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THE PHILOSOPHY OF MEDICAL SCIENCE,
*Considered with special reference to Dr. Elisha Bartlett's "Essay on the
Philosophy of Medical Science."*

A BOYLSTON PRIZE* ESSAY, BY E. LEIGH, M.D., TOWNSEND, MASS.

"I fear he has got hold of his pitcher by the *wrong* handle."
Altered from J. J. BECCHER, as quoted by DR. BARTLETT.

[Communicated for the Boston Medical and Surgical Journal.]

WE can hardly place too high an estimate upon the value of a sound philosophy of medical science. No one will deny this statement. Even those who contend most earnestly for "observation" and the strictest adherence to facts, will give to it their full assent. Though they will have no philosophy *in* science, they will insist upon their peculiar philosophy *of* science.

Indeed it is most obvious that the very shape the science will assume in the mind of the physician, or in the treatise of the medical writer, will be conformed to his views of its true nature and proper elements; so that, to the mature scientific physician, a sound philosophy of his science is of fundamental importance.

To the student in medicine, also, it is of no less consequence. The whole character and course of his studies will be shaped by it. Indeed *some* philosophy of science, either true or false, he *will* have, for no mind can be employed in the study of science without it. And a sound philosophy he will need, and will feel the need of at the outset, if he has had any experience in the study of other sciences. He will wish to know what he has before him. He will wish to have some general idea of the ground upon which he is about to tread. He will desire to ascend some eminence from which he can take a general survey of the country he is about to explore, and learn something of its general character and prominent features, before he descends to examine it in detail. In this way he will be prepared to proceed in the right direction, to make the most rapid progress, and prosecute his investigations in the wisest and most successful manner.

The very title, therefore, of Dr. Bartlett's work will at once attract

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the attention of the scientific physician, and of the reflecting student. The volume itself he will find to be one, in which he must necessarily take a deep interest. The perusal of it cannot fail to afford him pleasure, to give him valuable instruction, and furnish him food for thought. There is a charm in the style in which it is written, a beauty and freshness about it, a clearness, precision and vigor in its language, that is truly refreshing as we turn to it from our ordinary medical reading. There is a sincerity and earnestness in the author's manner, an ardent devotion to the cause he has espoused, that at once takes captive the mind of the reader. Moreover, the error he is combating, the error of substituting mere theories, hypotheses, assumptions and speculations in the place of facts and truth, is one of the gravest character—one which has exerted a pernicious influence upon our science from the earliest ages—one which is venerable for its antiquity, and carries with it the influence of great and honored names, and still maintains a strong hold upon the minds of men, though some of its more prominent developments are of recent date, and are only looked upon with ridicule or contempt. The cause he has espoused, the cause of fact and truth against theory and false doctrines, the cause of observation against speculative fancies, of true science against science falsely so called, must ever enlist the sympathies and engage the attention of truly scientific minds. He has done his work, too, in many respects, in such a masterly manner, that we involuntarily entertain for him more than the respect which his professional standing and reputation would demand; we feel that we are sitting at the feet of a master in science.

But with all our admiration of the author's abilities, of the vigor of thought, and beauty and freshness of style which his work exhibits, with all our sympathy with the cause he has espoused, with all our readiness to unite with him in excluding from the domain of science all speculative fancies, and unfounded assumptions, we cannot receive the philosophy he has thought necessary to adopt in order to secure this end. It is not the true philosophy which fact and reason teach.

The common idea of the philosophy of science is doubtless the true one. In accordance with this idea of it, science embraces,

I. Certain *Primary Truths*, or fundamental principles, upon which all its reasonings are based. These belong to each of the sciences in common with all the others. Two of the more important, only, need be mentioned here. One is the "principle or law of causation," that "every beginning or change of existence has a cause." The other is "the principle or law of uniformity," that "matter and mind have uniform and fixed laws," that "all the processes of nature take place in accordance with uniform and permanent laws."

II. Science embraces also certain *ascertained and classified Facts* (or, as Dr. Bartlett calls them, phenomena and their relationships), some of them ascertained by observation directly—others ascertained by reasoning from previously known facts and established principles.

III. But, above all, science embraces certain *General Ideas, Truths and Principles*, which the thinking, reasoning mind arrives at by studying the facts that have been ascertained and classified.

Of these threefold elements does science, absolute science, consist. Take away the first, the primary truths, and the whole fabric of science is overthrown, its observations and its reasoning are worthless, its facts and its truths are gone. Take away the second, the facts, and there are no means of arriving at its truths, the whole structure and its very materials are wanting, there is nothing to be seen but the everlasting foundations. Take away the third, the truths and ideas of science, and you leave the solid foundations, surrounded by a rich supply of well-selected and well-assorted materials; but the noble structure, the beautiful living temple of science, is not there.

The second class of these threefold elements—the facts—are often, in themselves considered, of great interest and importance. But their chief value lies in the truths and general principles to which they direct the mind, and which can be fairly deduced from them. It is in these general ideas, these scientific truths, these large and comprehensive principles, that science especially consists. Take them away, and you leave only a mere naked skeleton of material facts, beautifully formed and arranged, perhaps, but lifeless, powerless, inert. It is the mind, in the exercise of its higher powers, that gives to facts their significance, and, by working among them and upon them after they have been collected and arranged, draws forth and holds up to view those ideas, truths and principles, which constitute science in its highest and noblest sense, and make it the living, efficient, all-pervading thing it is.

But the philosophy of the work which has been referred to, in its attempt to banish theories and speculations from science, has left no place for its truths and principles; it has at once taken away the foundations and removed the superstructure, leaving only a limited collection of well-arranged, and well-classified materials. It admits into science nothing but “observed facts.” No other fact however clearly proved, no idea of science however clearly discerned, no principle of science however well established, no scientific truth however well known, no doctrine however sound, can gain admittance. Nothing can enter but mere facts; and each of these must enter by itself, through one of the five senses; and then poor pitiable reason is allowed to look at it, see what it looks like, and put it in its place by the side of others like it—that is all! This is absolutely all the author allows science to consist of. He makes it a mere cabinet of such dead material facts as the five senses are able to pick up on the surface of things.

Such a philosophy he never could have dreamed of, had he not been, either misled by the dogmas of the grossest materialism; or, what is more probable, blinded by his ardor to demolish speculative theories. As it is, he has set up an hypothesis against all hypotheses; a theory against all theories; an assumption against all assumptions; a mere speculation against all speculations; a false doctrine by which to annihilate all other false doctrines. For such in reality is his philosophy; it is hypothesis, theory, assumption, speculation, false doctrine. His leading doctrine, “that all science consists exclusively in phenomena and their relationships classified and arranged,” is so far from consisting of “phenomena and their relationships,” that it is not even based upon them, or deduced

from them ; it is neither the result of observation nor the deduction of reason ; but is a mere assumption, a speculative doctrine contrary to both.

The term "relationship" which he uses, if understood in its widest sense, might, perhaps, include the truths and principles of science. But he does not permit us so to understand him. He is too great a master of perspicuous language for that. Indeed, for him thus to use the word, would be, to defeat his own object, and to leave open the very loophole for the entrance of speculative theories into science, which he is so anxious to close. But he himself tells us his meaning clearly. Throughout his work he expressly excludes all truths and principles from science, endeavoring to reduce them all to the category of *phenomena*. Besides, all his relationships are *observed* relationships ; and, as appears from his remarks upon marble (pp. 12-16), are only phenomena of a particular kind, compound phenomena—phenomena observed between related substances, such phenomena as are observed when sulphuric acid acts upon marble, or a piece of marble falls to the ground. The facts observed respecting the "sensible properties" and "intimate composition" of this substance, he calls its "phenomena ;" and the facts observed in regard to its geographical and geological distribution, and when it is brought into chemical and physical relations to other substances, he calls "relationships." Here, his phenomena are what is observed in the marble itself, when examined alone, apart from other things ; and his relationships are the phenomena observed when the marble is considered in connection with and acting upon other objects. They are, after all, only observed facts or phenomena. Indeed when speaking (p. 25) of the "phenomena or relationships" of polarized light, he makes the two words synonymous. But whatever he may mean by "relationships," he means something that is observed, and he does *not* mean any truths or principles that the mind acquires by thinking and reasoning upon and studying those facts which have been ascertained and classified. And inasmuch as all his relationships thus appear to be phenomena, and the word phenomenon in itself signifies something that appears, something that is observed—the two words, "observed," and "relationship," in his statement of his principles are superfluous, and his theory may be reduced to this simple form—"All science consists exclusively in phenomena."

But such an examination of the author's expressions is perhaps unnecessary. The language in which he states his theory is so clear, so precise, so positive, so often repeated, that it is impossible to mistake his meaning. The favoring eye of a friend, admiring his peculiar excellencies and approving his general object without strictly scrutinizing the method by which he has sought to secure it, might perhaps overlook this at first. But even that friendly eye on being directed to this point, could not fail to see it through the transparent language of the author, lying there, as it does, in all the distinctness of outline which his clear intellect has given it.

The following are some of his strong and clear statements of his theory.

After referring (page 7) to the "common feeling" that facts do not constitute the whole science, but are only the foundation—the basis—upon which it rests, or the materials of which it is constructed, he affirms, on the contrary, that "*The science is in the facts and their relationships classified and arranged, and in nothing else.*" They "constitute in themselves and alone the science and the whole science to which they belong. The science, thus constituted, is, so far, complete. No process of inductive reasoning or any other reasoning, no act of the mind, can add anything to what has already been done. The only reasoning that has anything to do with the matter consists simply in the act of arranging and classifying the phenomena and their relationships, according to their differences, their resemblances, or their identity." He says of the phenomena of gravitation (p. 9), *They are the science in themselves, wholly and absolutely.* When all the phenomena "have been ascertained and classified, the science is complete; it is finished; there is nothing more to be done, nothing can be added to it by any subsequent process of reasoning or act of the mind."

With this language, and this theory, contrast the following language of Professor Agassiz. As the lecture* in which it occurs has never been published, this passage of the report of it has been shown to him, and has received his full assent as expressing his views. Indeed it is undoubtedly a strictly verbatim report of the words spoken by him, and it is only one instance of many in which he has expressed the same views. He says:—

"But how are we to proceed to trace a law? to investigate general views from isolated facts? It is an operation which has many and great difficulties. Trace isolated facts, and from isolated facts arrive at ideas. Derive thoughts from facts. From actual facts, from material things, derive thoughts. That is the condition; that is the aim, which we should have before our minds. Form thoughts from material facts, and form new thoughts from the combination of well-known facts, and constantly improve in our thoughts, by investigating the same long-known facts. It is not simply by adding new facts to the stock of knowledge, which we already possess, that we improve in our knowledge. From well-known facts, from generally-known facts, from facts which are known to everybody, there is new knowledge to be derived, provided we think deep enough, and we think high enough of what we see, to deduce something new from old, well-known things."

It would seem unnecessary to go further after such an expression of his views by Professor Agassiz. He tells us, not that the science is in the facts, that they constitute in themselves the whole of it, that all that reason has to do is to arrange the phenomena, that no reasoning, no act of the mind can add anything to the arranged facts; but he tells us that there are *general views* to be sought and proved by investigation, that there are *ideas* to be arrived at, that there are *thoughts* to be derived from the facts, and that this should be our great aim—to form *thoughts* from material facts—and to *improve* in our thoughts by investigating—that there is *new knowledge* to be derived from facts which

* Delivered before the Tremont Medical School.

have been long known and classified, by *thinking deep* and *thinking high*, and that by such thinking we may *deduce something new* from them.

Here certainly is something more than facts, and more excellent than they. Here is something of a higher nature added to the facts, by the thinking mind. Here is work, and noble work for the mind to engage in among the classified facts. This is the true view of the philosophy of science, and is one worthy of its elevated character, and of the glorious faculties of the soul which are employed upon it. The authority of Professor Agassiz upon such a question cannot be disputed. So far as authority goes, none higher can be found. We have here all that can be desired in the opinion of one who has done most for science, who has drunk most deeply of its spirit, who is most thoroughly imbued with its true philosophy.

[To be continued.]

REMOVAL OF OVARIAN TUMOR.

BY D. M'RUER, M.D., BANGOR, ME.

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MRS. FRANCES RAFFERTY, of this city, aged 28 years, of delicate frame and constitution, was delivered of her third child in the month of October, 1851, by a perfectly natural labor. About one month after her confinement, she began to complain of a severe but transient pain in the left iliac region. Upon examination of her case at that time, an unnatural fulness and tenderness was perceived, which in a few weeks presented all the features of a regularly-defined tumor. From its location and the absence of functional disturbance of any of the adjacent organs, it was diagnosed to be ovarian. The increase of the tumor from this time was rapid, so much so, that about the 20th of December, 1852, her abdomen was more distended than it had ever been during any of her pregnancies; and as the tumor had evidently become partly fluid, it was pierced by a trocar, and eleven quarts of thick, dark-colored fluid drawn off. This afforded but temporary relief, for in less than a month her abdomen had more than regained its former size. An operation for the entire removal of the tumor was *again* proposed, and consented to by the patient and her friends, who were convinced that she could live but a short time without radical relief. So great was the pressure upon the other cavities, that the utero-rectal wall of the vagina was protruded through the *labia* to such a degree as to present a tumor as large as an infant's head.

On the 20th of January the tumor was removed through an incision extending nearly from the ensiform cartilage of the sternum to the pubis. It was found necessary, from the great bulk of the tumor, to remove its fluid contents, amounting to eleven quarts, before extracting the solid part, which was found to consist of two globular masses of scirrhus infiltrated with pus, each weighing about three pounds, and connected by a dense fibrous sac of sufficient capacity to contain the amount of fluid mentioned. The following are the weights of the whole diseased mass,