it, the more will the results of our experience become definite and available; without the attempt, we can never tell, on recovery from disease, to what we are to attribute recovery—whether to nature or art; and if wholly or partly to art, what has been the particular agency of our different measures in the result. Without it, the largest experience may present only a dreary waste of vague inferences, and of loosely-observed and unavailable facts.

It is only by keeping an eye on this principle of judgment that we can attain to an understanding of the exact limits of our art—to a knowledge of what can and what cannot be done. In any

practical department, it is an indispensable condition of success to determine the limit between the practicable and the impracticable. What should we expect of the mechanic who attempted to construct a machine upon the principle of perpetual motion? Must it not vitiate all his calculations with regard to its working? He does not understand the limits of his art. He aims at the impracticable. The physician may do the same thing. He may aim at the impracticable for want of a proper appreciation of the limit of his power over disease. Suppose he were to attempt to arrest measles, or smallpox, or scarlatina at its onset, and prevent them from going through their regular course? Would not this be an attempt as preposterous as that to work a machine by perpetual motion? Now our present knowledge does not enable us to determine, in all cases, what the limit is, but it is no extravagance to say that any deliberate consideration of the matter at all is apt to be overlooked. To what heroic treatment have patients been made to submit; to what torments have they been subjected; what quantities of drugs have they been made to swallow—not only to effect purposes to which they were incompetent, but purposes which were in their very nature unattainable. We are constantly disappointed in the result of our plans of treatment, and in the effect of our medicines. Is it not often because we have aimed at controlling a state of disease which is only part of a necessary course of processes, or at the removal of a disease which is, in its nature, irremovable? In consequence of overlooking these considerations, it constantly happens that favorable results are attributed to remedies, with which remedies have had nothing to do; and, on the other hand, it constantly happens that unfavorable results are attributed to the disease, when they may in fact be owing to the remedies.

[To be continued.]

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## THE VALUE AND THE FALLACY OF STATISTICS IN THE OBSERVATION OF DISEASE.

A BOYLSTON PRIZE ESSAY, BY DAVID W. CHEEVER, M.D.

[Continued from page 483.]

THE numerical method affords us a numerical estimate of probability in a given number of cases; but this is not of much help to the practitioner at the bed-side, who has to determine the probabilities of the individual case before him, which may or *may not* be more or less similar to the cases estimated numerically. Perception, comparison and deduction are necessary for each individual, as well as in formulæ and tables. We may often learn from statistics, indeed, that of many effects or consequences, as the duration, course or result of a disease, one will occur more frequently under given circumstances than another. All this, however, admits of