able that the genesis of the single cell, whether passing into crystalline fixity or organizing into higher forms of life, points to the same place of origin—the salt sea—where the microscopic entity at the very outset is surrounded by large quantities of organic nitrates. Hence, the power of absorbing nitrogen would constitute the first and mutual condition for any order of cellular existence, organic or crystalline. And, as the evolution of the organic structure proceeds through and by the inorganic, it follows that the native powers of the mineral cell—of which nitrogenous absorption constitutes one—are all transmitted to the subsequent cell structures of vegetable and animal life.

On the basis of the experiments and investigations referred to in this article, there seems to be nothing either unreasonable or unscientific in the theory that the human being, under certain conditions, possesses the power of assimilating nitrogenous compounds in his vital economy without the assistance of an intervening vegetable kingdom.

AXEL EMIL GIBSON.

LOS ANGELES, CAL.

QUOTATIONS.

MR. J. B. BURKE'S EXPERIMENTS.

MR. BURKE made use of solid radium bromide in fine powder. He sprinkled a few minute grains on a gelatine broth medium, possibly somewhat soft, so that the granules would sink slowly below the surface. Once there they would dissolve in and decompose the water, liberating oxygen and hydrogen, together with emanations, which would remain mixed with these gases. The gases would form minute bubbles, probably of microscopic dimensions, and the coagulating action of the emanation on the albumen of the liquor would surround each with a skin, so that the product would appear like a cell; its contents, however, would be gas, or, rather, a mixture of the gases oxygen and hydrogen. The emanation, enclosed in such a sack, would still decompose water, for enough would diffuse through the walls of the sack, which, moreover, would naturally be moist. The accumulation of more gas would almost certainly burst the walls of the cell, and almost equally certainly in one or two places. Through the cracks more gas would issue, carrying with it the emanation, and with it the property of coagulating the walls of a fresh cell. The result of the original bubble would resemble a yeast cell, and the second cell a bud, or perhaps more than one, if the original cell happened to burst. This process would necessarily be repeated as long as the radium continued to evolve emanation, which would be for the best part of a thousand years. The 'life,' therefore, would be a long one, and the 'budding' would impress itself on an observer as equally continuous with that of a living organism.

I am surprised to learn from Mr. Burke's first letter that the 'organisms' appear to dissolve in water. The emanation does not coagulate or apparently affect gelatine, for I have tried and found that it does not; indeed, it was not to be expected. Is it possible that the gelatine is pushed away to form the cell-wall, leaving the albumen as a partial content of the cell, along with gas? The latter would, doubtless, diffuse through the cell-wall of coagulated albumen and dissolve in and mix up with the water. On placing the apparent 'organism' in water the gelatine, too, would be extracted, and the cell would seem to disappear, the wall being excessively thin. It would be interesting to learn if Mr. Burke has attempted to stain his 'organisms' with the usual dyes used by microscopists. It is possible that the coagulated albumen would take the stain better than the uncoagulated matter and that the structure would thus be revealed.

As I said before, I have no desire to dogmatize. The supposition that the pouring of energy in some form into matter similar to that of which living organisms are made, and which serves as sufficient food for actual living organisms, might conceivably result in the production of life, is a very attractive one. But one is bound to sceptical, and the explanation which I have ventured to suggest appears to me to be sufficient to meet the case. But no one will rejoice more than I if it should ultimately prove to be inadequate.—Sir William Ramsay in *The Independent*.