

Once More, Protoplasm! and All it Implies.

DAVID ECCLES VS. T. B. W.

EDITOR TORCH OF REASON:

Prof. Wakeman's metaphysical and scientific statements touching the nature of matter strike me as very questionable, and as he asks those who dissent to tell why, I avail myself of the privilege.

[A] With Judge Waite, he holds that the sentiency of matter is based on assumption, and as no scientific demonstration can be offered, he affirms that that should end the matter with sensible people. Suppose he applies his own criterion of truth to protoplasm? He declares it to be a mere chemical union of O. H. C. N. P. and S. What chemist has ever taken those elements and produced protoplasm from their union? Where is the experimental evidence in the case? If oxygen, carbon, hydrogen and nitrogen are non-sentient, how can any combination of them become sentient? As there is no evidence that protoplasm was ever produced by anything but a living system, is not his conclusion that the chemistry of matter explains the whole case a rather bold assumption? I am not saying anything now as to the truth or falsity of the assumption; I am only calling his attention to the fact that it is an assumption. But, then, there are a great many scientific assumptions. The atoms he talks so freely about are all "assumed." No one ever demonstrated their existence. The ether that he is so fearful of having "bespooked" is an assumption. It is untestable by any sense we have, and outrages the current conceptions of the properties of matter. I believe in the ether, not because I can demonstrate it, but because I cannot think of a mode of motion traveling in the absence of something to carry it. There are assumptions, however, that are not based on fact or based on reason, and I think Prof. Wakeman indulges in some of these.

[B] For instance, he (Professor Wakeman) tells us that "The chemical combinations of the same matter are found to be always the same in result," and that "matter that has not the same properties cannot be the same matter." The facts of chemistry show that, however rational these statements appear to a man who is befuddled with the notion that the properties of matter are intrinsic and unconditioned, the conclusion is false. Carbon and sulphur, and phosphorus and silicon, though chemically pure, can be made to assume many allotropic forms, with distinct properties in each form. Turpentine, oil of lemon, oil of pepper and oil of bergamot yield, on analysis, the same atoms in exactly the same proportions, yet few things

are more unlike in properties. The same combinations do produce "different results at different times," depending altogether on the conditions under which the combinations take place. There is nothing "unthinkable" in the proposition that practically the same results may be had from different elements of matter. The elements are classified in homologous groups that imitate each others' properties, and are isomeric in forms of crystallization, so that one element can be substituted for the other in compounds, with a result in form and character nearly the same. Of course, there is no identity, for, as Prof. Crookes has shown, there is individuality of character even among the atoms of the same element, which can be sifted from each other.

[C] It is simply absurd to suppose that the existence of sulphur is an indispensable condition of life. The elements that form protoplasm, no doubt, are adapted to the demands of organic change in a high degree, and perhaps the removal of any one of them would cause a radical transformation in the forms of life, but it is a gratuitous assumption that they are all indispensable. What Prof. Ward says about the accident of initiative that gave us our vertebral structure applies equally well as to the elements through which life has been evolved. Here and now these elements, especially nitrogen, meet the demand, at the temperature that obtains for easily made and broken affinities, thus affording plasticity and motion; but under other temperatures and other conditions it is quite conceivable that other elements might better fill the demands of living adaption. Of course, demonstration is impossible, but we have the strongest of probabilities.

[D] Calling protoplasm the first form of life does not make it so. A comprehensive view of nature teaches us that she has no "first" forms of anything. That conception is born in the theological belief of creation. Everything is evolved, and there is no break in the chain. The first man was not a man, and the first horse was not a horse. Protoplasm, as an organized structure, must have a long antecedent. While chemical and physiological laws blend in harmony, they are not identities. That is, the chemistry of the inorganic—inorganic only within the ranges of the senses—is not the chemistry of the organic. In other words, new conditions give the SAME MATTER added powers and properties. One might as well expect the chemist to turn out a full-grown living man from his laboratory from the simple elements that compose his frame, as to, by similar means, turn out protoplasm. Developed sentiency is an indispensable factor in the chemistry of the change, and this

can only come through evolved structure. There is no creation of sentiency at any point; there is only better and better means for bringing it in contact with the great universe around. Man, himself, is an insentiate clod to millions of activities in the world around him. He has no senses wherewith he can be stirred to a realization of their existence. Those who know the universe and matter best, but know how essentially mystical and transcendental it is.

[E] Prof. John Tyndall, I think, touched the gist of this problem in his reply to Martineau. He says: "No line has ever been drawn between the conscious and the unconscious. In all such inquiries we are limited by our powers of observation. Alter our capacity and the evidence alters too. Would that which is to us a total absence of any manifestation of consciousness be the same to a being with our capacities indefinitely multiplied? To such a being I imagine not only the vegetable but the mineral world responsive to the proper irritants." And again: "If matter starts as a beggar it is because the Jacobs of theology have robbed it of its birthright."

That is well put; and I am surprised that men, in their desire to get rid of "spooks," should antagonize the only philosophy that makes "spooks" a useless surplusage.

[F] Either all matter is sentient or no matter is sentient, for the evidence accumulates that matter is a bottom one, and that the so-called elements are evolved products. Of course, no one supposes that an atom is a thinking, reflective being like a man, but only that it responds by simple feeling through its limited structure to its limited environment, and that when united with the telegraphic system of a living organism, it may become the dominant will of the system.

[G] Atoms, however, conceived as ultimates, are doubtful metaphysical creations. Physics cannot explain the whole of things, and when we try to think how mind becomes a cause, we get beyond our depth. We are compelled to assume two parallel laws, mental and physical, and yet it seems impossible that there can be more than one. Perhaps they unite in the Unknowable, where the mind is impotent to follow. Let us stick to this one irrefutable conclusion, however, viz.: "Nothing can be evolved that is not involved!"

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Washington, D. C., Aug. 3, 1900.

COMMENT AND REPLY.

Mr. Eccles' words seem as though they had sound meaning, but, on reflection, they are the spray and mist that in various forms dash up against the inexpugnable rocks—the facts and laws of Science. Let us work them over:

A. "The sentiency of matter,"

that is, of protoplasm, is not "an assumption," but the commonest and simplest fact known to all.

The Organic or Biologic World is this living fact, including all microbes, plants, animals and man, including Mr. Eccles. On that fact Judge Waite, and the Torch, and the rest of the world do stand, and there is no assumption about it, any more than that the sun shines. We are all here and all sentient matter, and we all grew from our sentient germ cells. This undeniable fact of vital activity, or life, is found to be the property of protoplasm, which is a chemical combination of C. H. O. N. P. S.; and so FAR it has not been found to be the resultant or property of anything else. Until it is so FOUND, the assertion that it so exists, is the utterly baseless and unscientific "assumption" in which spookists indulge. But until they can show life as a property of something besides protoplasm, we respectfully repeat, "the matter is ended with all sensible people."

But, says Mr. Eccles, "What chemist has ever taken those elements and produced protoplasm from their union?" We answer, he has himself, every time he digests a meal of victuals. A few more years of chemical progress may enable the chemist to do it in the laboratory very much as it is now done in his alimentary canal. But as long as the law of "Equivalent Correlation" holds (which is the fundamental law of all Science), all sensible people know that Nature is uniform, and that different correlates cannot produce the same result, and therefore life cannot result from a different lot of elements or correlates. Nature never has but one way of doing anything—like cause like effect, only one line of causes or correlates for one effect. That is her invariable "law of economy," which no scientist doubts.

B. But Mr. Eccles next questions whether "the chemical combinations of the same matter are found to be always the same in result," and that "matter that has not the same properties cannot be the same matter." But when Mr. Eccles gets through with his comment, which refers to chemical isomerism, he seems to agree to the above. He says "the elements are classified in homologous groups that imitate each others' properties and are isomeric in forms of crystallization, so that one element can be substituted for the other in compounds, with a result in form and character nearly the same. OF COURSE THERE IS NO IDENTITY, for, as Professor Crookes has shown, there is individuality of character even among the atoms of the same element, which can be sifted from each other. But it always takes these same sifted elements under the same conditions to give the same