

THE PHENOMENISM OF HIPPOCRATES.

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The name Hippocrates is assuredly the greatest of Greek medicine and up to his advent philosophers applied their general speculations, which were more or less transcendent, to biology and pathology. But with Hippocrates one enters into the true scientific domain of practical medicine. Pathology, hygiene, philosophy, biology and therapeutics were all studied by this great man, whose writings consist of a certain number of works collected under the name of the Hippocratic Collection.

It is not our intention to enter into a consideration of the discussions to which these works have given rise and it is not for us to show whether they were the work of a single writer or simply represent the fruit of researches of an entire school. In this paper we will only consider the works of Hippocrates in their ensemble and details, for the simple purpose of extracting the doctrine contained therein. We will more particularly

consider the matter which is related to biological questions and we will endeavor to point out what the author's conception of life was.

The pre-Socratic Greek philosophers who were the predecessors of Hippocrates employed the *a priori* method and by pure hypothesis they came to their conclusions by deduction. Now, as a matter of fact, it is quite certain that as far as science is concerned this manner of reasoning is quite opposed to the general rule that every scientific theory should be the expression of facts, both based on and verified by them. Hippocrates inaugurated a method quite the opposite, namely, the experimental method proceeding by induction, basing himself on the facts observed and terminating in general theories only by an *a posteriori* reasoning.

The analysis of his treatise "On Ancient Medicine" shows this plainly and in this work Hippocrates raises his voice against physicians and philosophers who consider that life, disease and death come from a single cause. He opposes those who endeavor to explain facts by a single hypothesis. He retraces the origin and history of medicine and shows that the true method has observations of facts as a starting point. He writes lengthily of the evolution of medicine which, according to him, had its starting point in the fact that certain men commenced to modify their food and varied their regimen in order to accommodate themselves to the various temperaments and constitutions of man. He points out that, in order to acquire knowledge of man as a living creature, one should commence by the study of medicine, as is explicitly stated in the work above alluded to, the French translation due to Littré being as follows:

"Quelques-uns disent, sophistes et medecin, qu'il n'est pas possible de savoir la médecine sans savoir ce qu'est l'homme, et que celui qui veut pratiquer avec habileté l'art de guerir, doit posséder cette connaissance. Mais leurs discours ont la direction philosophique des livres d'Empedocle et des autres qui écrivent sur la nature humaine et exposé dans le principe ce qu'est l'homme, comment il a été formé d'abord, et d'où provient sa composition primordiale; pour moi, je pense que tout ce que sophistes et medecins, ont dit ou écrit sur la nature appartient moins à l'art de la médecine qu'à l'art du dessin. Je pense encore que c'est par la médecine seule qu'on arrivera à quelques connaissances positives sur la nature humaine, mais à condition d'embrasser la médecine même dans sa véritable généralité. Sans cela, il me semble qu'on est bien loin de telles connaissances, je

veus dire de savoir ce qu'est l'homme, par quelles causes il subsiste et le reste exactment."

The above paragraph leaves no doubt as to the method he employed, but does it mean that hypothesis should be absolutely proscribed in the domain of biology or in science in general? Were this admitted, it would misconstrue the value of the general idea in no matter what branch of human knowledge. The fact taken in its narrowest particularity is sterile if reason does not intervene in order to compare and connect it with other facts in order to abstract certain characters and afterwards to generalize them, thus founding an hypothesis which will be susceptible of an indefinite experimental verification after having itself been taken from observation.

One should not allow this value of general theory and of the idea in science to pass by unrecognized; the most fruitful hypotheses of astronomy, physics and biology are the result of this double method of limited sensible observation and of unlimited rational generalization. The laws would never be known should one hold strictly to particular facts and it would be falling into the most absolute empiricism.

If science wishes to furnish results that can be utilized in philosophy, it should go beyond the fact in order to erect a law. Although primarily based on observation, it should, by extending, systematize the results; it should be its ultimate conclusions, its theories both solid and vast, which will pass into the domain of philosophy. To restrict science to the empirical study of the fact without drawing consequences from it, although simply hypothetical, is to implicitly authorize pure speculation.

If one prohibits general conceptions to philosophy of the sciences it is necessary that another method of cognizance take these researches. Thus deprived of that help, this study will produce hypotheses which will no longer be susceptible of verification by facts and pure transcendence will reign supreme.

The method of Hippocrates is, however, far from reaching such extreme consequences and he simply establishes the undeniable necessity of a positive foundation for scientific theories. He does not discourage the biological doctrine and he simply shows that it should be based on the complete study of physiology and medicine and not to be based *a priori* or after the exclusive consideration of a single property of the human body. If the *a priori* hypothesis may be suspected in Hippocrates, as has been

pointed out by Littré, the same cannot be said of that one which represents the conclusion of an ensemble of facts methodically compared and studied and it may be said that the physician of Cos showed a large amount of distrust regarding the reduction of all biologic phenomena to a fundamental unity.

In certain treatises of Hippocrates one will find several doctrines exposed on the origin and cause of diseases, but Littré has shown that one should attribute to other authors the theories which consider air as the cause of human life and which give as the essential rôle in the etiology of all diseases, the action of the winds. The treatise "On Airs" is a work which is now known to be apocryphal and one finds the same metaphysical theory transported into the domain of pathology that one finds in Anaximenes and Diogenes. Air is the cause of life and disease. This hypothesis is based on quite a strange argument, as is pointed out by Littré in the following paragraph of his translation:

"Si grand est le besoin de souffle pour tous les corps, que l'homme qui, privé de tout aliment solide et liquide, pourrait vivre deux ou trois jours ou même davantage, périrait si l'on interceptait les voies du souffle ou corps, en une brève portion du jour, tant la nécessité du souffle est prédominante."

Now, the above thesis tends to impose a single cause to disease and by attributing a single substance to the human body is manifestly in contradiction with all the other works of Hippocrates, principally with "On Ancient Medicine" and "On the Nature of Man." It is well known that Hippocrates does not cease to reprimand his contemporaries for their tendency to reduce everything to a unity in the human body as well as in medical etiology.

One has only to read the first chapters of "On the Nature of Man" to convince oneself to what extent the writer combats this notion and he says: "I say, in fact, that man is absolutely neither air, fire, water, earth nor any other substance, the existence of which is not manifest in the body." Then showing the great variety of their conclusions, Hippocrates concludes that they are all in the wrong when they wish to speculate on the unity of substance of the human body. Then, taking up the medical side of the question, he establishes the fact that if man was one there would only be one disease and one remedy. Now, in reality, there are many remedies and many diseases; this is proven by experience and for this very reason the unicist doc-

trine must of necessity fall. He then goes on to say that according to him the principles he would consider as constituting man, in usual language and in nature, he will show are constantly and identically the same in youth and old age, in cold and warm seasons; he will give the signs and make evident the necessities of an increase and of a diminution of each principle of the human body.

From all this it is evident that the theory of air exposed in the book "On the Humors" is not due to Hippocrates, but the theory of the four humors, as well as that of coction and the crises, which for that matter are intimately united to each other, would appear to us to sum up the medical system of Hippocrates, and which has been called Hippocratic dogmatism.

In his treatise "On the Nature of Man," Hippocrates exposes his theory after having combated those doctrines which reduce the human body to a single substance, such as air, water or some other element. He shows that the study of the phenomenon of generation proves that the organism is not composed of a single substance and he points out that the body is composed of four humors whose exact combination represents a condition of health. These four humors are the blood, pituit and yellow and black bile. They are absolutely distinct from each other and it is quite impossible to admit that they are the result of successive transformations of a single principle, because at no period of existence are they to be found isolated. Hippocrates then exposes the error of those who attribute to the blood the rôle of the single element of life and he says that they see this liquid flow from a wound and death results, for which reason they imagine that it is the soul which leaves the body in this form.

The same views are again to be found in his treatise "On the Humors" and similar considerations are to be found in the treatise "On Epidemics."

The theory of coction and crises is to be found in several of his works, namely in "On the Nature of Man," the treatise "On the Humors," and that "On Epidemics." These form the basis of the entire pathogenesis of Hippocrates, and, as we shall see, it is one of the most durable parts of his work. It is, for that matter, intimately united with the theory of the four humors, representing, so to speak, the consequence.

According to this doctrine, disease is a succession of phenomena which result from the efforts made by the preserving principle of life having for end the production of coction of the

morbigenous matter. Hippocrates believed that this matter could not be advantageously expelled from the body until it had reached a certain degree of maturity. That is to say, after these elements, detached and mixed with the natural humors of the body, had become united in such a manner as to form an excremental humor. At this point the crisis arrives and Nature redoubles her efforts. Acute phenomena appear with fever and then elimination takes place by the natural emunctories, in the midst of sweating, abundant diuresis and profuse diarrhea. It is the duty of the physician to respect this effort of the vital principle and he should if possible favor it by appropriate administration of drugs which will force the morbid matter toward the natural ways of elimination to accomplish which, according to the case, purgatives, diuretics or sudorifics should be given.

Such is the manner in which things should take place in favorable cases but it may happen that the vital principle is too weak to accomplish coction or to support the critical phenomena, in which case the patient dies.

Such is briefly the theory of coction and crises according to Hippocrates, and it now remains for us to examine its value. The four humors of Hippocrates are now known in their most intimate composition and we also know what one should think of the distinction of two kinds of bile, as well as the physiological importance of pituit. Likewise we are familiar with the histology and the complex chemical composition of the blood. But one should always bear in mind the epoch at which these theories were promulgated and then one will understand the great weight of the writings of the physician of Cos.

Leaving aside the physiological and anatomical part of the question as well as the conception that this great man had of the human organism, we would consider that part of the truth contained in his theory on the pathology of the humors and the crises, because here one will immediately be struck by the advanced ideas which he had for the epoch in which he lived. We know to-day, after centuries of observation and discovery, that certain affections are due to the entrance of organic refuse into the blood. Jaundice is produced by the retention of biliary products which invade the blood and the entire theory of auto-intoxications certainly presents an evident analogy with the doctrine of the mixture of humors. Then, again, in recent works on infectious diseases one will find confirmed to a certain extent the crises of Hippocrates. Deprived

of all experimental work and in a nearly complete ignorance of all chemical and physiological phenomena, without knowledge of anatomy, a man dared to raise his voice against empirical or speculative minds of his time and discovered what thousands of years of study have only confirmed in substance, developed and rendered more precise. His system of evacuating medication is at the present time extensively employed and if abstraction be made of those errors which were due to a lack of scientific knowledge, one finds a durable and solid theory which has held its own throughout centuries.

The doctrines which we have exposed form by their ensemble what might be called the medical system of Hippocrates, but a sufficiently distinct theory relative to life does not become evident, and if we wish to know his opinion regarding this problem, both biologically and philosophically, we should continue the study of his works and his ideas.

From the method employed by Hippocrates, it is easy to conclude that, according to him, science should not be subordinated to metaphysics, and it may be even said that according to his views scientific facts in no way aid the solution of problems of a more abstract order; in other words, he professed a kind of biologic phenomenism. And still Hippocrates lived at a time when science was still too limited to completely satisfy the searching and speculative minds of the Greeks, and there reigned at this time a metaphysical current whose effects were felt everywhere.

We have endeavored to show how Hippocrates escaped this influence in the domain of medicine. It was a real revolution of method the advantages of which, as far as science is concerned, must be thoroughly appreciated. There were certain questions related to biologic science, and these questions could not be completely avoided by Hippocrates, and all he could do was to separate them more or less from medicine, to treat them outside of his method, so that his medical theories would not receive the *contre-coup*. Among this number is the problem of life and, as has already been said, Hippocrates had refused to admit that some single substance, determined *a priori*, was the constituting element of the human body and at the same time the principle of life.

In order to explain the phenomenon of life one must distinguish the definition and the explanation; or, better still, the phenomenal definition and the essential or causal definition. In

the first point of view, life is the harmonious ensemble of the internal phenomena of the living body and the relationship of action and of reaction existing between the body and external objects. In the second point of view this definition has no place, because it remains to determine what the living body is in itself and in what manner it produces these effects, those phenomena which form what we ordinarily call life, by distinguishing the appearance and not the root of things.

Now, we are confronting the problem as it should be propounded when one has taken the care to disengage it from all its accessory propositions. What is a living body? What is the nature of the inherent activity of such a body? In a word, what is life itself? Faithful to his method, Hippocrates says that the living body is a substance essentially distinct from other bodies, whose effects cannot be explained by the simple properties of elements, such as air, water, earth, or fire, and whose qualities are quite different from the fundamental qualities, such as heat and cold, moisture and dryness. This is what Littré calls the vitalism of Hippocrates, which considers life as a positive thing, and a living being as a substance, and searching the relationship of action and reaction with the various objects of nature.

All this is very well, when considered from the experimental and scientific aspect as well as from the study of the phenomena; but as an explanation, this vitalism is in itself insufficient. It will be seen that the living body is a substance quite distinct from all other bodies, and whose effects are different from those produced by the different possible combinations of the simple elements. What makes the living body essentially distinct from the other bodies, and why are its effects different from the elementary reactions? Hippocrates replies to this question that life is a positive thing, quite distinct from any other property possessed by bodies. One of two things must exist: there is either a vicious circle, or else life, this positive thing, is only an entity, unless it represents an unknown quantity, as Barthez himself admitted a century ago.

With this doctrine one is obliged to revolve around two phrases without being able to reach the truth. Life is the unique property of living bodies; the living body is a substance distinct from all other bodies by an essential character which is life. But true vitalism goes further still, and Hippocrates admits without hesitation that life is a principle unknown to man, the necessity of which imposes itself as soon as one considers the unity, finality

and harmonious plan of the vital phenomena; to sum up, he makes life an *archeus*, a primary force regularizing our organism.

The discussion of this theory is not in the province of this paper, and all that is necessary for us to demonstrate is the relationship that it affects with the doctrine of Hippocrates, as well as the difference which separates it from the latter. The physician of Cos does not go as far as the vitalists of the school of Barthez, to the marked distinction of a principle of life, the nature of which remains to be discovered. As a medical doctrine, the vitalism of Hippocrates ceases with the phenomena with which he makes a relationship, a quality of unity and harmony under the abstract term of life, and under the concrete image of the living body. It should here be remarked, as Littré has already done, that the relationship of this doctrine with that of the theory of Pythagoras of harmony penetrating the bodies is extremely similar and their resemblance is quite startling.

As has been pointed out, Hippocrates never studied the question so far as to determine the intimate nature of the vital principle, and that his reasoning, unless a vicious circle is admitted, obliges him to admit that the basis consists of the phenomena of life. Some of the passages in his writings show a more philosophical, and even psychological, tendency, and would appear of the nature to fill this gap which, for that matter, from the medical standpoint is quite indifferent. Thus, when speaking of the harmony which constitutes health, in his "Precepts" he says: "The health of man resides in a special, natural force, and may pass from an agent or foreign motor. It more especially keeps up a constant harmony between the vital breath, heat, and the elaboration of the humors."

In his treatise "On Aliment," it is stated that "There is a simple principle which is multiple in its effects presiding over the entire economy of the body, and which produces contraries therein; it makes life of all and of the parts." This closely approaches the vitalism of the school of Montpellier, as pointed out by Jacquin, but it would seem difficult to conclude in the identification of this force with the soul, that is to say, the animism of Hippocrates, as Blondin has endeavored to do in his introduction to the works of Stahl.

In the same treatise we find the psychological theories exposed by Hippocrates; according to him, everything in the intelligence is derived from sensation; in other words, he antedated the famous saying of Bacon: "*Nihil est in intellectu quod non prius fuerit*

in sensu." Sensation, in a way, is the guide of the understanding.

It should also be noted that the distinction made by Stahl of reflected reasoning and of simple reason, superior and anterior to all other operation of the mind, which does not enter into the conscience, is also to be found expressed in the works of Hippocrates. Since Stahl employed it in order to establish the nature of the action of the soul over the body, it is quite logical to assume that Hippocrates used it in order to explain the directing and regulating influence of the soul over the vital phenomena, and this is what is upheld by Blondin in his study on animism before the advent of Stahl.

It would seem, however, that sufficient proof of a well-determined animism is lacking in the works of Hippocrates, and vague terms, such as *ἐμφύτον*, *θερμόν*, *πνεῦμα*, etc., would rather prove the indetermination of the vital cause than its identification with the soul. This, as in the case of life, is defined by Hippocrates more by its effects than by its intimate nature.

From an examination of the doctrine of vitalism of Hippocrates, it would seem that everything resolves itself into a simple appreciation of the vital phenomena, their relationship beautifully observed and methodically studied. The principle of life admitted by Hippocrates hardly eludes the vicious circle or an undetermined entity, as far as it goes, as a philosophical conception. But in order to appreciate this theory with justice one should there see the expression of character of the facts, of their connections and their harmony, rather than an hypothesis on the intimate nature of life. The fundamental irreducibility of the phenomena of the organism to the reactions of the elements should also be noted. This is both the basis and final conclusion of the system of Hippocrates.

Considered in this light and in its scientific value, and considering the want of knowledge in physics, chemistry and anatomy of the time, a system so built up is the wonderful work of a critical and observing mind. All there found is the logical consequence of the method adopted; the application is pushed as far as it can go; that is to say, to the end of the chain of phenomena observed; and if the modern doctrine of the phenomenistic philosophers is the total expression of the reality, it may be said that the biology of Hippocrates, with the facts that he possessed, is a complete work for the epoch in which he lived.

At that time it was impossible for one to know that nearly,

if not all, biological phenomena are reducible to physio-chemical actions or reactions, nor could they know the essential properties and anatomical structure of the viscera. Here resides the principal defect in the system of Hippocrates, which is due to the epoch in which he lived, and not to his great mind. In spite of all, even in the philosophical point of view, one cannot help conceding that the incomplete vitalism of Hippocrates is the just expression of a certain aspect of vital phenomena, namely, the ensemble, the harmony and the final unity.